



BUTTE COUNTY ASSOCIATION of GOVERNMENTS

965 FIR STREET, CHICO, CALIFORNIA 95928-6301 ♦ (530) 879-2468 ♦ FAX: (530) 879-2444 ♦ www.bcag.org

September 22, 2003

Name

Company/Resident

Street Address

City, State Zip

Re: Notice of Availability for Draft Environmental Impact Report for the State Route 99 Auxiliary Lane Project

Attached, please find a copy of the Notice of Availability for the Draft Environmental Impact Report (DEIR) and Public Hearing Notice prepared for the above mentioned project.

The DEIR is available for review at the following locations:

- Butte County Association of Governments, 965 Fir Street, Chico, CA 95928
- City of Chico Development Services, 411 Main Street, 2nd Floor, Chico, CA 95928
- Butte County Library, 464-A Street, Biggs, CA 95917
- Butte County Library, 1108 Sherman Avenue, Chico, CA 95928
- Butte County Library, 2545 Durham Dayton Hwy, Durham, CA 95938
- Butte County Library, 299 Spruce Street, Gridley, CA 95948
- Butte County Library, 1820 Mitchell Avenue, Oroville, CA 95965
- Butte County Library, 5922 Clark Road, Paradise, CA 95969

We would also like to inform you that there will be a public hearing on November 20th, 2003 at a BCAG Board of Directors regularly scheduled meeting. The location and time is as follows:

City of Chico Council Chambers

411 Main Street

Chico, CA 95928

Date: November 20th, 2003

Time: 9:00 am

BCAG staff and the hired consultant will give a short presentation with the Public Hearing to immediately follow. We strongly encourage anyone wishing to participate to be present at the Public Hearing such that all public comments can be entered into the record and made a part of the final Environmental Impact Report. It is expected that the BCAG Board of Directors will adopt an alternative and certify the Environmental Document in early 2004.

Should you have questions, please contact me at 530-879-2468.

Sincerely,

Andy Newsum
Project Manager

Notice of Availability for Public Review

To: ☒ Interested Individuals
see attached distribution list

From: Butte County Association of Governments
965 Fir Street
Chico, CA 95928
(Lead Agency and Address)

Contact: Andy Newsum, Project Manager

☒ County Clerk, County of: Butte

Subject: **Notice of Availability for Public Review**

This is to advise that Butte County Association of Governments has prepared a
(Lead Agency)

☐ Negative Declaration or Mitigated Negative Declaration ☒ Environmental Impact Report

for the project identified below. As mandated by State law, the minimum public review period for this document is:

Negative Declaration

EIR

☐ 21 days (Negative Declaration was not submitted to the State Clearinghouse for review)	☐ 30 days (Draft EIR was not submitted to the State Clearinghouse for review)
☐ 30 days (Negative Declaration was submitted to the State Clearinghouse for review)	☒ 45 days (Draft EIR was submitted to the State Clearinghouse for a normal 45-day review)
☐ 21 days (State Clearinghouse granted a shortened review period for the Negative Declaration)	☐ 30 days (State Clearinghouse granted a shortened review period for the Draft EIR)

This document is available
for review at:

Butte County Association of Governments, 965 Fir Street, Chico, CA 95928
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Butte County Library, 1820 Mitchell Avenue, Oroville, CA 95965
Butte County Library, 5922 Clark Road, Paradise, CA 95969

(Location)

A public hearing has been scheduled with The Butte County Association Governments Board of Directors to receive comments on the document.

Date: November 20, 2003

Time: 9:00 am

Place: City of Chico, Council Chambers, 411 Main Street in Chico

The comment period for this document closes on: November 20, 2003
(Date)

Testimony at future public hearings may be limited to those issues raised during the public review period either orally or submitted in writing by 5:00 p.m. the day the comment period closes.

Project Title: State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue
Project Location – Specific: City of Chico

Notice of Availability for Public Review, continued

Project Description – Brief: The project is located on SR 99 between SR 32 and East 1st Avenue in the City of Chico. Two build alternatives are analyzed in the EIR, Outside Widening and Inside Widening Alternatives. Both involve widening SR 32 southbound off-ramp and northbound on-ramp, widening East 1st Avenue, widening the northbound East 1st Avenue off-ramp and southbound on-ramp, and widening the Bidwell Park Viaduct and Palmetto Avenue Undercrossing structures.

Significant Environmental Effects:

The following impacts can be mitigated to a less-than-significant level:

direct land use impacts

access and circulation impacts

construction-related traffic safety concerns

impacts on existing bicycle route

temporary increase in construction-related emissions

construction-related noise

increase in operation-related noise

temporary construction-related water quality impacts

long-term water quality impacts

disturbance to riparian habitat

removal of trees until replacement trees mature (the removal of trees is considered to be significant and unavoidable in the short-term)

loss of aquatic habitat

removal of elderberry bushes, host plant to valley elderberry longhorn beetle

loss of potential wildlife habitat and potential disturbance to wildlife

potential damage to unknown cultural resources

potential exposure of unknown hazardous wastes to construction workers

temporary visual changes due to construction

permanent changes in light and glare

permanent visual changes resulting from vegetation removal and addition of bridge piers in Caltrans right-of-way

potential for temporary disruptions to law enforcement, fire protection, and emergency medical services

Listed Toxic Site: ☐ Yes ☒ No **Explanation:** The database search and field reconnaissance conducted for the project initial site assessment did not identify any hazardous waste facilities, land designated as hazardous waste property, hazardous waste disposal sites, or the presence of hazardous materials/wastes in the project area.

Signature:



Date:

September 22, 2003

Title:

Project Manager

Telephone:

530-879-2468

SR 99 Chico Auxiliary Lane Project Resident Listing

A. Ted & Ingrid Horton Fulmer	David L. Dunn	J. M. Dailey
Adolph J. & Betty Liden	David Wilkinson	Jack W. & Beverly M. Wally
Alice N. Sykess	Dianne Wilkinson	James & Ruth Vernon
Allan J. Savitz	Donald & Jacquelyne Corrie	James J. & Joan Zydonis
Allen Theodore & Kay Lin Logan	Donald & Cynthia Pustejovsky	James L. Downey
Anita Brauer	Donna Grassini/Robert Grassini	Jane Coleman
Ann Hardin SS Rutherford	Donna Stewart	Janice K. Plotts
Ann Schwab	Dorbin Rosalind & Sanford Living Trust	Janis Chisholm
Anthony D. Nicosia	Dorothy J. Borges	Jeffrey C. & Robin I. Brun
Bill & Violet Howerton	Doug Fogel	Jerome Arnoldy
Bob Gruhler	Douglas Boring	Jerry & Susan Rychtera
Bob Koch	Douglas Linn & Melanie Leigh Smith	Jerry Reyes
Brad Glanville	Drew Charlotte Revocable Trust	Jesse Merle & Shirley Leighty
Brad Hemstalk	E. Richard Weiss	Jessica M. Rios
Bradley P Wurlitzer	Edward E. Seagle	Jessie Maye Silva
Broyles Revocable Trust	Edwin R. & Jayne L. Logan	Jim Stevens
California Water Service	Eric & Jessica North	Jim Walker
Carl Quandt	Ernest M. & Kathleen R. Hillman	Joan Goodwin
Carlisle Family Trust	Estate of Edith Day	Joana M. & Michael G. Brooks
Carmen Rios-Ramirez	Estate of Patricia Ratliff	Joe Allen & Loni Knight
Carole O'Gara	Findlay Beatrice B Rev Trust	Joel A. Heaton
Carolyn Dorn	Frank P. Mendoza	John & Heidemarie Shepherd
Catherine Fish	Fred J. & Christine A. Moore	John & Joy E. Merrill
Charles & Linda Mountsier	Gachen Family Trust	John & Rebecca Crowston
Charles H. & Lula E. Phillips	Gail E. Knapp	John Byrne
Charlotte Drew	Garrett B. Gibson	John C. Sovero
Cindy McGarr	Gary Dunsmoor	John E. Garden
Clark Lane & Cindy McGarr	Glenn Davis Lee	Jon & Kerry Farley
Claude & Glennis Smith	Glenn Dunning	Joseph R. Acquistapace
Claudia M. Aldred	Greg Tropea	Juliet Stowie-Koch
Clive & Norma Fairchild	Gregg & Phyllis Berryence	Karen T. Baer
Conley Genevieve Rev Trust	Gregory F. & Linda L. Miller	Katherine Bryan
Corwin Family Trust	Halimi Lotfallah Estate of	Katheryn E. McKasson
Cy Weagle	Heather Nelson	Kathie Russo
Dan & Nell Cook	Helen P. Kutz	Kathleen Lydon
Dan B. & Olive L. Mesiroff	Heller First Capital Corp	Kathleen M. Carpenter
Dana J. & Louise M. Ward	Henry & Connie Roberson	Keith & Joanne Bentz
Daryl Kaiser	Henry & Kim Inouye	Kelly M. & Gerald V. Levin
Dave & Su Murray	Herbert Clark	Kevin Hanley
Dave Fuller	Annabel Hightman Family Trust	Kirk Moufort
David Boos	Hopkins Family Living Trust	Kostiz Marian E Trust
David Bradley	Howard Slater	Kris Zappettini
David G. Cowan	Hunter F. & Teresa F. Hampton	Larry & Nancy Boggs
Larry & Sharon Bumgardner	Muriel Gibson	Sidney A. Leube/Leube Family Trust
Larry G. & Marianne Schlecht	Nancy L. Good	Sierra Club - Yahi Group
Laura Nissim	Nayaram & Deanna Persaud	Sovero Revocable Living Trust
Lawrence & Michele Holland	Nicholas C. & Mary Grant Clark	Stanley & Judy Sinor
Leanne M. Jones	Norm Rosene	Steve & Charlene Gonsalves
Leanne Powell	Norman Corwin	Steve Brown
Leslie Fredrickson	Olsen Laurence R. Revocable Trust	Steve Gonsalves
Lester & Catherine Atkin	Orville & Rosemary Revocable Trust	Steve Thompson

**SR 99 Chico Auxiliary Lane Project
Resident Listing**

Linda Kay Lunsford	Patton Family Trust	Steven L. & Kathryn S. O'Bryan
Lois Cooper	Paula Downing	Stiefvater G W Revocable Trust
Lois Irene Bruggman	Percy D & Gracie L. Koch	Susan Edna Dare
Lorna Barth	Perry L. & Susan Dorman	Susan Elizabeth Golson
Louise R. Provence	Peter & Anna Craig	Teddy Darrell & Doris Helen Roberts
Luis & Linda Sagastume	Peter M. Scalise	Terry & Robin Walling
Marian Brashears	PJ Burrell	Thelma Safarik
Marilyn Ey	Tom R & Gwendolyn E Polk	Theresa J. Moore
Mark & Elizabeth Evans	R.L. & Elen Castleberry	Thomas & Rebecca McCarthy
Mark & Tomoko Lance	Raymond & Carole Watkins	Thomas & Roxanna Gay Hageman
Mark A. Steele	Raymond J. Jukic	Tiffany Hardin
Mark Habib	Renee Thompsen	Tim Wood
Mark Haynes	Retta Herfi	Timothy & Anne Murphy Wood
Mark Lance	Richard & Eulene McLees	Timothy M. & Christin L. Gallagher
Mark Sorensen	Richard Alm & Kim Blatnick Horton	Todd Hall & Molly Stokes
Marks Family Trust	Richard D. & A. Louise Logue	Tom Hageman
Marlene S. Bisignani	Richard R. & Jeanne B. Giberson	Tom Motta
Marlene S. Marron	Rick & Jeanne Giberson	Valerie Wells
Martin Knauer	Rick Sheridan	Viola Dockins
Mary Pattne	Rick T. & Debra D. Webb	Virginia A. Leighty
Melanie Smith	Robert & Marjorie Whitaker	Wallace E. & Margaret Douglass
Melecio & Judith Huerta	Robert & Tisha Moore	Walter G. Patton
Merle & Clara Raimer	Robert Brewster & Shannon Beattie	Watts Mary W Trust
Merwin D. & Dorothy I. Babcock	Robert Storre	Wayne Dean & Shelli Lynn Craig
Michael & Jill Hernandez	Robert Walter & Nelly Hoffman	William & Judy Cohea Revocable
Michael & Lynne Loofbourrow	Rochanah Weissinger	William & Lorraine Farnham
Michael L. Hosler	Ronald H. Hulen	William R. Knudsen
Michael Stephen Ballou	Ronald & Shirley Geschke Dawson	Woodrow & Dorhanda Soulliere
Michael & Margaret Higginson	Ronald S. & Sharon K. Andrade	Wright & Mary Carleton
Michele Curiale	Rosanna Disalvo	Zane M. & Karen A. Schreder
Mick Phillips	Rosemary Rist	
Mickey & Teresa Duzdevich	Royce S. & Susan D. Tevis	
Miguel & Leticia Cisneros	Sally Holland	
Mike & Jan Wacker	Sally Jo Smith	
Morcom Inc.	Sawgrass Investors	
Motta Revocable Trust	Shults Family Trust ETAL	

SR 99 Chico Auxiliary Lane Project

Agency Listing

AGENCY	CONTACT NAME	AGENCY	CONTACT NAME
Air Resources Board	Public Information	County of Butte	
Air Resources Board		Department of Fish & Game	
AQMD	Gail Williams	Department of Parks & Recreation	Historic Preservation
Big Chico Creek Watershed Alliance		Department of Parks & Recreation	
Biggs Library		Dept. of Fish & Game, Region 2	
Butte Co. Developmt Services	Carl Durling	Development Services	Fred Davis
Butte County	Curt Josiassen	Durham Library	
Butte County	Jane Dolan	Enterprise Record	Steve Schoonover
Butte County	Kim Yamaguchi	Environmental Protection Agency	Sam Agpawa
Butte County	Robert J. Beeler	FHWA	R. Clayton Slovensky
Butte County	Mary Anne Houx	John Blacklock	
Butte County Dept of Public Health	Jim Botill	KHSL TV Channel 12	
Butte County Environmental Health	Vance Severin	KNVN CHANNEL 24	
Butte County Library - Chico		KPAY Radio Station	
Butte County Library - Gridley		KPAY/KMXI/KHSL	
Butte County Library - Oroville		LAFCO	Paula Leasure
Butte County Library - Paradise		Musacchio & Montanari, P.C.	Matthew S. Angell, Esq
Butte County OES	J. Michael Madden	National Marine Fisheries Service	Mike Aceituno
Butte County Public Works	Mike Crump	Native American Heritage Commission	
Butte Creek Watershed Conservancy		Northeast Information Center	Bill Dreyer
Butte Economic Partnership	Bob Linscheid	Public Information Center	U.S. E.P.A.
Butte Environmental Council		Regional Water Quality Control Board	James Pedri
CA Water Service		Salvation Army	
Calif State University Chico	William A. Jones	State of California	The Reclamation Board
Calif. Dept of Fish & Game	Jack Miller	State of California	Water Resources
California Dept of Fish & Game	Scott Flint	State of California - Resources Agency	Rick Rayburn
California Native Plant Society		Town of Paradise	Daniel Wentland
Caltrans	Mike Forga	U.S. Army Corps of Engineers	Tom Cavanaugh
Caltrans District 3	Bruce deTerra	U.S. Fish & Wildlife Service	
Caltrans, District 03	Jody Lonergan		
Caltrans, District3			
Caltrans, Local Assistance	Ben Bramer		
CDF	Bill Sager		
Chamber of Commerce	Chico Chamber		
Chico Area Recreation & Park District	Kathy Long		
Chico Chamber of Commerce	Jim Goodwin		
CHICO ENTERPRISE RECORD			
CHICO NEWS & REVIEW			
Chico Velo	Ed McLaughlin		
City of Chico	Coleen Jarvis		
City of Chico	Coleen Jarvis		
City of Chico	Dan Herbert		
City of Chico	Dan Nguyen-Tan		
City of Chico	Fritz McKinley		
City of Chico	Steve Bertagna		
City of Chico	Thomas Lando		
City of Chico Park Dept	Dennis Beardsley		
City of Gridley	Frank Cook		
City of Oroville	Gordon Andoe		
Congressman Wally Herger			

Draft
Environmental Impact Report for the
State Route 99 Auxiliary Lane Project
between State Route 32 and
East 1st Avenue

SCH #: 2002112002

Prepared for:

Butte County Association of Governments
965 Fir Street, Chico, CA 95928
Contact: Andy Newsum, Project Manager
(530) 879-2468

Prepared by:

Jones & Stokes
2600 V Street
Sacramento, CA 95818-1914
Contact: Debbie Loh, Principal-in-Charge
(916) 737-3000

September 2003

Jones & Stokes. 2003. Draft environmental impact report for the State Route 99 auxiliary lane project between State Route 32 and East 1st Avenue. September. (J&S 02-022.) Sacramento, CA. Butte County Association of Governments, Chico, CA.

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List of Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
ADL	aerially deposited lead
APE	Area of Potential Effects
ARB	California Air Resources Board
BA	biological assessment
BCAG	Butte County Association of Governments
BCAQMD	Butte County Air Quality Management District
BMI	benthic macroinvertebrate
BMPs	Best Management Practices
CAA	federal Clean Air Act
Caltrans	California Department of Transportation
CATS	Chico Area Transit System
CDFA	California Department of Food and Agriculture
CE	categorical exclusion
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CIA	Community Impact Assessment
City	City of Chico
City General Plan	City of Chico General Plan
cms	cubic meters per second
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
Corps	U.S. Army Corps of Engineers
County	Butte County
CRHR	California Register of Historical Resources
CSU	California State University
CSUC	California State University at Chico
CTs	Census tracts
dbh	diameter at breast height
DFG	California Department of Fish and Game
DTSC	California Department of Toxic Substances Control
du	dwelling units
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESUs	evolutionarily significant units
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTIP	federal transportation improvement program
HCM	<i>Highway Capacity Manual</i>
HCP	habitat conservation plan
HPSR	Historic Property Survey Report
ISA	Initial Site Assessment
ISAC	Invasive Species Advisory Committee
I-5	Interstate 5

KP	kilometer post
LOS	level of service
µg/m ³	micrograms per cubic meter
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NCCP	natural communities conservation plan
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NIC	Northeast Information Center
NISC	National Invasive Species Council
NO ₂	nitrogen dioxide
NOI	notice of intent
NOP	notice of preparation
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSVAB	Northern Sacramento Valley Air Basin
NWP	nationwide permits
O ₃	ozone
OHWM	ordinary high water mark
Pb	lead
PCBs	polychlorinated biphenyls
PCE	perchloroethylene
PDT	project development team
PM	post mile
PM ₁₀	particulate matter 10 microns or less in diameter
PM _{2.5}	particulate matter 2.5 microns or less in diameter
ppm	parts per million
Protocol	Construction Noise and Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects
PS&E	Plans Specifications and Estimates
PSR	Project Study Report
RIP	regional improvement program
RIS	Relocation Impact Statement
ROG	reactive organic gases
RTP	regional transportation plan
RWQCB	Regional Water Quality Control Board
SAAs	streambed alteration agreements
SHPO	State Historic Preservation Officer
SIP	state implementation plan
SO ₂	sulfur dioxide
SOI	sphere of influence
SR	state route
STIP	state transportation improvement program
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan

TIP	transportation improvement program
TMP	traffic management plan
UDB	Urban Development Boundary
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley elderberry longhorn beetle
vph	vehicles per hour
vphpl	vehicle per hour per lane
WDRs	waste discharge requirements
WPCP	Water Pollution Control Plan
WQOs	water quality objectives

Chapter 1 Introduction

The purpose of this introduction is to describe the organization and scope of this draft environmental impact report (EIR) on the State Route (SR) 99 auxiliary lane project between SR 32 and East 1st Avenue (kilometer post R52.22/53.56 [post mile R32.4/33.28]). This document has been prepared to comply with the requirements of the California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code, Section 21000, et seq.). With the Butte County Association of Governments (BCAG) acting as state lead agency under CEQA, this EIR has been prepared based on the State CEQA Guidelines (14 California Code of Regulations, Section 14000 et seq.).

Funding from the Federal Highway Administration (FHWA) (federal lead agency) will be used to construct this project. FHWA expects to prepare a Categorical Exclusion (CE) under the National Environmental Policy Act (NEPA) for this project subject to further information generated through public comment. A series of technical reports were prepared to support the CE. A list of these technical reports is contained in Table 1-1. Where the NEPA analysis is an integral part of the CEQA analysis and/or federal standards or regulations are used in developing the mitigation measures that are required for this project, the impact evaluations (such as the evaluations conducted for transportation conformity with air quality standards [Chapter 6], noise [Chapter 7], biological resources [Chapter 9], and cultural resources [Chapter 10]) are contained in the body of this report. Other analyses conducted to comply with NEPA (i.e., analyses that do not affect the proposed mitigation measures) are contained in the appendices to this report (see Appendices C and F).

1.1 Organization of the Environmental Impact Report

This EIR is organized as follows:

- Following this chapter, Chapter 2, “Summary”, presents an overview of the project alternatives and potential environmental impacts of the project alternatives. Table 2-1 provides the CEQA-required pre- and post-mitigation significance conclusions. This chapter also discusses known areas of controversy associated with the project and the environmentally preferred alternative.
- Chapter 3, “Project Description”, presents a description of the project location; project background (including a description of the alternatives considered but rejected and a summary of the public involvement process); project objectives; project alternatives (two build alternatives and the No-Project Alternative), including project phasing and construction, characteristics of each alternative, right-of-way acquisition requirements, and costs; related projects; and required permits and approvals.
- Chapters 4 through 13 present the setting, environmental impacts, and proposed feasible mitigation measures for 10 environmental issues:
 - Chapter 4, “Land Use and Socioeconomics”
 - Chapter 5, “Transportation”
 - Chapter 6, “Air Quality”

- Chapter 7, “Noise”
- Chapter 8, “Hydrology and Water Quality”
- Chapter 9, “Biological Resources”
- Chapter 10, “Cultural Resources”
- Chapter 11, “Earth Resources”
- Chapter 12, “Visual Resources”
- Chapter 13, “Public Services and Facilities”

The two build alternatives and the No-Project Alternative are each evaluated in these chapters.

- Chapter 14, “Cumulative Impacts”, presents cumulative impacts associated with the proposed project.
- Chapter 15, “Citations and Lists of Agencies Consulted”, lists all sources and personal communications made in preparing this joint document. This chapter also identifies the agencies and organizations that were consulted in preparing this report.
- Chapter 16, “List of Preparers”, lists the technical specialists who prepared this report.

This joint document also contains the following appendices:

- Appendix A, “Notice of Preparation and Comments Received”
- Appendix B, “Public Review Process”
- Appendix C, “Environmental Justice (Executive Order 12898)”
- Appendix D, “Summary of Relocation Benefits”
- Appendix E, “Proposed Landscaping Plan and Aesthetic Treatment for the Noise Barrier”
- Appendix F, “Floodplain Management (Executive Order 11988)”

1.2 Scope of the Environmental Impact Report

Based on the results of the technical studies prepared for this project, as well as the Initial Study/Environmental Checklist Form attached to the Notice of Preparation (NOP) for the project (see Appendix A), BCAG has determined that the appropriate level of CEQA environmental documentation for this project is an EIR since substantial evidence supported a conclusion that the proposed project may have a significant effect on the environment.

BCAG prepared and distributed an NOP and a CEQA initial study checklist on November 1, 2002 (Appendix A). This EIR includes a discussion of specific issues and concerns identified by BCAG as potentially significant or less than significant in the initial study checklist.

The CEQA initial study checklist contained in Appendix A identifies that the proposed project would have *no impact* on the following environmental issues:

- Ib. Scenic resources, including rock outcroppings and historic buildings along a scenic highway;
- IIa–c. Agricultural resources;
- VIe. Septic tanks or alternative wastewater disposal systems;

Table 1-1. List of Technical Studies (Bound Separately)

The following identifies the technical studies prepared for this project. These documents are available for review by contacting:

Andy Newsum, P.E., Project Manager
Butte County Association of Governments
965 Fir Street
Chico, CA 95928-6301
530-879-2468

España Geotechnical Consulting. 2003. *Revised Initial Site Assessment for Hazardous Materials Impact for the State Route 99 Operational Improvements Project Between State Route 32 to East First Avenue, Chico, CA.* Prepared for Jones & Stokes, Sacramento, CA. January 2003. Sacramento, CA.

Fehr & Peers Transportation Consultants. 2003. *Traffic Report for the State Route 99 Auxiliary Lanes.* February 4, 2003. Prepared for Quincy Engineering, Sacramento, CA. Roseville, CA.

Jones & Stokes. 2003a. *Air Quality Technical Report for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Administrative Draft.* March 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Jones & Stokes. 2003b. *Biological Assessment and Essential Fish Habitat for Central Valley Steelhead and Central Valley Spring-Run and Fall-Run Chinook Salmon, State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Administrative Draft.* March 2003. Sacramento, CA.

Jones & Stokes. 2003c. *Biological Assessment for the Valley Elderberry Longhorn Beetle for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue.* April 2003. Sacramento, CA.

Jones & Stokes. 2003d. *Community Impact Assessment Technical Report for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Administrative Draft.* March 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Jones & Stokes. 2003e. *Earth Resources Technical Report for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Administrative Draft.* 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Jones & Stokes. 2003f. *Historic Property Survey, Historic Resource Evaluation Report, and Archeological Survey Report for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue.* January 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Jones & Stokes. 2003g. *Hydrology and Water Quality Technical Report for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st, Administrative Draft.* March 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Jones & Stokes. 2003h. *Natural Environment Study Report for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Final.* April 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Table 1-1. Continued

Jones & Stokes. 2003i. *Noise Study Technical Report, State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Administrative Draft*. March 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Jones & Stokes. 2003j. *Relocation Impact Statement for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Administrative Draft*. March 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Jones & Stokes. 2003k. *Visual Resources Technical Report for the State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue, Administrative Draft*. March 2003. Prepared for Quincy Engineering, Sacramento, CA; Butte County Association of Governments, Chico, CA; and Caltrans District 3, Marysville, CA. Sacramento, CA.

Parikh Consultants. 2003. *Preliminary Geotechnical Report, State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue in the City of Chico*. February 2003. Prepared for Quincy Engineering, Sacramento, CA. Milpitas, CA.

Quincy Engineering. 2002. *Preliminary Drainage Report, Auxiliary Lanes and Ramp Improvements in Butte County on SR 99 between the SR 99/32 and East First Avenue Interchanges in Chico, CA*. November 21, 2002. Prepared for the Butte County Association of Governments, Chico, CA. Sacramento, CA.

Quincy Engineering. 2003. *Draft Vulnerability and Retrofit Strategy Report, Bidwell Park Viaduct, Bridge No. 12-0151 R/L*. June 2003. Prepared for Butte County Association of Governments, Chico, CA. Sacramento, CA.

WRECO. 2002. *Final Location Hydraulic Study for the Proposed Widenings of State Route 99 Bridges over Big Chico Creek in Butte County, California*. November 2002. Prepared for the Butte County Association of Governments, Chico, CA, and Quincy Engineering, Sacramento, CA. Walnut Creek CA.

- VIIe. Safety hazards for areas within an airport land use plan or within 2 miles of a public airport or public use airport;
- VIIIf. Safety hazards for areas within the vicinity of a private airstrip;
- VIIIf. Risk of loss, injury, or death involving wildland fires;
- VIIIb. Substantial depletion of groundwater supplies;
- VIIIf. Housing within a 100-year flood hazard area;
- VIIIf. Inundation by seiche, tsunami, or mudflow;
- IXa. Physical division of an established community;
- Xa. Loss of availability of known mineral resources;
- Xb. Loss of availability of a locally important designated resource recovery site;
- XIe. Exposure of people to excessive noise levels within an airport land use plan or within two miles of a public airport;
- XIIf. Exposure of people to excessive noise levels near a private airstrip;
- XIIb–c. Displacement of a substantial number of existing housing units and people (The proposed alternatives would result in the displacement of housing units and people, and, therefore, this impact is discussed in Chapter 4.);
- XIIIa. Provision of or need for new or physically altered governmental facilities which could cause significant environmental impacts, in order to maintain acceptable performance objectives for fire or police protection, schools, parks, or other public facilities;
- XIVa. Neighborhood and regional parks or other recreational facilities;
- XIVb. Recreational facilities;
- XVc. Air traffic patterns;
- XVIa–b. Water or wastewater treatment facilities;
- XVIId. Water supply;
- XVIe. Wastewater treatment capacity;
- XVIIIf. Landfill capacity; and
- XVIIf. Compliance with regulations related to solid waste.

Because, as noted above, the Initial Study checklist explains why these impacts are not treated in detail in this EIR, the checklist satisfies the requirements of CEQA Guidelines section 15128, which requires that an EIR “shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR”.

Chapter 2 Summary

2.1 Summary of the Project Objectives and Alternatives

The proposed project is located on SR 99 between the SR 32 and East 1st Avenue interchanges and on East 1st Avenue in the vicinity of the SR 99/East 1st Avenue interchange, in the City of Chico (City), in Butte County (County). The proposed project would improve the operational characteristics of SR 99 between SR 32 and East 1st Avenue by providing an auxiliary lane in each direction. Caltrans and BCAG are proposing this project to:

- Improve existing safety and traffic operations and reduce traffic delays and congestion;
- Provide improved access across Bidwell Park for local traffic from the SR 32 interchange to the East 1st Avenue interchange;
- Improve ramp merge areas that currently cause vehicles to have difficulty entering SR 99 in the northbound and southbound directions; and
- Reduce congestion on SR 99 at the northbound off-ramp to East 1st Avenue.

Two build alternatives are considered in this report. The Outside Widening Alternative would provide an auxiliary lane to the outside of SR 99, using retaining walls to reduce impacts on adjacent properties. The Inside Widening Alternative would realign the existing freeway lanes into the median in order to use the existing outer lanes as auxiliary lanes. This report also analyzes two optional configurations for the SR 99/East 1st Avenue intersections: conventional ramp intersections and roundabouts.

The Outside and Inside Widening Alternatives involve the following:

- widening the SR 32 southbound off-ramp and northbound on-ramp to provide for two lanes;
- with conventional ramp intersections, widening East 1st Avenue to four westbound lanes (two through lanes and two left-turn lanes) and two eastbound lanes (one through lane and one left-turn lane); with roundabouts, widening East 1st Avenue to two westbound and two eastbound lanes;
- widening the northbound East 1st Avenue off-ramp to provide two left-turn lanes and one right-turn lane;
- widening the southbound East 1st Avenue on-ramp to two lanes; and
- widening the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures, including providing full 1.5-meter (5-foot) inside shoulders and full 3.0-meter (10-foot) outside shoulders.

In addition to the two build alternatives, this report analyzes the No-Project Alternative.

2.2 Summary of Environmental Impacts and Mitigation Measures

Table 2-1 presents a comparison of the potentially significant environmental impacts associated with each of the project alternatives and identifies proposed mitigation measures that would reduce significant impacts to less than significant. This table also presents the premitigation and postmitigation significance conclusions associated with the each alternative.

2.3 Terminology Used in this Environmental Impact Report

Under CEQA, the following terms denote the significance of environmental impacts:

- a less-than-significant impact would cause no substantial adverse effect on the environment and would not require mitigation.
- a significant impact would cause a substantial adverse effect on the environment; Appendix G of the State CEQA Guidelines provides a list of environmental effects that would normally be considered a significant impact. Each impact chapter of this report (Chapters 4–13) identifies the significance thresholds that were used to judge the significance of impacts. Appendix G, together with professional standards, were used to judge significance for this project.
- a significant and unavoidable impact is one that would cause a substantial adverse effect on the environment and for which no mitigation is available to reduce the impact to a less-than-significant level. One significant and unavoidable impact has been identified for the proposed project (see Impacts BR1 and BR14) related to the short-term loss of native trees 30 centimeters (12 inches) or greater in diameter at breast height.
The proposed project can proceed with this significant unavoidable impact, but BCAG is required to prepare a Statement of Overriding Considerations, pursuant to Section 15093 of the State CEQA Guidelines, that explains the overriding benefits of the project despite the occurrence of this unavoidable environmental impact.

2.4 Known Areas of Controversy

The following major issues have been raised during the project’s public involvement process and are potential areas of controversy:

- removal of trees,
- impacts on Bidwell Park,
- increases in traffic noise,
- visual changes in the residential neighborhoods,
- removal of oleanders in the SR 99 median, and
- congested traffic flow on East 1st Avenue.

Table 2-1. Summary of Impacts, Mitigation Measures, and CEQA Significance Conclusions Associated with the Project Alternatives

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
Chapter 4. Land Use and Socioeconomics				
LU1: Direct land use impacts on eight to 10 residential parcels, including one to three full acquisitions (LTS/LTS) <u>Conventional intersections:</u> Permanent partial acquisitions on eight residential parcels and temporary easements on 10 residential parcels; one full residential acquisition <u>Roundabouts:</u> Permanent partial acquisitions on eight residential parcels and temporary easements on 10 residential parcels (amount of area acquired differs for some parcels under this design option versus conventional intersections); three full residential acquisitions	LU1a: Compensate displaced land uses in conformance with the Uniform Relocation Assistance and Real Property Acquisition Polices Act ^a	LU1: Direct land use impacts on eight to 10 residential parcels, including one to three full acquisitions (LTS/LTS) <u>Conventional intersections:</u> Permanent partial acquisitions on eight residential parcels and temporary easements on 10 residential parcels; one full residential acquisition <u>Roundabouts:</u> Permanent acquisitions on eight residential parcels and temporary easements on 10 residential parcels (amount of area acquired differs for some parcels under this design option versus conventional intersections); three full residential acquisitions	LU1a: Compensate displaced land uses in conformance with the Uniform Relocation Assistance and Real Property Acquisition Polices Act ^a	No impact
LU2: Direct land use impacts on three to four nonresidential parcels (no full acquisitions) (S/LTS) <u>Conventional intersections:</u> Permanent acquisitions on three commercial parcels and temporary easements on one nonresidential parcel <u>Roundabouts:</u> Permanent acquisitions on four commercial parcels and temporary easements on one nonresidential parcel	LU2a: Provide at least 10 additional parking spaces for business at 1078 East 1st Avenue (conventional ramp intersection and roundabout) LU2b: Provide exit driveway for business at 1108 Sheridan Avenue (roundabout)	LU2: Direct land use impacts on three to four nonresidential parcels (no full acquisitions) (S/LTS) <u>Conventional intersections:</u> Permanent acquisitions on three commercial parcels and temporary easements on one nonresidential parcel <u>Roundabouts:</u> Permanent acquisitions on four commercial parcels and temporary easements on one nonresidential parcel	LU2a: Provide at least 10 additional parking spaces for business at 1078 East 1st Avenue (conventional ramp intersection and roundabout) LU2b: Provide exit driveway for business at 1108 Sheridan Avenue (roundabout)	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
LU3: Construction-related impacts (S/LTS)	LU3a: Implement a transportation management plan	LU3: Construction-related Impacts (S/LTS)	LU3a: Implement a transportation management plan	No impact
LU4: Compatible with planned uses (LTS/LTS)	None proposed	LU4: Compatible with planned uses (LTS/LTS)	None proposed	No impact
LU5: Consistent with local and regional plans and policies (LTS/LTS)	None proposed	LU5: Consistent with local and regional plans and policies (LTS/LTS)	None proposed	Inconsistent with RTP and BCAG Chico corridor study
LU6: No impact on community cohesion (LTS/LTS)	None proposed	LU6: No impact on community cohesion (LTS/LTS)	None proposed	No impact
LU7: Access and circulation impacts (S/LTS)	LU2b: Provide exit driveway for business at 1108 Sheridan Avenue (roundabout)	LU7: Access and circulation impacts (S/LTS)	LU2b: Provide exit driveway for business at 1108 Sheridan Avenue (roundabout)	No impact
LU8: Displacement of two to seven residents (LTS/LTS) <u>Conventional intersections:</u> Displacement of two persons <u>Roundabouts:</u> Displacement of seven persons	None proposed	LU8: Displacement of two to seven residents (LTS/LTS) <u>Conventional intersections:</u> Displacement of two persons <u>Roundabouts:</u> Displacement of seven persons	None proposed	No impact
LU9: Minor local tax revenue impacts (economic impact)	None proposed	LU9: Minor local tax revenue impacts (economic impact)	None proposed	No impact
LU10: Minor local and roadside business impacts (economic impact)	None proposed	LU10: Minor local and roadside business impacts (economic impact)	None proposed	No impact
LU11: Minor beneficial construction-related economic impacts (economic impact)	None proposed	LU11: Minor beneficial construction-related economic impacts (economic impact)	None proposed	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
Chapter 5. Transportation				
T1: Construction-related safety concerns (S/LTS)	LU3a: Implement a Traffic Management Plan	T1: Construction-related safety concerns (S/LTS)	LU3a: Implement a Traffic Management Plan	No impact
T2: Existing with project (Option D-1 or E-1)—acceptable LOS for the freeway (LTS/LTS)	None proposed	T2: Existing with project (Option D-1 or E-1)—acceptable LOS for the freeway (LTS/LTS)	None proposed	No impact
T3: Existing with project (Option D-1 or E-1)—acceptable LOS at all arterial intersections (LTS/LTS)	None proposed	T3: Existing with project (Option D-1 or E-1)—acceptable LOS at all arterial intersections (LTS/LTS)	None proposed	No impact
T4: Existing with project (Option D-1 or E-1)—disruption in Class III bicycle route on Sheridan Avenue (S/LTS)	T4a: Relocate the Class III bicycle route to Sherman Avenue/Mildred Avenue	T4: Existing with project (Option D-1 or E-1)—disruption in Class III bicycle route on Sheridan Avenue (S/LTS)	T4a: Relocate the Class III bicycle route to Sherman Avenue/Mildred Avenue	No impact
T5: 2007 (Option D-1 or E-1)—acceptable LOS for the freeway (LTS/LTS)	None proposed	T5: 2007 (Option D-1 or E-1)—acceptable LOS for the freeway (LTS/LTS)	None proposed	2007—unacceptable LOS for the freeway
T6: 2007 (Option D-1 or E-1)—acceptable LOS at all arterial intersections (LTS/LTS)	None proposed	T6: 2007 (Option D-1 or E-1)—acceptable LOS at all arterial intersections (LTS/LTS)	None proposed	2007—unacceptable LOS at arterial intersections during the p.m. peak hour
T7: 2027 (Option D-1 or E-1)—acceptable LOS for the freeway (LTS/LTS)	None proposed	T7: 2027 (Option D-1 or E-1)—acceptable LOS for the freeway (LTS/LTS)	None proposed	2027—unacceptable LOS for the freeway
T8: 2027 (Option D-1)—improved LOS at arterial intersections (LTS/LTS)	None proposed	T8: 2027 (Option D-1)—improved LOS at arterial intersections (LTS/LTS)	None proposed	2027—unacceptable LOS at arterial intersections
T9: 2027 (Option E-1)—unacceptable LOS at the East 1st Avenue/southbound SR 99 ramp intersection (S/LTS)	T9a: Construct Option D-1	T9: 2027 (Option E-1)—unacceptable LOS at the East 1st Avenue/southbound SR 99 ramp intersection (S/LTS)	T9a: Construct Option D-1	2027—unacceptable LOS at arterial intersections

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
Chapter 6. Air Quality				
AQ1: Temporary increase in ROG, NOx, and PM10 construction-related emissions during grading and construction activities (S/LTS)	AQ1a: Implement construction mitigation measures to reduce construction emissions, as required by BCAQMD	AQ1: Temporary increase in ROG, NOx, and PM10 construction-related emissions during grading and construction activities (S/LTS)	AQ1a: Implement construction mitigation measures to reduce construction emissions, as required by BCAQMD	No impact
AQ2: No violations of CO NAAQS (LTS/LTS)	None proposed	AQ2: No violations of CO NAAQS (LTS/LTS)	None proposed	No violations of CO NAAQS
AQ3: Transportation conformity achieved (LTS/LTS)	None proposed	AQ3: Transportation conformity achieved (LTS/LTS)	None proposed	Maintaining project components in current configuration is not consistent with the 2001 RTP and 2002 FTIP
Chapter 7. Noise				
N1 (NEPA): Up to 3dB increase in existing noise levels/predicted traffic noise levels approach or exceed the noise abatement criteria for category B land uses (NA ^b)	4.1-meter-high (14-foot-high) barrier constructed at edge of shoulder adjacent to southbound and northbound SR 99 and near property lines adjacent to East 1st Avenue ramps, between Bidwell Park and East 1st Avenue, considered reasonable and feasible	N1 (NEPA): Up to 3dB increase in existing noise levels/predicted traffic noise levels approach or exceed the noise abatement criteria for category B land uses (NA ^b)	4.1-meter-high (14-foot-high) barrier constructed at edge of shoulder adjacent to southbound and northbound SR 99 and near property lines adjacent to East 1st Avenue ramps, between Bidwell Park and East 1st Avenue, considered reasonable and feasible	No impact
N2 (CEQA): Exposure of noise sensitive land uses to construction noise (S/LTS)	N2a: Employ noise-reduction construction measures	N2 (CEQA): Exposure of noise sensitive land uses to construction noise (S/LTS)	N2a: Employ noise-reduction construction measures	No impact
N3 (CEQA): Exposure of noise sensitive land uses to a significant increase in traffic noise at three receivers (S/LTS)	N3a: Employ traffic noise-reduction design features in the design of the proposed project	N3 (CEQA): Exposure of noise sensitive land uses to a significant increase in traffic noise at three receivers (S/LTS)	N3a: Employ traffic noise-reduction design features in the design of the proposed project	No impact
N4 (CEQA): Consistency with local policies (LTS/LTS)	None proposed	N4 (CEQA): Consistency with local policies (LTS/LTS)	None proposed	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
Chapter 8. Hydrology and Water Quality				
W1: Permanent changes in local storm water drainage (LTS/LTS)	None proposed	W1: Permanent changes in local storm water drainage (LTS/LTS)	None proposed	No impact
W2: Flooding and hydraulic changes (LTS/LTS)	None proposed	W2: Flooding and hydraulic changes (LTS/LTS)	None proposed	No impact
W3: Temporary construction water quality impacts (S/LTS)	W3a: Implement construction-related Best Management Practices	W3: Temporary construction water quality impacts (S/LTS)	W3a: Implement construction-related Best Management Practices	No impact
W4: Water quality impacts from changes in stormwater drainage (S/LTS)	W4a: Implement permanent post-construction Best Management Practices	W4: Water quality impacts from changes in stormwater drainage (S/LTS)	W4a: Implement permanent post-construction Best Management Practices	No impact
Chapter 9. Biological Resources				
BR1: Disturbance to approximately 1.3 hectares (3.2 acres) of riparian forest; direct and indirect impacts to approximately 101 trees in the riparian area adjacent to Bidwell Park, of which 55 are native and 30 centimeters (12 inches) diameter at breast height (dbh) or greater (SU in the short term; S/LTS in the long term)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan	BR1: Disturbance to approximately 1.3 hectares (3.2 acres) of riparian forest; direct and indirect impacts to approximately 106 trees in the riparian area adjacent to Bidwell Park, of which 57 are native and 30 centimeters (12 inches) dbh or greater (SU in the short term; S/LTS in the long term)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
BR2: Permanent loss of approximately 0.02 hectare (0.06 acre) of aquatic habitat in Big Chico Creek (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek	BR2: Permanent loss of approximately 0.03 hectare (0.09 acre) of aquatic habitat in Big Chico Creek (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek	No impact
BR3: No impact to special-status plant species (LTS/LTS)	None proposed	BR3: No Impact to special-status plant species (LTS/LTS)	None proposed	No impact
BR4: Removal of 20 blue elderberry bushes, host plant to the Valley elderberry longhorn beetle (S/LTS)	BR4a: Fence elderberry shrubs to be protected BR4b: Inspect buffer area fences during construction BR4c: Water down construction areas to control dust in the vicinity of elderberry shrubs BR4d: Compensate for direct and indirect effects on Valley elderberry longhorn beetle habitat in a conservation area that is at least 0.67 hectare (1.65 acres) in size	BR4: Removal of 19 blue elderberry bushes, host plant to the Valley elderberry longhorn beetle (S/LTS)	BR4a: Fence elderberry shrubs to be protected BR4b: Inspect buffer area fences during construction BR4c: Water down construction areas to control dust in the vicinity of elderberry shrubs BR4d: Compensate for direct and indirect effects on Valley elderberry longhorn beetle habitat in a conservation area that is at least 0.62 hectare (1.53 hectares) in size	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
BR5: Potential loss of 0.02 hectare (0.06 acre) of aquatic habitat and 0.10 hectare (0.24 acre) of suitable upland habitat for northwestern pond turtle (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR5a: Conduct preconstruction surveys for northwestern pond turtle and construct exclusion fencing, if needed	BR5: Potential loss of 0.03 hectare (0.09 acre) of aquatic habitat and 0.14 hectare (0.35 acre) of suitable upland habitat for northwestern pond turtle (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR5a: Conduct preconstruction surveys for northwestern pond turtle and construct exclusion fencing, if needed	No impact
BR6: Loss of approximately 332 trees 30 centimeters (12 inches) dbh or greater that may provide suitable nesting habitat for Swainson's hawk (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR6a: Conduct a preconstruction survey for nesting Swainson's hawks and begin construction activities and remove trees during the Swainson's hawk nonbreeding season (September 15 to March 1)	BR6: Loss of approximately 218 trees 30 centimeters (12 inches) dbh or greater that may provide suitable nesting habitat for Swainson's hawk (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR6a: Conduct a preconstruction survey for nesting Swainson's hawks and begin construction activities and remove trees during the Swainson's hawk nonbreeding season (September 15 to March 1)	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
BR7: Loss of approximately 332 trees 30 centimeters (12 inches) dbh or greater that may provide suitable nesting habitat for Cooper's hawk (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	BR7: Loss of approximately 218 trees 30 centimeters (12 inches) dbh or greater that may provide suitable nesting habitat for Cooper's hawk (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	No impact
BR8: Loss of approximately 711 trees 15 centimeters (6 inches) dbh or greater that may provide suitable nesting habitat for oak titmouse (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	BR8: Loss of approximately 414 trees 15 centimeters (6 inches) dbh or greater that may provide suitable nesting habitat for oak titmouse (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
BR9: Loss of approximately 711 trees 15 centimeters (6 inches) dbh or greater that may provide suitable nesting habitat for Nuttall's woodpecker (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	BR9: Loss of approximately 414 trees 15 centimeters (6 inches) dbh or greater that may provide suitable nesting habitat for Nuttall's woodpecker (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	No impact
BR10: Potential disturbance to Yuma myotis and pallid bat (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR10a: Conduct preconstruction surveys for special-status species bats and avoid construction activities, if maternity colonies are found within the project area, until after migration	BR10: Potential disturbance to Yuma myotis and pallid bat (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR10a: Conduct preconstruction surveys for special-status species bats and avoid construction activities, if maternity colonies are found within the project area, until after migration	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
BR11: Potential disturbance to Central Valley spring-run and fall-run chinook salmon and Central Valley steelhead habitat (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan BR11a: Implement measures to protect fish species and water quality of Big Chico Creek	BR11: Potential disturbance to Central Valley spring-run and fall-run chinook salmon and Central Valley steelhead habitat (S/LTS)	BR1a: Conduct a biological resources education program for construction crews and enforce construction restrictions BR1b: Install construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided BR1c: Retain a biologist to monitor construction activities in and near Big Chico Creek BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan BR11a: Implement measures to protect fish species and water quality of Big Chico Creek	No impact
BR12: Potential disturbance to non-special-status nesting migratory birds and raptors (S/LTS)	BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	BR12: Potential disturbance to non-special-status nesting migratory birds and raptors (S/LTS)	BR7a: Begin construction activities and remove trees and shrubs during the nonbreeding season for most birds (generally, August 15 to March 1)	No impact
BR13: Potential disturbance to nesting swallows (S/LTS)	BR 13a: Avoid construction activities that could disturb nesting swallows	BR13: Potential disturbance to nesting swallows (S/LTS)	BR 13a: Avoid construction activities that could disturb nesting swallows	No impact
BR14: Removal of approximately 610 trees 15 centimeters (6 inches) or greater dbh in the Caltrans right-of-way on the SR 99 side slopes, of which 60 are native and 30 centimeters (12 inches) or greater dbh (SU in the short term; S/LTS in the long term)	V3a: Implement project landscaping plan to replace trees that are removed, using the specified guidelines	BR14: Removal of approximately 308 trees 15 centimeters (6 inches) or greater dbh in the Caltrans right-of-way on the SR 99 side slopes, of which 27 are native and 30 centimeters (12 inches) or greater dbh (SU in the short term; S/LTS in the long term)	V3a: Implement project landscaping plan to replace trees that are removed, using the specified guidelines	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
BR15: Potential introduction of new noxious weeds or spread of existing noxious weeds (S/LTS)	BR15a: Avoid the introduction of new noxious weeds or the spread of existing noxious weeds	BR15: Potential introduction of new noxious weeds or spread of existing noxious weeds (S/LTS)	BR15a: Avoid the introduction of new noxious weeds or the spread of existing noxious weeds	No impact
Chapter 10. Cultural Resources				
CR1: Potential damage to currently unknown cultural resources (S/LTS)	CR1a: Implement procedures for the unanticipated discovery of cultural resources	CR1: Potential damage to currently unknown cultural resources (S/LTS)	CR1a: Implement procedures for the unanticipated discovery of cultural resources	No impact
Chapter 11. Earth Resources				
ER1: Change in topography from grading activities during construction (LTS/LTS)	None proposed	ER1: Change in topography from grading activities during construction (LTS/LTS)	None proposed	No impact
ER2: Potential for structural damage and injury from development in Seismic Risk Zone 3 (LTS/LTS)	None proposed	ER2: Potential for structural damage and injury from development in Seismic Risk Zone 3 (LTS/LTS)	None proposed	Bidwell Park viaduct would not be retrofitted to current standards
ER3: Potential for structural damage and injury from development on materials subject to liquefaction (LTS/LTS)	None proposed	ER3: Potential for structural damage and injury from development on materials subject to liquefaction (LTS/LTS)	None proposed	No impact
ER4: Potential for increased short-term and long-term erosion rates from grading activities (LTS/LTS)	None proposed	ER4: Potential for increased short-term and long-term erosion rates from grading activities (LTS/LTS)	None proposed	No impact
ER5: Potential for exposure of previously unknown hazardous wastes to construction workers and/or nearby land uses (S/LTS)	ER5a: Implement recommendations related to hazardous materials contained in the project initial site assessment	ER5: Potential for exposure of previously unknown hazardous wastes to construction workers and/or nearby land uses (S/LTS)	ER5a: Implement recommendations related to hazardous materials contained in the project initial site assessment	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
Chapter 12. Visual Resources				
V1: Temporary visual changes due to construction (S/LTS)	V1a: Install temporary, visual barriers between construction zones and residences	V1: Temporary visual changes due to construction; less impact than Outside Widening Alternative on adjacent residences between Vallombrosa and Palmetto Avenues because proposed improvements would be constructed from SR 99, not Caltrans right-of-way adjacent to these residences (S/LTS)	V1a: Install temporary, visual barriers between construction zones and residences	No impact
V2: Permanent changes in light and glare, including from proposed noise barrier (S/LTS)	V2a: Construct walls with low-sheen and non-reflective surface materials	V2: Permanent changes in light and glare; no glare impacts from proposed noise barrier for residences between Vallombrosa and Palmetto Avenues (S/LTS)	V2a: Construct walls with low-sheen and non-reflective surface materials	No impact
V3: Permanent visual changes resulting from vegetation removal throughout the Caltrans right-of-way in the project area (S/LTS)	V3a: Implement project landscaping plan to replace trees that are removed, using the specified guidelines V3b: Implement the specified Best Management Practices for inclusion in the project description of the project report BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan	V3: Permanent visual changes resulting from vegetation removal; removal of SR 99 median plantings; less impact for adjacent residences between Vallombrosa and Palmetto Avenues than under Outside Widening Alternative since views for these residences would change minimally (S/LTS)	V3a: Implement project landscaping plan to replace trees that are removed, using the specified guidelines V3b: Implement the specified Best Management Practices for inclusion in the project description of the project report BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan	No impact
V4: Permanent changes to views in Landscape Unit 1 (SR 99); view of thrie-beam railing on both sides of SR 99 median plantings (S/LTS)	V4a: Provide aesthetic treatments to the noise barrier	V4: Permanent changes to views in Landscape Unit 1 (SR 99); removal of SR 99 median plantings (S/LTS)	V4a: Provide aesthetic treatments to the noise barrier	No impact
V5: Permanent changes to views in Landscape Unit 2 (SR 99 Interchanges) (LTS/LTS)	V5a: Implement landscape plantings in roundabout islands	V5: Permanent changes to views in Landscape Unit 2 (SR 99 Interchanges) (LTS/LTS)	V5a: Implement landscape plantings in roundabout islands	No impact

Table 2-1. Continued

Outside Widening Alternative (Preferred Alternative)		Inside Widening Alternative		No-Project Alternative
Impacts	Mitigation Measures	Impacts	Mitigation Measures	
V6: Permanent changes to views in Landscape Unit 3 (Bidwell Park), including addition of 26 bridge columns; no new lights (S/LTS)	BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan	V6: Permanent changes to views in Landscape Unit 3 (Bidwell Park), including addition of 39 bridge columns; darkened tunnel effect from bridge construction; two new lights added to viaduct (S/LTS)	BR1d: Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan	No impact
V7: Permanent changes to views in Landscape Unit 4 (residences) (S/LTS)	V3a: Implement project landscaping plan to replace trees that are removed, using the specified guidelines	V7: Permanent changes to views in Landscape Unit 4 (residences); less impact for residences between Vallombrosa and Palmetto Avenues than under Outside Widening Alternative (S/LTS)	V3a: Implement project landscaping plan to replace trees that are removed, using the specified guidelines	No impact
V8: Consistency with local visual policies (LTS/LTS)	None proposed	V8: Consistency with local visual policies (LTS/LTS)	None proposed	No impact
Chapter 13. Public Services and Facilities				
PS1: No long-term disruption of services (LTS/LTS)	None proposed	PS1: No long-term disruption of services (LTS/LTS)	None proposed	No impact
PS2: Potential for temporary disruptions to law enforcement, fire protection, and emergency medical services (S/LTS)	LU3a: Implement a traffic management plan	PS2: Potential for temporary disruptions to law enforcement, fire protection, and emergency medical services (S/LTS)	LU3a: Implement a traffic management plan	No impact
Notes: (significance conclusion before mitigation/significance conclusion after mitigation) SU = significant and unavoidable. S = significant. LTS = less than significant. NA = not applicable. Economic impact = under CEQA, the social and economic effects of projects are not normally considered impacts on the environment; therefore, no criteria were developed to evaluate the significance of purely social or economic effects of the project. ^a Required by a law other than CEQA. ^b Significance conclusions of individual impacts are not identified under NEPA.				

2.5 Environmentally Preferred Alternative

CEQA requires that an environmentally preferred alternative be identified in the environmental document. Chapter 2 provides a summary of the impacts of each alternative and Table 2-1 compares the alternatives. Although the No-Project Alternative (2027) would not result in any construction-related impacts, it does not improve safety and traffic operations in the project area, or improve access across Bidwell Park and for vehicles entering and exiting SR 99 in the project area. The No-Project Alternative would also be inconsistent with the Regional Transportation Plan and BCAG's Chico Corridor Study; would result in unacceptable levels of service on SR 99 in 2007 and 2027, unacceptable levels of service at studied arterial intersections during the p.m. peak hour in 2007, and unacceptable levels of service at arterial intersections during the a.m. and p.m. peak hours in 2027; and would not retrofit the Bidwell Park Viaduct to current standards.

Of the two build alternatives, the Inside Widening Alternative would generally result in fewer environmental impacts than the Outside Widening Alternative, including the following:

- Removal of one fewer blue elderberry bush, host plant to the federally listed Valley elderberry longhorn beetle, (19 removed under the Inside Widening Alternative versus 20 removed under the Outside Widening Alternative);
- Loss of fewer trees in the project area that provide suitable nesting habitat for Swainson's hawk (state-listed species), Cooper's hawk (state species of special concern), oak titmouse (federal species of concern), and Nuttall's woodpecker (federal species of concern);
- Removal of fewer trees on the SR 99 side slopes, adjacent to residential backyards and along the Rey Way residential neighborhood; Approximately 308 trees 15 centimeters [6 inches] or greater in diameter at breast height would be removed under the Inside Widening Alternative versus 610 under the Outside Widening Alternative;
- Fewer impacts for residences between Vallombrosa and Palmetto Avenues related to temporary visual changes during construction of the proposed improvements;
- Fewer impacts for residences between Vallombrosa and Palmetto Avenues related to permanent visual changes resulting from vegetation removal in the Caltrans right-of-way (i.e. SR 99 side slopes). Views from these residences would change minimally under the Inside Widening Alternative; vegetation adjacent to residences would remain, but the proposed noise barrier would be visible even under the Inside Widening Alternative at some locations.

However, the Inside Widening Alternative would have greater environmental impacts than the Outside Widening Alternative for the following:

- Removal of oleander and bottlebrush plantings from the SR 99 median and their replacement with a concrete barrier. Under the Outside Widening Alternatives, these plantings would be retained; as part of the Caltrans' SR 99 median barrier project, a three-beam railing is being constructed on either side of these plantings.
- Removal/trimming of a slightly greater number of trees in the Caltrans right-of-way, adjacent to Bidwell Park, from construction of proposed improvements to the Bidwell Park Viaduct (106 trees 15 centimeters [6 inches] or greater in diameter at breast height under the Inside Widening Alternative versus 101 trees under the Outside Widening Alternative). Even though fewer trees would be removed within the entire project area under the Inside

Widening Alternative, a slightly greater number of trees would be affected near Bidwell Park under the Inside Widening Alternative. This occurrence is due to the fact that under both alternatives, approximately the same area on the outside of the viaduct would be impacted for construction vehicle access and equipment activities, but more trees would be removed between the bridges under the Inside Widening Alternative;

- Loss of slightly greater amount of aquatic habitat in Big Chico Creek since a greater number of bridge column footings would encroach within the ordinary high water mark of the creek;
- Potential loss of a slightly greater amount of aquatic habitat (0.03 hectare [0.09 acre] under the Inside Widening Alternative versus 0.02 hectare [0.06 acre] under the Outside Widening Alternative) and suitable upland habitat (0.14 hectare [0.35 acre] under the Inside Widening Alternative versus 0.10 hectare [0.24 acre] under the Outside Widening Alternative) for northwestern pond turtle (federal and state species of concern); and
- Darkened tunnel effect caused by widening the Bidwell Park Viaduct to the inside.

Two optional intersection configurations were evaluated for the SR 99/East 1st Avenue intersections: conventional ramp intersections and roundabouts. From an overall traffic operations standpoint, the conventional ramp intersections (Option D-1) operates slightly better than the roundabouts (Option E-1). Options D-1 and E-1 have different traffic safety considerations for East 1st Avenue.

- The roundabout intersections under Option E-1 reduce the possibility of severe accidents since vehicles must travel at a slower speed through the roundabout and the number of conflict points is reduced.
- Option D-1 gives pedestrians the right-of-way using traffic signals. The roundabouts in Option E-1 have uncontrolled pedestrian crossing which can be especially difficult for the visually-impaired to use.

With regard to other environmental impacts, the roundabouts have slightly greater direct land use impacts, as described below:

- Three full residential acquisitions would be required with roundabouts versus one full acquisition with conventional intersections; and
- Four partial commercial acquisitions with roundabouts versus three with conventional intersections.

2.6 Preferred Alternative

The Project Development Team, consisting of representatives from BCAG, Caltrans, the County, the City, and members of the consultant team, has selected the Outside Widening Alternative with signalized conventional ramp intersections on East 1st Avenue as the preferred alternative based on the following considerations:

- The Outside Widening Alternative would accommodate future freeway widening within the median by constructing the noise barrier at the ultimate location that would be required with future widening of SR 99 (with additional through lanes). Implementation of the Inside

Widening Alternative would require any future freeway lanes to be constructed to the outside and full reconstruction of the noise barrier.

- The Outside Widening Alternative would preserve the recently-completed median barrier. Implementation of the Inside Widening Alternative would remove the median barrier within the project limits.
- Although the Outside Widening Alternative would result in a greater number of trees being removed within the entire project area (see the “Environmentally Preferred Alternative” section above), tree removal in the Caltrans right-of-way, adjacent to Bidwell Park, would be similar to the Inside Widening Alternative. It should also be noted that Caltrans would likely propose a restoration planting project along portions of SR 99, including the project area in the absence of implementing the Outside Widening Alternative. This planting project would entail removing all overgrown or unmaintainable vegetation as determined by Caltrans’ landscape architecture and maintenance staff. In addition, any dying or dangerous trees would be pruned or removed. Caltrans is currently proposing a restoration planting project for implementation in fiscal year 2007/2008 on SR 99 between Lindo Channel Bridge and the Lassen Avenue undercrossing, north of the auxiliary lane project area. (Pietrzak pers. comm.)
- The Outside Widening Alternative would cost nearly 10% less than the Inside Widening Alternative.
- The Outside Widening Alternative meets the project objectives of improving freeway operations and safety for the traveling public, as does the Inside Widening Alternative.
- Conventional ramp intersections at East 1st Avenue would have slightly better traffic operations as compared to roundabouts. The SR 99/East 1st Avenue southbound ramp terminal intersection would operate at LOS B or better during the a.m. peak hour and LOS C during the p.m. peak hour in 2027, whereas the intersection would operate at LOS E and F, respectively, with a roundabout. Although the freeway LOS would be acceptable under both options, the southbound freeway lanes would have a better LOS with a roundabout than with a signalized intersection.
- Conventional ramp intersections at East 1st Avenue would impact fewer properties (one full residential acquisition) than roundabouts (three full residential acquisitions).
- Conventional ramp intersections at East 1st Avenue would not require that Sarah Avenue be permanently closed, as would roundabouts.
- Conventional ramp intersections on East 1st Avenue would provide a controlled crossing for pedestrians whereas roundabouts would have uncontrolled pedestrian crossings which could create difficulties for the visually impaired.
- Based on a FHWA publication on roundabouts (U.S. Department of Transportation 2000), a study on roundabouts in 15 towns in France found that a higher percentage of accidents at roundabouts involved bicyclists than accidents at conventional intersections (7.3% of roundabout accidents involved bicyclists versus 3.7% of accidents at conventional intersections). This report states, “At double-lane and larger roundabouts where bicycles are typically traveling on the outside part of the circulatory roadway, bicyclists face a potential conflict with exiting vehicles where the bicyclist is continuing to circulate around the roundabout...Bicyclists are less visible and therefore more vulnerable to the merging and exiting conflicts that happen at double-lane roundabouts.” Comments expressing concern for bicyclists traveling through roundabouts were received at the March 2003 public meeting for the proposed project.

- Local residents appear to prefer conventional ramp intersections at East 1st Avenue over roundabouts, as indicated by public comments received to date. Twice as many written comments received from the March 2003 public meeting noted a preference for conventional ramp intersections over roundabouts (27 in favor of conventional ramp intersections versus 12 in favor of roundabouts).

In this report, the Outside and Inside Widening Alternatives are analyzed in equal level-of-detail so that the BCAG Board of Directors will have the option of adopting either one of the alternatives.

2.7 Mitigation Monitoring

The mitigation measures that are ultimately proposed in the final EIR are required to be the subject of a mitigation monitoring plan to be prepared by BCAG and adopted as part of the final approval of the project. The mitigation monitoring plan will be prepared and available for public review with the final EIR.

Chapter 3 Project Description

3.1 Project Location

The proposed project is located on SR 99 between the SR 32 and East 1st Avenue interchanges and on East 1st Avenue in the vicinity of the SR 99/East 1st Avenue interchange, in the City of Chico, in Butte County (Figures 3-1 and 3-2). SR 99 is an important interregional route that runs north to south, connecting Bakersfield to Red Bluff and other points north. For the Chico area, SR 99 serves as one of the few crossings through Bidwell Park and over Big Chico Creek, and serves as a local connection between the northern and southern halves of the city.

3.2 Project Background (Including Alternatives Considered But Rejected) and Summary of Public Involvement Process

In April 1999, a meeting was held between various California Department of Transportation (Caltrans) functional units, BCAG, and the City. All involved came to a consensus that congestion and operational difficulties occur at the proposed project location and that the scope of the project to improve traffic flow should include ramp widening, adding northbound and southbound auxiliary lanes, and constructing double left-turn lanes from the northbound off-ramp to westbound East 1st Avenue. Two conceptual configurations were initially developed to meet this project scope. Alternative 1 (referred to in this report as the “Outside Widening Alternative”) would consist of constructing all improvements within the State right-of-way by widening SR 99 to the outside and using retaining walls to reduce impacts to adjacent properties. Under Alternative 2, widening would occur outside of the State right-of-way and would require the acquisition of 39 parcels (of which 37 parcels are residential and 26 would entail full takes). Because of funding constraints, it was suggested that the project be constructed in three phases. (California Department of Transportation 2000.)

A public informational workshop was held in October 1999 at the Chico Municipal Center. This workshop was scheduled to allow residents, local public officials, Caltrans staff, and other interested groups to exchange information and discuss issues related to the project. (California Department of Transportation 2000.) A total of 34 written comments were received at the workshop. The following is a summary of the comments:

- 59% were in favor of the project,
- 35% were not in favor of the project, and
- 6% had no comment.

Of the 20 comments in favor of the project:

- 50% were in favor of Alternative 1,
- 5% were in favor of Alternative 2, and
- 45% had no preference.

During the public informational workshop, several comments were made with regards to analyzing a third alternative. Alternative 3 (referred to in this report as the “Inside Widening Alternative”) would entail widening into the freeway median. A feasibility study conducted by Caltrans District 3 in 1998 concluded that constructing auxiliary lanes by widening into the median would not improve existing conditions unless additional traffic operations improvements are implemented, such as widening ramps, improving the ramp merge areas, and improving the local street network (California Department of Transportation 1999). At the request of BCAG and the City, Alternative 3, with the necessary traffic operations improvements, was added to the list of alternatives to be studied.

In October 2001, BCAG completed a comprehensive study of the SR 99 corridor in the Chico urban area. The corridor study area consisted of 15.85 kilometers (9.85 miles) of SR 99 beginning at Estates Drive, kilometer post (KP) 45.6 (post mile [PM 28.36]) and ending at Esplanade Drive, KP 61.5 (PM 38.21). The objective of the study was to develop a priority list of projects for capacity and interchange improvements to SR 99 through the Chico urbanized area. A Study Advisory Committee was formed, and public input was solicited to develop a consensus on the study recommendations. The prioritized list helped to identify projects for potential future State Transportation Improvement Program (STIP) funding. Adding auxiliary lanes to SR 99 between SR 32 and East 1st Avenue was identified as a priority project in the short term (i.e., within 5 years). (Quincy Engineering 2001.)

In November 2000, Caltrans approved the Project Study Report (PSR) prepared for the project. The PSR is intended to provide information to be used for future programming and to identify appropriate levels of project delivery support prior to in-depth environmental analysis and detailed engineering design. The approved PSR allows BCAG to program funding to further study the proposed project by developing a project report and prepare environmental documentation. Work has begun on this phase of the project. A Project Development Team (PDT), consisting of representatives from BCAG, Caltrans, the County, the City, and members of a consultant team, has been assembled to help identify issues and develop consensus on the proposed improvements.

In February 2002, the PDT determined that Alternative 2 should be dropped from consideration within the project report and environmental documentation because it required numerous full parcel takes and would not likely be supported by the public. Therefore, the two build alternatives that are studied in this report are:

- The Outside Widening Alternative, which would provide an auxiliary lane to the outside of SR 99, using retaining walls to reduce impacts on adjacent properties, including widening the Bidwell Park Viaduct (bridge 12-151 R/L) and the Palmetto Avenue Undercrossing (bridge 12-152 L/R).
- The Inside Widening Alternative, which would realign the existing freeway lanes into the median in order to use the existing outer lanes as the auxiliary lanes, including widening the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing.

A public scoping meeting was held on May 29, 2002 at the Chico Municipal Center. This meeting was scheduled to give the public an opportunity to provide input on the two remaining alternatives, the scope of the environmental document, and the environmental review process.

Appendix B contains a copy of the mailer and handouts that were distributed at the meeting. Approximately 80 members of the public attended this meeting. A comment card was provided to the public for the purpose of soliciting written comments on the proposed project. A total of 49 written comments were received. The following is a summary of the comments:

- 71% were in favor of the project, and
- 29% were not in favor of the project.

Of the 35 comments in favor of the project:

- 24 preferred the Inside Widening Alternative,
- four preferred the Outside Widening Alternative, and
- seven had no preference.

Comments were also received in favor of investigating roundabouts as a means to improve traffic flow on East 1st Avenue. Therefore, this report analyzes roundabouts at each East 1st Avenue ramp intersection as possible alternatives to the ramp intersections.

BCAG released an NOP of an Environmental Impact Report on November 1, 2002. The NOP was distributed in accordance with Section 15082 of the State CEQA Guidelines and asked for comments during a 30-day period ending on November 30, 2002. Appendix A contains a copy of the NOP and comments received.

A second public meeting was held on March 12, 2003 at the City of Chico Council Chambers. Appendix B contains a copy of the mailer and handouts that were distributed at the meeting. At this meeting, the two build alternatives and the two optional intersection configurations at East 1st Avenue (roundabouts and ramp intersections) were described. The preliminary results of the environmental impact analyses were also summarized. Comment cards were also provided at this meeting. A total of 43 written comments were received indicating the following:

- 22 supported the project,
- eight did not support the project, and
- eight were unsure.

Regarding the alternatives:

- 16 preferred the Outside Widening Alternative,
- 19 preferred the Inside Widening Alternative, and
- one had no preference.

Regarding the East 1st Avenue options:

- 27 preferred signalized ramp intersections,
- 11 preferred roundabouts, and
- one had no preference.

3.3 Existing Conditions

Between SR 32 and East 1st Avenue, SR 99 is a four-lane divided freeway with two 3.6-meter (12-foot) lanes in each direction separated by a 14-meter (46-foot) median. The median has two 1.5-meter (5-foot) paved shoulders and an 11-meter (36-foot) unpaved portion with plantings in the center. The SR 32 interchange is a modified L-5 diamond that intersects with one-way couplets. The northbound and southbound ramps are one-lane diagonal ramps. The East 1st Avenue interchange is a tight diamond with approximately 76 meters (249.3 feet) between the northbound and the southbound ramps. (California Department of Transportation 2000) The existing northbound off-ramp leaves the freeway as a single lane, then widens to provide one left-turn lane and one right-turn lane that each measure approximately 57 meters (187 feet) long.

East 1st Avenue is a two-lane facility with back-to-back left-turn lanes to the freeway on-ramps. Heading east on East 1st Avenue from the interchange, the first intersection is Sarah Avenue, which is an unsignalized T-intersection proceeding south from East 1st Avenue. The next intersection to the east is Neal Dow Avenue, which is signalized with left-turn lanes in both the eastbound and westbound directions. The left-turn movements are permissive. Heading west on East 1st Avenue from the interchange, the first intersection encountered is Sheridan Avenue, which is a four-legged unsignalized intersection. The next intersection to the west is Holben Avenue, which is an unsignalized T-intersection that runs south from East 1st Avenue. The last intersection to the west of the interchange within the project limits is Sherman Avenue, which is signalized with one lane for the through, right-turn, and left-turn movements.

The Bidwell Park Viaduct bridges are 232.3 meters (762 feet) long. Each bridge has two 3.6-meter (12-foot) travel lanes, 2.4-meter (8-foot) outside shoulders, and 1.5-meter (5-foot) inside shoulders, and are supported by 13 single columns. The bridges are slightly flared on the outside at the south end to accommodate the ramp connections.

The Palmetto Avenue Undercrossing bridges are 34.7 meters (114 feet) long. Each bridge has two 3.6-meter (12-foot) travel lanes, 2.4-meter (8-foot) outside shoulders, and 1.5-meter (5-foot) inside shoulders. These bridges are supported by pier walls located at the back of the sidewalks along Palmetto Avenue. The bridges are slightly flared on the outside at the north end to accommodate the ramp connections.

3.4 Project Objectives

Rapid growth within Butte County, specifically within Chico, has produced increased traffic congestion on SR 99. The limited number of local road connections across Bidwell Park, which bisects the town, adds to the congestion problem. High volumes of local traffic attempt to merge with the through traffic on SR 99. Vehicles exiting northbound SR 99 to East 1st Avenue frequently back up onto the freeway. Traffic studies indicate that accident rates exceed the statewide average. The proposed project would improve the operational characteristics of SR 99 between SR 32 and East 1st Avenue by providing an auxiliary lane in each direction. Caltrans and BCAG are proposing this project to:

- *Improve existing safety and traffic operations and reduce traffic delays and congestion.*
 Both southbound and northbound SR 99 traffic within the project limits experience accident rates that exceed the average accident rates for similar facilities. The actual accident rates for northbound and southbound SR 99 are 56% and 35% higher than the statewide average, respectively. Similarly, both the northbound on-ramp from SR 32 and the southbound on-ramp from East 1st Avenue experience accident rates that are significantly higher than the statewide average for similar facilities. The actual accident rate for the northbound on-ramp from SR 32 is more than five times the statewide average, and the actual accident rate for the East 1st Avenue southbound on-ramp is nearly double the statewide average. Rear-end collisions account for the vast majority of accidents. Of those collisions, most are a result of a vehicle stopping or slowing because of weaving movements or freeway congestion, then being hit from behind by the following vehicle(s). The project would improve ramp and freeway operations by providing an auxiliary lane for weaving movements. The project would also lengthen the ramps and improve sight distance. Improved freeway and ramp geometrics and operations would improve safety.
- *Provide improved access across Bidwell Park for local traffic from the SR 32 interchange to the East 1st Avenue interchange.*
 For the majority of SR 99 in Chico, the freeway capacity is estimated at 2,200 vehicle per hour per lane (vphpl). However, the non-standard outside shoulders on the Bidwell Park Viaduct reduces the capacity of this segment to about 1,900 vphpl in the afternoon peak period. By observation, the merging and diverging traffic between the on- and off-ramps occasionally cause temporary conflicts, which leads to breakdowns in the mainline traffic. Approximately 70% of the vehicles entering SR 99 at the SR 32 on-ramp exit at East 1st Avenue. During the peak periods, vehicles exiting northbound at East 1st Avenue frequently back up onto the freeway, causing further congestion. (California Department of Transportation 2000.)
 The Chico Corridor Study (Quincy Engineering 2001) completed in October 2001 evaluated future traffic on SR 99 under the assumption that the Manzanita Avenue project would entail construction of four lanes through Bidwell Park. As a result of the Chico City Council decision on this project to limit Manzanita Avenue to two lanes, SR 99 will experience additional traffic congestion.
- *Improve ramp merge areas that currently cause vehicles to have difficulty entering SR 99 in the northbound and southbound directions.*
 Recent freeway analysis (Stanek pers. comm.) shows that during the morning peak hour, the northbound SR 32 on-ramp and East 1st Avenue off-ramp and the southbound East 1st Avenue on-ramp and SR 32 off-ramp operate at LOS D (speeds decline slightly with increasing flows, freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort). For the evening peak hour, all of these locations operate at LOS E. The density (passenger cars per lane mile) is higher in the northbound direction.
- *Reduce congestion on SR 99 at the northbound off-ramp to East 1st Avenue.*
 Recent operational analysis (Stanek pers. comm.) of East 1st Avenue ramp intersection indicates that the SR 99 northbound off-ramp has a long queue during the morning and evening peak hours because of insufficient capacity on the approach to the ramp terminal intersection. In addition, queues from eastbound East 1st Avenue at the southbound ramps intersection are long. The congestion near the interchange causes poor LOS for the adjacent

unsignalized intersections, primarily at Sheridan Avenue, which experiences LOS E conditions in the evening peak hour.

Policy T-I-29 of the City of Chico General Plan (City General Plan) (Blaney Dyett 1999) calls for implementation of circulation improvements identified in the traffic report prepared for the City General Plan. Table B-5 of this traffic report (Korve Engineering 1994 as contained in Michael Brandman Associates 1994) shows SR 99 between north of Cohasset Road and south of Skyway to be six through lanes.

The proposed project is included in the adopted Butte County Regional Transportation Plan, 2001–2025 (RTP) (Butte County Association of Governments 2001) and the approved 2002 Federal Transportation Improvement Program (FTIP) (approved by FHWA on October 4, 2002). Table 5-4 of the RTP identifies the proposed project as “auxiliary lanes SR 32 to East 1st; widen East 1st Avenue.” Page 16 of the FTIP identifies it as “Butte 99 Chico Aux. Lanes/Intersection (Chico-On SR 99 between SR 32 and East 1st Avenue and at East First Avenue – Widen ramps, construct aux. lanes, intersection improvements”.

3.5 Project Alternatives

The process used to select the project alternatives analyzed in this report is described in the “Project Background” section above. As noted above, two build alternatives are considered in this report. The Outside Widening Alternative would provide an auxiliary lane to the outside of SR 99, using retaining walls to reduce impacts on adjacent properties. The Inside Widening Alternative would realign the existing freeway lanes into the median in order to use the existing outer lanes as auxiliary lanes. Two optional configurations are also evaluated for the SR 99/East 1st Avenue intersections: conventional ramp intersections or roundabouts.

As described in the “Preferred Alternative” section in Chapter 2, “Summary,” the PDT has selected the Outside Widening Alternative as the preferred alternative. The section in Chapter 2 describes the reasons for this selection. The Outside and Inside Widening Alternatives are analyzed in equal level-of-detail in this report so that the BCAG Board of Directors will have the option of adopting either one of the alternatives.

The Outside and Inside Widening Alternatives involve the following:

- widening the SR 32 southbound off-ramp and northbound on-ramp to provide for two lanes;
- with conventional ramp intersections, widening East 1st Avenue to four westbound lanes (two through lanes and two left-turn lanes) and two eastbound lanes (one through lane and one left-turn lane); with roundabouts, widening East 1st Avenue to two westbound lanes and two eastbound lanes;
- widening the northbound East 1st Avenue off-ramp to provide two left-turn lanes and one right-turn lane;
- widening the southbound East 1st Avenue on-ramp to two lanes; and

- widening the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures, including providing full 1.5-meter (5-foot) inside shoulders and full 3.0-meter (10-foot) outside shoulders.

In addition to the two build alternatives, this report analyzes the No-Project Alternative.

3.5.1 Design Parameters

The PSR identifies the following design parameters, which have been applied to both build alternatives.

- Encroachment into Bidwell Park and Rey Way will be avoided through the use of retaining walls. Discussions with local officials suggested that alteration of Rey Way should be avoided because it would hinder emergency vehicles responding to adjacent neighborhoods.
- On-ramps are designed to accommodate queue storage for future ramp metering.
- Soundwalls are included as they are likely to be required by Caltrans' "Procedures for Abatement of Highway Traffic and Noise and Construction Noise." A detailed analysis of soundwalls is included in the project's noise study report (Jones & Stokes 2003i) and is summarized in this report in Chapter 7).
- The project purpose and need criteria are met.
- The project is likely to be constructed in three phases based on the programming of funding which will be based on regional priorities (see the "Project Phasing" section below). *This report analyzes the build alternatives after completion of all phases of construction.*

3.5.2 Project Phasing and Construction Schedule

As stated, because of funding constraints, the adopted project alternative would likely be constructed in three phases. The following describes a preliminary phasing plan; however, the final phasing plan would be based on the availability of funding.

Phase 1: East 1st Avenue

- Widen lower half of the northbound off-ramp at East 1st Avenue to provide two left-turn lanes and one right-turn lane;
- widen East 1st Avenue; and
- improve ramp intersections or construct roundabouts.

Phase 2: Northbound State Route 99

- Widen northbound on-ramp at SR 32 to two lanes;
- construct SR 99 northbound auxiliary lane;
- widen upper half of northbound off-ramp at East 1st Avenue; and
- construct retaining walls, concrete barriers, and soundwalls, as required.

Phase 3: Southbound State Route 99

- Widen southbound off-ramp at SR 32 to two lanes;
- construct SR 99 southbound auxiliary lane;
- widen southbound on-ramp at East 1st Avenue to two lanes; and

- construct retaining walls, concrete barriers, and soundwalls, as required.

Project construction is expected to commence in 2005/2006. Later phases of construction will be constructed as funding becomes available.

3.5.3 Outside Widening Alternative (Preferred Alternative) Freeway Auxiliary Lanes

The Outside Widening Alternative would provide auxiliary lanes by widening the freeway to the outside using retaining walls to reduce impacts on adjacent properties. The existing freeway median and travel lanes would be unaffected, and a new lane with shoulder would be constructed adjacent to the existing outer (#2) freeway lane. Figures 3-3a and 3-3b show this alternative and the project area. The project area is defined as the area proposed for construction activities, construction staging areas, and construction access.

Both the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures would be widened to accommodate the auxiliary lanes. Under this alternative, both structures would be widened to the outside, maintaining separate northbound and southbound structures. The existing Bidwell Park Viaduct structures are each supported by 13 columns (total of 26 existing columns). Widening the Bidwell Park Viaduct structures requires the placement of one additional column alongside each of the existing columns or a total of 26 new columns. These new columns will vary in size according to the amount of widening. The structures would be widened more (nearly 11 meters [36.1 feet]) to accommodate the ramp merges and then less (approximately 4.5 meters [14.8 feet]) for the auxiliary lane and standard outside shoulder.

Construction of four new pier footings and retrofitting the footings of four existing piers would occur within Big Chico Creek's ordinary high water mark (OHWM). Sheet piles would be placed adjacent to the edge of the excavation in order to separate the creek waterway from the active work area. Dewatering of the excavated work areas would be achieved with cofferdams constructed on both sides of the creek; creek flow would be maintained outside of the dewatered area. Water removed from the excavated area would be pumped into a settling basin. The existing bridge overhangs would be demolished without allowing any concrete or steel to fall into the creek. Temporary falsework that clear spans the creek would be erected to support the new bridge members as they are being constructed. A temporary creek crossing would also be constructed to provide equipment and worker access from one side of the creek to the other. This crossing would span the creek with structural bridge elements, such as steel beams or railroad flatcars. Construction within the creek bed would require approximately 6–8 weeks. Total construction time in the vicinity of the creek would require approximately 18–24 months.

The Palmetto Avenue Undercrossing structures are each supported by two pier walls. These pier walls would be widened to the outside by 5.9–8.8 meters (19.3–28.9 feet) to support the widened bridge so that the finished supports would still be one solid wall for each bridge.

Ramp Improvements

The northbound on-ramp from SR 32 and the southbound on-ramp from East 1st Avenue would be widened to provide for two ramp lanes that transition to a single-lane on-ramp. The ramp lane

would become the freeway auxiliary lane. Both on-ramps would be constructed to accommodate future ramp metering.

The southbound off-ramp to SR 32/East 8th Street would be a two-lane off-ramp that would provide for one through onto the one-way frontage road and one right-turn lane onto 8th Street (a one-way street).

The northbound off-ramp to East 1st Avenue would be a two-lane off-ramp. It would be widened to provide for two left-turn lanes and one right-turn lane at the ramp intersection.

East 1st Avenue Widening

Two optional configurations are evaluated for the SR 99/East 1st Avenue intersections: conventional ramp intersections or roundabouts. The existing overpass wall (overpass substructure) would not be modified under either configuration. These are described below.

Ramp Intersections

East 1st Avenue is proposed to be widened to four westbound lanes (two through lanes and two left-turn lanes) and two eastbound lanes (one through lane and one left-turn lane). The existing ramp intersections are signalized, and the signals would be relocated as needed to match the widened intersection. The cross section on East 1st Avenue would provide six 3.3-meter (11-foot) lanes, two 1.3-meter (4.25-foot) shoulders, and two 1.5-meter (5-foot) sidewalks.

Roundabouts

Two through lanes in each direction would be provided on East 1st Avenue between two 45-meter-diameter (147.6-foot-diameter) two-lane roundabouts, one of which would be provided at each ramp intersection (Figure 3-4). The East 1st Avenue/Sheridan Avenue and the East 1st Avenue/Sarah Avenue intersections would remain independent. Roundabouts provide for continuous traffic access and are defined by two basic operational principles:

- yield at entry: vehicles in the roundabout have the right-of-way over entering vehicles, and
- deflection at entry: traffic-deflecting islands are used to reduce the speed of entering vehicles.

All vehicles would have equal access into the roundabout from East 1st Avenue as well as the off-ramps; although entering vehicles would have to yield to vehicles already using the roundabout. A free right turn would be provided from the northbound SR 99 off-ramp onto eastbound East 1st Avenue in order to prevent ramp traffic from backing onto the freeway. The roundabouts would have adequate width for two lanes of traffic. Bicyclists would travel through the roundabout using the 2.4-meter (8-foot) shoulders, and pedestrians would use the 1.5-meter (5-foot) sidewalks.

Right-of-Way Acquisition

The following is a summary of the acquisitions that will be required for project construction. A more detailed discussion will be contained in the project's Community Impact Assessment Report.

The Outside Widening Alternative with **conventional ramp intersections** would require full acquisition of one residence at the southwest corner of East 1st Avenue/Sheridan Avenue (APN 003-501-025) since the driveway would be displaced with the right-turn lane from eastbound East 1st Avenue onto the southbound SR 99 on-ramp. The remaining acquisitions would be sliver or corner takes. West of SR 99, sliver or corner acquisitions would be required of the following parcels (these parcels are single-family homes unless otherwise noted): APNs 003-501-026, 003-510-065 (California Water Services facilities), 003-480-113 (apartments), and 003-480-112 (vacant). East of SR 99, sliver or corner acquisitions would be required of the following parcels (these parcels contain single-family homes unless otherwise noted): APNs 045-192-061, 045-191-016, 045-191-015, 045-701-001, 045-150-090, and 045-150-068 (spa broker and liquor store that would lose some parking spaces).

A temporary construction easement would be required for four residences along Sheridan Avenue (APNs 003-510-049, 003-510-054, 003-510-047, and 003-510-070) and six residences on Sarah Avenue (APNs 045-192-045, 045-192-066, 045-192-051, 045-192-044, 045-192-046, and 045-192-042) for construction of a retaining wall in the SR 99 right-of-way needed for the East 1st Avenue improvements. These residences would lose fences, but the fences would be replaced as part of the project. The temporary construction easement would extend approximately 3.0 meters (10 feet) into the backyards of these residences to accommodate construction vehicles used to construct the retaining wall.

In addition, a temporary construction easement would be required to west of SR 99 in Bidwell Park in order to use existing paved roads for construction access. No vegetation removal would be required in this easement with project construction.

If **roundabouts** are adopted, in addition to fully acquiring APN 003-501-025, as described above, Sarah Avenue would be reconstructed as a cul-de-sac to remove access onto East 1st Avenue, requiring the full acquisition of residential parcels at APNs 045-192-042 and 045-192-061. The remaining acquisitions would be sliver or corner takes affecting the same parcels as described for the conventional ramp intersections (however, the amount acquired varies slightly between the two options). In addition, the insurance agency business in the northwest quadrant of the interchange (APN 003-480-066) would lose a few parking spaces along Sheridan Avenue and East 1st Avenue; the exit driveway on Sheridan Avenue would also need to be reconfigured. The temporary construction easements described above would also occur with construction of the roundabout.

No permanent property acquisitions would be required for widening of the SR 99 mainline.

Project Costs

The total cost of the proposed improvements under this alternative, including construction and right-of-way acquisition, is estimated to be \$ 23.0 million (in 2000 dollars). The project is expected to be funded by Regional Improvement Program (RIP) funds and/or other local funding. (California Department of Transportation 2000.)

3.5.4 Inside Widening Alternative

Freeway Auxiliary Lanes

Under the Inside Widening Alternative, the existing freeway lanes would be realigned into the median to use the existing outer (#2) freeway lane as the auxiliary lane. The median would be reduced to 6.8 meters (22.3 feet) (Figures 3-5a and 3-5b). This alternative would include construction of a concrete barrier at the centerline of the median, thereby requiring removal of the existing oleanders and bottlebrush in the median (see also the “Route 99 Median Barrier Project” section below).

Both the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures would be widened to the inside to accommodate the auxiliary lanes, resulting in one structure, rather than two structures (as currently exists), at each bridge location. The existing Bidwell Park Viaduct structures are each supported by 13 columns (total of 26 existing columns). The Bidwell Park Viaduct structures would be widened to the inside to provide for the auxiliary lane and standard inside shoulders, but would also be widened to the outside for a portion of the structure to accommodate the ramp merges and to provide for standard outside shoulders. The inside widening requires removing the inside railings and connecting the two bridges. This new bridge portion would be supported by new single columns constructed between the existing columns; 13 columns on spread footings or piles would be added in the median. A cast-in-place box girder structure would be constructed to connect the two existing bridges. The outside widening necessary to match the ramps and to provide standard outside shoulders on both sides of the structure would be supported by one additional column constructed to the outside of each of the existing columns; the outside widening ranges from 0.8–11.7 meters (2.6–38.4 feet). These new columns will vary in size according to the amount of widening they support. A total of 39 new columns would be constructed. Construction near Big Chico Creek would be similar to that described for the Outside Widening Alternative, except that six new pier footings would be constructed within Big Chico Creek’s OHWM.

The Palmetto Avenue Undercrossing structures are each supported by two continuous pier walls. These pier walls would be widened to the outside to provide for ramp merges and standard outside shoulders so that the finished supports would both be one solid wall supporting one finished bridge. The widening would range from 3.0–7.0 meters (9.8–23.0 feet).

Ramp Improvements

The ramp improvements under the Inside Widening Alternative would be identical to those described for the Outside Widening Alternative.

East 1st Avenue Widening

Improvements to East 1st Avenue and the two optional intersection configurations would be identical to those described for the Outside Widening Alternative.

Right-of-Way Acquisition

The right of way acquisition for this alternative would be the same as for the Outside Widening alternative since the proposed East 1st Avenue improvements are the same under both build alternatives.

Project Costs

The total cost of the proposed improvements under the Inside Widening Alternative, including construction and right-of-way acquisition, is estimated to be \$24.2 million (in 2000 dollars). The project is expected to be funded by RIP funds and/or other local funding. (California Department of Transportation 2000.)

3.5.5 No-Project Alternative

Under the No-Project Alternative no interchange or intersection improvements would be constructed along SR 99 between SR 32 and East 1st Avenue (Figure 3-6). The No-Project Alternative would maintain the existing interchange and intersection configurations. The existing interchange and intersection configurations are described in detail in the “Existing Interchange” section of this chapter.

The No-Project Alternative would not improve safety and traffic operations and would be inconsistent with the RTP and BCAG’s Chico Corridor Study.

3.6 Related Projects

Three other projects are proposed for construction in the vicinity of the proposed project. These projects include the City of Chico pedestrian bridge relocation project, median barrier project on SR 99, and the Mangrove Avenue/East 1st Avenue project.

3.6.1 City of Chico Pedestrian Bridge Relocation Project

The City is planning on replacing and relocating the pedestrian bridge over Big Chico Creek, located in the project area, just west of SR 99 and adjacent to the Bidwell Park viaducts (City Capital Project No. 12029 approved by Resolution No. 28.01-02, Supplemental No. 401-02). The purpose of this project is to replace the existing pedestrian bridge which has reached the end of its functional design life. The City plans to initiate the CEQA environmental review process for this project in late 2003 or early 2004 and remove the existing bridge and construct the replacement bridge in late 2004 or early 2005. The pedestrian bridge may be relocated downstream of its current location at a site where additional pedestrian access is desired and construction-related vegetation removal can be minimized.

3.6.2 State Route 99 Median Barrier Project

Caltrans proposes to install a median barrier on SR 99 from the Skyway/East Park Avenue interchange to the Cohasset Road interchange. This project is intended to improve safety by reducing the possibility of cross-median accidents. A single three-beam barrier is proposed to be placed on each side of the existing median plantings (oleander and bottlebrush) such that the plantings can be preserved as part of the median barrier project. The planted median width enclosed by the barrier would be 4.2 meters (14 feet). The width from the edge of the traveled way to the face of the barrier would be 4.9 meters (16 feet). (California Department of Transportation 2001a.)

A categorical exemption/categorical exclusion was adopted in July 2001 for this project; a project report was approved in November 2001. Construction of this project has been completed in the project area.

The Inside Widening Alternative considered for this project would result in removal of the three-beam barriers and replacement with a concrete barrier at the centerline of the median, thereby requiring removal of the existing oleanders and bottlebrush in the median (these plantings would likely be retained under the Outside Widening Alternative).

3.6.3 Mangrove Avenue/East 1st Avenue Improvement Project

The project involves the widening of the Mangrove Avenue/East 1st Avenue intersection to add a right-turn lane for each approach. The intersection is currently signalized with two through lanes and a left-turn lane for each approach on Mangrove Avenue and one through lane and a left-turn lane for each approach on East 1st Avenue. No additional through-lane capacity is proposed. Associated work will include the reconstruction and reconfiguration of curb, gutter, sidewalk, traffic signals, roadway structural section, and other appurtenant work. Right-of-way acquisition will be required for this project from six parcels on Mangrove Avenue; existing structures on these parcels will not be affected.

A mitigated negative declaration was approved for this project in January 2002. Construction is scheduled to begin in spring of 2003 and be completed by the fall of 2003.

3.7 Required Permits and Approvals

3.7.1 Lead Agency Approvals

The discretionary actions required by BCAG, as the lead agency under the California Environmental Quality Act, for project implementation include the following:

- certification of the EIR, and
- approval of the proposed improvements (one of the two build alternatives) or the No-Project Alternative

As owner/operator of SR 99, the discretionary actions required by Caltrans for project implementation include the following:

- approval of final engineering designs and advertisement of construction bids for the approved project,
- approval of right-of-way acquisition for the approved project,
- approval to award the construction contract for the approved project, and
- approval of a Caltrans encroachment permit.

The discretionary actions required by FHWA, as lead agency under NEPA, for project implementation include the following:

- approval of a CE in compliance with NEPA;
- approvals under National Historic Preservation Act Section 106; federal Endangered Species Act Section 7; federal Clean Air Act Section 176(c); federal Clean Water Act Section 404; and Executive Orders 11988 (Floodplain Management), 11990 (Protection of Wetlands), 12898 (Environmental Justice), 13112 (Invasive Species).

In compliance with Section 4(f) (23 CFR 771.135), FHWA determined that a Section 4(f) evaluation does not need to be prepared because the project would involve a temporary occupancy. FHWA's determination is based on the fact that all permanent project-related impacts would occur within Caltrans' right-of-way for SR 99 and would not require the acquisition of any land within Bidwell Park. Temporary construction easements, however, would be required within Bidwell Park solely to use the paved park maintenance roads for construction access. On November 19, 2002, the City of Chico Parks Department concurred with the required findings for temporary occupancy.

- approval of the proposed improvements (one of the two build alternatives) or the No-Project Alternative;
- approval of federal funding; and
- approval of right-of-way acquisition for the approved project.

3.7.2 Approval by Other Agencies

The following agencies are expected to take action of the following:

- U.S. Army Corps of Engineers: Clean Water Act Section 404 permit,
- California Department of Fish and Game: California Fish and Game Code Section 1601 streambed alteration agreement, and
- Regional Water Quality Control Board: Clean Water Act Section 401 water quality certification.

Chapter 4 Land Use and Socioeconomics

The information below is summarized from the project Community Impact Assessment (CIA) report (Jones & Stokes 2003d) and project Relocation Impact Statement (RIS) (Jones & Stokes 2003j); these reports are available for review at BCAG offices. This chapter addresses direct and indirect land use impacts, consistency with plans and policies, growth inducement, and population and economic impacts. Environmental justice effects under federal Executive Order 12898 are discussed in Appendix C.

4.1 Setting

4.1.1 Land Use Characteristics

The project and study areas are located within the City; however, two pockets of unincorporated land lies on either side of SR 99 between East 1st Avenue and Vallombrosa Avenue. The 65.5-acre (26.5-hectare) unincorporated area west of SR 99 is currently being proposed for annexation to the City.

Chico is an important commercial and services center for the eastern side of the Sacramento Valley and is home to California State University (CSU) at Chico. The project and study areas consist of a mix of urban land uses, including residential and commercial uses. No rural lands or farmlands are located within the project area or study area.

The project area consists of a mix of residential and commercial land uses. Major land uses within and immediately adjacent to the project area include Bidwell Park and Big Chico Creek, which runs through the park. Bidwell Park, one of the largest municipal parks in the nation, traverses almost the entire east-west length of the City and provides for a variety of recreational uses, including swimming areas, picnic areas, and equestrian, hiking, and bicycle facilities. A raised section of SR 99 (Bidwell Park Viaduct) passes over a central portion of the park and Big Chico Creek. The land under and immediately adjacent to the Bidwell Park Viaduct is within Caltrans right-of-way; this area is shown in Figures 3-3a and 3-5a.

With the exception of the park and creek, land uses adjacent to SR 99 between its intersection with SR 32 and East 1st Avenue are primarily residential, consisting of established neighborhoods of single-family homes. At the intersection of SR 99 and SR 32, commercial and residential uses are located along East 8th Avenue west of SR 99. East of the intersection, uses are residential and institutional, including a Caltrans park-and-ride lot and a municipal services center. Similarly, mixed uses make up the land use near the intersection of SR 99 and East 1st Avenue, although residential uses dominate.

4.1.2 Plans and Policies

City of Chico General Plan

Land use planning in the study area is governed by the City General Plan, adopted in 1994 and updated in 1999 (Blaney Dyett 1999). The general plan contains goals, objectives, and policies

that guide growth and development within areas under the City's jurisdiction, including the study area. General plan policies relevant to the proposed project are described and evaluated in the "Environmental Impacts and Mitigation Measures" section below. Regional transportation planning for the area is conducted by BCAG.

The Chico General Plan identifies 2,782 hectares (6,874 acres) in the City's planning area available for additional development over the general plan buildout period (i.e., 2012). Land available for development is allocated among residential, commercial, office, industrial, and public uses, with the largest share (58%) designated for residential development. Among the four quadrants comprising the planning area, the greatest portion of the developable land, including the largest share of the developable residential land, is located in the City's southeast quadrant, which lies east of SR 99 between Big Chico Creek and the planning area boundary south of the Skyway.

A recent study conducted by the City (Hayes pers. comm.) found that additional land may be required to meet housing demand within Chico through the 2012 general plan buildout date. According to this study, land is available to satisfy a 2% growth rate through the buildout period, but would not satisfy demand generated by a growth rate of 2.5%–3.0%. Chico grew at a rate of 4.1% between 1990 and 2000, indicating that more land may be required for residential development in the future. None of the areas being considered by the City for urban expansion are located near the project site.

The area within and surrounding the project area is largely developed with residential, commercial, and public uses. Two large undeveloped parcels, however, are located adjacent to the project area, both along East 1st Avenue. One of these parcels (APN 003-480-112) is located southwest of SR 99 at the intersection of East 1st Avenue and Sheridan Avenue. This parcel is designated for low-density residential uses (4.5 dwelling units [du] per acre) by the City's General Plan. The second parcel (APN 045-150-068) is located northeast of SR 99 between Neal Dow Avenue and the highway. This parcel is partially developed in commercial uses, but approximately half of the parcel is undeveloped and designated by the City's General Plan for community commercial uses. This designation is intended to provide sites for retail shopping areas, primarily in shopping centers

City of Chico Bidwell Park Master Management Plan

The management of Bidwell Park is governed by the Bidwell Park Master Management Plan (Bidwell Park & Playground Commission 1990). This plan contains policies and recommendations for managing Bidwell Park. Relevant policies and management recommendations are discussed in Chapter 7, "Noise", and Chapter 12, "Visual Resources".

4.1.3 Social and Economic Issues

Project and Study Area

The project area consists of the area in which project improvements would be constructed, as depicted in Figures 3-3a, 3-3b, 3-5a and 3-5b. The study area consists of subareas, as delineated by census tracts (CTs), in which the direct impacts and many of the indirect impacts of the project would occur (Figure 4-1). The study area includes an area within the City much larger than that directly affected by project construction, right-of-way acquisitions, and potential

displacements. The analysis, however, focuses on the portion of the study area within and immediately adjacent to the project area.

As shown in Figure 4-1, the study area includes CTs 7, 8, 9, and 10 and encompasses the project's potential displacement area. These CT's refer to the following subareas:

- CT 7—area west of SR 99 bounded by Lindo Channel, Big Chico Creek, and the Esplanade;
- CT 8—area east of SR 99 bounded by Lindo Channel, Big Chico Creek, and the convergence of the channel and creek at the Sycamore Creek Diversion Channel;
- CT 9—area east of SR 99 bounded by Big Chico Creek, Butte Creek and the Skyway, and an irregularly shaped eastern boundary along Chico Canyon Road, California Park Drive, Yosemite Drive, SR 32, Humboldt Road, Stilson Canyon, and Little Chico Creek south to the Skyway; and
- CT 10—area west of SR 99 bounded by Big Chico Creek, Little Chico Creek, and Orange Street.

Detailed information concerning the affected environment and effects is provided for these CTs/subareas where appropriate. For context and comparison, information is also provided for the City and County as a whole for certain topics.

Data used to characterize the study area, the City, and the County were obtained primarily from the 2000 U.S. Census, the City of Chico General Plan, and BCAG. Information was also gathered through interviews with City staff and other knowledgeable sources and through site visits and field surveys.

Community/Neighborhood Characteristics

The project area is located in central Chico, east of the city's downtown area, in an area of established neighborhoods and older homes. The project area extends along a corridor that is currently developed surrounding the alignment of SR 99. From north to south, development along the alignment consists of mixed commercial/residential uses adjacent to the SR 99/East 1st Avenue interchange; residential uses along Sheridan Avenue, Sarah Avenue, and Rey Way; public uses provided by Bidwell Park and Big Chico Creek in the central portion of the project area; and commercial, residential, and public uses adjacent to the SR 99/East 8th Street interchange.

The neighborhoods adjacent to the project area along Sheridan Avenue, Sarah Avenue, and Rey Way are well established and fairly uniform in age and style. Most of the homes, which are generally older and modest in size, are located on standard-sized city lots and are surrounded by mature landscaping. Some of the lots and homes on Sheridan Avenue and the cul-de-sacs off of Sheridan Avenue, such as Sierra Vista Way and Filbert Avenue, are relatively large, especially near Bidwell Park. Sidewalks are discontinuous through the neighborhoods. Commercial uses are generally situated near the highway interchanges and are located in relatively small shopping centers.

Population Characteristics

In contrast to the County as a whole, Chico has been growing rapidly in recent years, reaching a population of 59,950 by 2000. The City's population increased by 50% between 1990 and 2000,

compared to a modest 12% increase in the County over the same period. The 4.1% growth rate experienced by Chico between 1990 and 2000 resulted in a population increase of nearly 20,000 persons, accounting for almost all the population growth in the County over that period. As Table 4-1 shows, the demographics of Chico's population reflects its status as a home to a large college student population drawn to the area by CSU at Chico. Not only is the community's median age (25.9 years) much lower than the countywide median (35.8 years), Chico's median household income of \$29,360 is below the countywide median of \$31,920, showing the influence of a population that includes a large contingent of part-time student workers. The racial characteristics of Chico, which are presented in Table 4-2, are similar to countywide characteristics and reflect a population that is largely white. With whites accounting for approximately 82% of Chico's population, no other racial groups make up a significant portion of the City's population. Persons of Hispanic or Latino heritage, which, for purposes of the U.S. Census, can be considered members of other racial groups, accounted for 12.3% of Chico's population in 2000, slightly higher than the 10.5% countywide share.

The population of the study area totaled approximately 26,400 in 2000, representing 44% of Chico's population. The largest share of the study area population (11,575) resided in CT 9, which takes in a large area southeast of Bidwell Park. As Table 4-1 illustrates, the demographics of the study area as a whole are similar to those of Chico, although the median age and income of the study area suggest a population with relatively fewer students than other areas of Chico. The median age of study area residents was 32.9, compared to 25.9 in Chico. The study area's median household income, at \$34,590 in 2000, is higher than median income citywide and countywide, reflecting a more-mature population. The racial characteristics of the study area are similar to those of Chico and the County, with whites accounting for 87% of the study area population.

Within the study area, the demographic characteristics of CT 10, which takes in part of CSU at Chico, are dramatically different than those of the three other study area CTs, largely due to its student population. Approximately 40% of CT 10's population was within the 20-to-24 age group compared to 9% within the remainder of the study area and 20% citywide (U.S. Census Bureau 2002). Additionally, the median household income of CT 10, at \$18,140, is substantially lower than the \$34,588 median income of all households within the study area. Despite these differences, the racial distribution of CT 10's population, which is 85% white, is similar to the rest of the study area and to Chico, although CT 10 contains a higher percentage of Hispanics (16%) than elsewhere in the study area (Table 4-2).

Table 4-1. Selected Demographic Characteristics: 2000 Census

Area	Population	Average Persons per Household	Median Age	Percent Under Age 18	Percent Age 65 or Older	Median Household Income
Butte County	203,171	2.48	35.8	24.0%	15.5%	\$31,924
Chico	59,954	2.42	25.9	21.1%	9.9%	\$29,359
Census tract 7	4,656	2.03	32.6	17.9%	12.1%	\$27,906
Census tract 8	5,202	2.45	39.4	24.7%	17.2%	\$52,523
Census tract 9	11,575	2.46	34.1	26.8%	13.8%	\$41,624
Census tract 10	4,970	2.23	23.6	11.9%	4.6%	\$18,140
Study Area total	26,403	2.38	32.9	22.0%	12.4%	\$34,588

Source: U.S. Census Bureau 2002.

Table 4-2. Racial Distribution of Area Populations: 2000 Census

Area	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race	Two or More Races	Hispanic or Latino of Any Race
Butte County	84.5%	1.4%	1.9%	3.3%	0.1%	4.8%	3.9%	10.5%
Chico	82.4%	2.0%	1.3%	4.2%	0.2%	5.7%	4.3%	12.3%
Census tract 7	87.9%	1.6%	0.8%	2.3%	0.1%	2.9%	4.3%	7.1%
Census tract 8	91.1%	1.3%	1.1%	2.0%	0.1%	1.9%	2.6%	5.6%
Census tract 9	85.0%	1.8%	1.4%	2.6%	0.1%	5.0%	4.1%	11.4%
Census tract 10	85.1%	1.4%	1.2%	2.0%	0.3%	6.4%	3.7%	16.1%
Study Area total	86.7%	1.6%	1.2%	2.3%	0.1%	4.3%	3.8%	10.4%

Source: U.S. Census Bureau 2002.

Note: Percentages for each area total greater than 100% because persons of Hispanic or Latino heritage may be considered members of other racial classifications.

Population Growth Policies

As discussed previously, Chico has been growing rapidly in recent years, its population increasing at a rate substantially exceeding the 2.5% growth rate called for by the City's General Plan. Within the City's sphere of influence, which includes both incorporated and unincorporated areas, the growth rate during the 1990s was 2.4%, significantly lower than the 4.1% rate within the City itself. BCAG (2002) projects Chico's population growth rate to slow, but remain steady in future years. The BCAG projections show Chico growing from a population of 59,950 in 2000 to 108,040 by 2025, or at a rate of almost 2.4%.

Growth policies for the project area and study area are contained within the City's General Plan. According to the General Plan's land use element, the City's planning area, which is substantially larger than the area within the city limits, would, at buildout, accommodate a population of approximately 134,000 by the General Plan buildout date of 2012. The General Plan contains no policies that would specifically limit growth within the study area or City, although, within the land use and community design elements, the General Plan includes numerous policies designed to guide the density and location of growth within the City. An important policy issue addressed by the General Plan is the maintenance of Chico's historically compact urban form, stressing the importance of maintaining the residential densities called for by the General Plan. Recent growth has increased pressure on the City to expand the population capacity of the planning area by rezoning specific developable sites. (Hayes pers. comm.)

Housing Stock, Tenure, Vacancy Rates, and Housing Values

According to the 2000 Census, approximately 11,505 housing units are located in the study area, representing 47% of Chico's housing stock (Table 4-3). The study area's housing stock is relatively old, with one-third of the housing units constructed prior to 1960. Single-family housing units accounted for 63% of the study area's housing stock, which exceeds the citywide share of single-family housing. In 2000, the study area's housing stock was composed of 51% of renter-occupied housing and 49% of owner-occupied housing, which reflected a housing stock more heavily weighted toward owner-occupied housing than throughout the city. During the Census, approximately 400 housing units were vacant within the study area, resulting in a vacancy rate of 3.5%. This rate was similar to the citywide rate of 3.7%.

The median value of housing in the study area was approximately \$135,100 in 2000, which was slightly lower than the citywide median value of \$141,600 but higher than the countywide median value of \$129,800. Median rental rates within the study area, at \$625, were higher than within the City and the County in 2000 (Table 4-3).

Within the study area, the composition, age, and tenure of the housing stock varies from area to area. As Table 4-3 shows, single-family homes dominate CT 8 (i.e., the area east of SR 99 between Lindo Channel and Big Chico Creek), accounting for 86% of the housing. Conversely, single-family homes account for only half the housing within CT 10 (i.e., the area west of SR 99 between the channel and creek). CT 10's emphasis on multi-family housing, which is largely used by renters, is reflected in its low percentage of owner-occupied housing (21.5%). The average age of housing also varies substantially within the study area. Homes are generally much older in CTs 7, 8, and 10, with 47.1% to 60.8% of the housing stocks of these areas constructed prior to 1960, whereas only 4.8% of CT 9's housing stock was constructed prior to 1960. (CT 9 is located southeast of SR 99/Big Chico Creek.)

The project area is located adjacent to neighborhoods of single-family homes along Sheridan Avenue, Sarah Avenue, and East 1st Avenue that were largely constructed in the 1940s and 1950s. Most of the modest, modern- and traditional-style homes have mature landscaping in their fronts and back.

Economic Setting

Tax Revenue

The City receives an allocation of the property tax revenue generated by private properties within the project area.

The locally assessed value of property subject to general property taxes in Chico was approximately \$3.3 billion in fiscal year 2001-02. This tax base generated approximately \$2.6 million in property tax revenue for the City general fund during that fiscal year. (City of Chico 2002a)

Parts of 23 parcels are potentially located within the temporary and permanent right-of-way area required for the proposed project. The portions of these properties within the permanent project right-of-way have a total assessed value ranging from approximately \$270,200 for the project alternatives with conventional intersection to \$341,000 for the project alternatives with roundabouts. Based on an average property tax rate of 1.06%, these properties annually generate property tax revenue ranging from approximately \$2,900 to \$3,700, a portion of which is allocated to the City general fund.

Businesses within and adjacent to the project area generate sales tax revenue through the sale of taxable products. These businesses include Finnegan's Jug Liquors and Spa Broker, located together in a small shopping center on East 1st Avenue immediately northeast of the SR 99/East 1st Avenue interchange. The City received approximately \$13.5 million in sales tax revenue from citywide businesses during fiscal year 2001-02 (City of Chico 2002a).

Labor Force and Employment

According to the California Employment Development Department (2002a), which prepares labor force and employment estimates for California counties, Butte County's civilian labor force averaged 88,000 persons in 2001, of which 22,700 resided in Chico. Unemployment in the County and City averaged an estimated 7.0% and 6.8%, respectively, in 2001. According to 2000 U.S. Census data, nearly 88% of County workers commuted to jobs in private vehicles. In Chico, this figure was somewhat lower, at nearly 83%.

Employment by industries located in the County averaged 73,900 jobs in 2001. Services, government, and retail trade are the dominant employers in Butte County. Services, and in particular health services, account for the most jobs in the County, providing for 30% of total employment. Government and retail trade contribute 23% and 20%, respectively, of all jobs. (California Employment Development Department 2002b). In Chico, major employers include CSU at Chico, Aero Union Corporation (aircraft and parts), and Enloe Medical Center (California Employment Development Department 2002c).

The study area's civilian labor force totaled 13,815 persons in 2000, representing 15% of Butte County's labor force. Unemployment was 6.6%, or slightly higher than the citywide rate of 5.9% at the time of the 2000 Census. Almost one-third of employed study area residents were employed by the educational, health, and social services sector in 2000, reflecting the importance of Chico as a regional educational and health services center. Approximately 82% of study area workers commuted by private vehicles in 2000, a rate which is similar to the citywide rate. (U.S. Census Bureau 2002.)

Table 4-3. Selected Housing Characteristics: 2000 Census

Area	Total Housing Units	Percent Vacant	Percent Single-Family Units	Percent Constructed Prior to 1960	Percent Owner-Occupied	Median Value	Median Rent
Butte County	85,523	7.0%	63.2%	26.2%	60.7%	\$129,800	\$563
Chico	24,352	3.7%	52.6%	24.0%	40.4%	\$141,600	\$594
Census tract 7	2,376	3.6%	60.3%	51.6%	41.7%	\$127,800	\$544
Census tract 8	2,171	2.4%	86.0%	47.1%	72.3%	\$135,600	\$675
Census tract 9	4,749	3.5%	60.5%	4.8%	55.0%	\$151,700	\$689
Census tract 10	2,209	4.5%	50.0%	60.8%	21.5%	\$106,900	\$526
Study Area total	11,505	3.5%	63.3%	33.2%	49.1%	\$135,100	\$625

Source: U.S. Census Bureau 2002.

4.2 Environmental Impacts and Mitigation Measures

4.2.1 Methodology

Data used to describe the study area and the region were obtained primarily from City and BCAG documents, the 2000 U.S. Census, and information from the California Employment Development Department. Information was also gathered through interviews with the City (Sellers pers. comm.) and through site visits and field surveys.

4.2.2 Significance Thresholds

Appendix G of the State CEQA Guidelines provides guidance for the evaluation of project land use, population, housing, and social impacts. Based on these guidelines, the project is considered to have a significant impact if it would:

- displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere;
- displace a substantial number of people, necessitating the construction of replacement housing elsewhere;
- displace existing businesses that provide essential or critical services to the local community;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- physically divide an established community; or
- induce substantial population growth in an area, either directly (such as by proposing new homes and businesses) or indirectly (such as through extension of roads or other infrastructure).

Under CEQA, the social and economic effects of projects are not normally considered impacts on the environment; therefore, no criteria have been developed to evaluate the significance of purely social or economic effects of the project. These purely social or economic effects include tax revenue changes, construction-related economic effects (such as employment changes), and potential sales effects for private businesses caused by parking and access impacts.

Impact LU1: Direct Land Use Impacts on Eight to 10 Residential Parcels, Including One to Three Full Acquisitions

Direct impacts on residential land uses within the project area would result from widening the northbound East 1st Avenue on- and off-ramps, reconstructing both East 1st Avenue/SR 99 intersections, and constructing a retaining wall needed for East 1st Avenue improvements.

Outside and Inside Widening Alternatives

The residential property acquisitions would be the same under the Outside and Inside Widening Alternatives. However, acquisitions would differ depending on whether conventional ramp intersections or roundabouts are implemented on East 1st Avenue.

With ***conventional ramp intersections*** on East 1st Avenue, the project would require temporary construction easements and permanent right-of-way acquisitions from 18 residential parcels, including temporary construction easements on ten parcels and permanent acquisitions from eight parcels. Table 4-4 details the anticipated direct land use impacts associated with the project. Figures 4-2a through 4-2d show the location of the affected parcels.

Table 4-4. Property Easements and Acquisitions Required for the Outside and Inside Widening Alternatives with Conventional Intersections on East 1st Avenue

Assessor's Parcel Number ^a	Address of Affected Property	Impact Area Hectares (acres)	Anticipated Impact
Temporary construction easements:			
005-300-001	Bidwell Park	0.401 (0.99)	Park. Easement for access on existing road.
003-510-049	916 Sheridan Avenue	0.004 (0.01)	Residence. 3 meters (10 feet) strip at back.
003-510-054	926 Sheridan Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
003-510-047	934 Sheridan Avenue	0.012 (0.03)	Residence. 3 meters (10 feet) strip at back.
003-510-070	944 Sheridan Avenue	0.012 (0.03)	Residence. 3 meters (10 feet) strip at back.
045-192-045	1005 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-066	1019 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-051	1031 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-044	1045 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-046	1059 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-042	1071 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
Partial permanent acquisitions:			
003-510-065	Sheridan Avenue	0.016 (0.04)	Demonstration garden. Loss of plants.
003-501-026	1070 Holben Avenue	0.012 (0.03)	Residence. Loss of landscaping.
003-480-112	East 1 st Avenue	0.016 (0.04)	Vacant parcel. Loss of narrow strip of land.
003-480-113	1125 Sheridan Avenue	0.004 (0.01)	Apartment complex. Loss of landscaping.
045-192-061	1087 Sarah Avenue	0.004 (0.01)	Residence. Loss of landscaping.
045-191-016	1088 Sarah Avenue	0.024 (0.06)	Residence. Loss of landscaping/driveway.
045-191-015	1087 East 1 st Avenue	0.016 (0.04)	Residence. Loss of landscaping/driveway.
045-701-001	1099 East 1 st Avenue	0.020 (0.05)	Residence. Loss of landscaping/driveway.
045-150-068	1078 East 1 st Avenue	0.049 (0.12)	Commercial. Loss of 10 parking spaces.
045-150-090	1098 East 1 st Avenue	0.016 (0.04)	Residence. Loss of landscaping.
Full permanent acquisitions:			
003-501-025	997 Sheridan Avenue	0.085 (0.21)	Residence. Displacement of entire property.

^a See Figures 4-1a through 4-1d for location of parcels.

Construction of the project would require temporary construction easements along the back of four residential properties on Sheridan Avenue and six residential properties on Sarah Avenue (Table 4-4 and Figure 4-2b). These temporary easements would be required for approximately 12–18 months and would be needed for construction of a retaining wall in the SR 99 right-of-way necessary for the freeway ramp improvements. The easements would extend approximately 3.0 meters (10 feet) into the backyards of residential properties to accommodate construction vehicles used to construct the retaining wall; access into private backyards would be required over an approximately 6-month period. The ten affected residences would lose fences, and could lose landscaping along these fences, but fencing and landscaping would be replaced as part of the project.

In addition to these temporary effects, permanent impacts would result from improvements to East 1st Avenue that would require acquisitions from eight residential properties (Table 4-4 and Figures 4-2c and 4-2d). (No permanent acquisitions would be required for widening work on the SR 99 mainline.) All but one of the acquisitions would consist of sliver or corner takes, displacing no structures but potentially affecting fencing, landscaping, and driveways. These takes would range from less than 0.01 hectare (0.01 acre) to 0.02 hectare (0.06 acre). One parcel would be fully acquired, displacing the single-family home located on the property. Permanent effects resulting from right-of-way acquisition potentially include the following:

- The single-family home located at the corner of East 1st Avenue and Sheridan Avenue (997 Sheridan Avenue) would be fully displaced because the driveway to the home would be

removed by construction of the right-turn lane from eastbound East 1st Avenue onto the southbound SR 99 on-ramp. Relocation would be required for the residents of this home. . Based on the homeowner's mailing address, the home may be renter occupied.

- The single-family residence located on the corner of East 1st Avenue and Holben Avenue (1070 Holben Avenue) would lose landscaping, including lawn and trees, between its side fence and the sidewalk along East 1st Avenue. A small portion of the landscaping at the northeast corner of the property's front yard could also be displaced.
- The Sawgrass Estates apartment complex (1125 Sheridan Avenue) would lose a sliver of its property fronting East 1st Avenue. The take from this property could displace lawn and trees between the existing sidewalk and apartment structures.
- The residence located at the southwest of East 1st Avenue and Sarah Avenue (1087 Sarah Avenue) would lose a sliver of landscaping along the East 1st Avenue side of the property. Additionally, landscaping at the northwest corner of the property could be displaced.
- The residence located at the southeast corner of East 1st Avenue and Sarah Avenue (1088 Sarah Avenue) would lose fencing and landscaping along East 1st Avenue. Construction of improvements to this intersection would also displace a short portion of the driveway on Sarah Avenue.
- The residence located next door at 1087 East 1st Avenue would lose a portion of its driveway and a sliver of its lawn along East 1st Avenue.
- The residence located at the southwest corner of East 1st Avenue and Neal Dow Avenue (1099 East 1st Avenue) would lose a portion of its driveway and a sliver of lawn along East 1st Avenue.
- The residence located at the northwest corner of East 1st Avenue and Neal Dow Avenue (1098 East 1st Avenue) would lose a sliver of landscaping along East 1st Avenue. A dirt path along the edge of this property, which is used by pedestrians to walk along East 1st Avenue, would also be displaced. (This portion of East 1st Avenue does not have a sidewalk.)

With **roundabouts**, the project would result in greater impacts on two residential properties (Table 4-5 and Figure 4-3a and 4-3b). In addition to the displacement of the residence at 997 Sheridan Avenue required by East 1st Avenue improvements (discussed previously), two single-family residences (1071 Sarah Avenue and 1087 Sarah Avenue) would be displaced by reconstructing Sarah Avenue as a cul-de-sac to remove access onto East 1st Avenue. Home ownership records indicate that one of these homes is owner occupied and the other is renter occupied. The residents of these homes would require relocation under this intersection option. The remaining property acquisitions would be sliver or corner takes affecting the same parcels as described previously for the conventional ramp intersections option. The acquisition amounts would vary slightly from this option, as shown in Table 4-5, but would result in similar impacts to those described previously.

Table 4-5. Property Easements and Acquisitions Required for the Outside and Inside Widening Alternatives with Roundabouts on East 1st Avenue

Assessor's Parcel Number ^a	Address of Affected Property	Impact Area Hectares (acres)	Anticipated Impact
Temporary construction easements:			
005-300-001	Bidwell Park	0.401 (0.99)	Park. Easement for access on existing road.
003-510-049	916 Sheridan Avenue	0.004 (0.01)	Residence. 3 meters (10 feet) strip at back.
003-510-054	926 Sheridan Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
003-510-047	934 Sheridan Avenue	0.012 (0.03)	Residence. 3 meters (10 feet) strip at back.
003-510-070	944 Sheridan Avenue	0.012 (0.03)	Residence. 3 meters (10 feet) strip at back.
045-192-045	1005 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-066	1019 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-051	1031 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-044	1045 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
045-192-046	1059 Sarah Avenue	0.008 (0.02)	Residence. 3 meters (10 feet) strip at back.
Partial permanent acquisitions:			
003-510-065	Sheridan Avenue	0.016 (0.04)	Demonstration garden. Loss of plants.
003-501-026	1070 Holben Avenue	0.012 (0.03)	Residence. Loss of landscaping.
003-480-112	East 1 st Avenue	0.020 (0.05)	Vacant parcel. Loss of narrow strip of land.
003-480-113	1125 Sheridan Avenue	0.004 (0.01)	Apartment complex. Loss of landscaping.
003-480-066	1108 Sheridan Avenue	0.012 (0.03)	Commercial. Loss of 3 parking spaces
045-191-016	1088 Sarah Avenue	0.016 (0.04)	Residence. Loss of landscaping.
045-191-015	1087 East 1 st Avenue	0.012 (0.03)	Residence. Loss of landscaping/driveway.
045-701-001	1099 East 1 st Avenue	0.016 (0.04)	Residence. Loss of landscaping/driveway.
045-150-068	1078 East 1 st Avenue	0.049 (0.12)	Commercial. Loss of 10 parking spaces.
045-150-090	1098 East 1 st Avenue	0.016 (0.04)	Residence. Loss of landscaping.
Full permanent acquisitions:			
003-501-025	997 Sheridan Avenue	0.085 (0.21)	Residence. Displacement of entire property.
045-192-042	1071 Sarah Avenue	0.065 (0.16)	Residence. Displacement of entire property.
045-192-061	1087 Sarah Avenue	0.069 (0.17)	Residence. Displacement of entire property.

^a See Figures 4-1a, 4-1b, 4-2a, and 4-2b for location of parcels.

Typically, it is reasonable to assume that displaced persons would seek replacement housing that is similar in location, cost, and character to the homes they would be leaving behind. This would indicate that residents of the three displaced homes would seek affordable single-family homes on City lots within the part of Chico containing the displacement area. No information is available concerning the market value of the three homes that could be displaced by the project; however, 2000 U.S. Census data indicates that the median value of owner-occupied housing in the displacement area ranged from \$127,800 in Census tract 7 to \$135,600 in Census tract 8; median monthly rental rates ranged from \$544 in Census tract 7 to \$675 in Census tract 8. Based on a February, 2003, review of classified advertisements for homes for sale and rent in Chico, housing prices and rental rates have increased substantially since April, 1979, when 2000 U.S. Census data was collected.

A recent review of homes-for-sale data for the 95926 zip code area, which includes the displacement area, found that 27 single-family homes were for sale in the area (Realtor.com 2003). Of the homes for sale, five contained two-bedrooms, 12 offered three bedrooms, and 10 provided four bedrooms. The available homes were distributed across a range of prices, including 22% priced below \$200,000, 26% priced between \$200,000 and \$250,000, 19% priced between \$250,000 and \$300,000, and 33% priced above \$300,000. This data indicates that ample housing at a variety of prices is available to relocate the residents of the one owner-occupied home potentially displaced by the project.

During this same period, 79 homes were listed for rent in Chico (Chico Enterprise-Record 2003). Available rental homes included 34 one- and two-bedroom homes, 41 three-bedroom homes, and 4 four-bedroom homes. Monthly rental rates ranged from \$475 to \$1,800, with 30% renting for \$800 or less, 38% renting for between \$800 and \$1,100, 24% renting for between \$1,100 and \$1,400, and 8% renting for more than \$1,400. Based on this data, the rental housing market in the vicinity of the displacement area appears to be fairly balanced and affordable to a wide range of renters. There appears to be ample replacement single-family rental housing on the market similar to the displacement properties to relocate the residents of the two renter-occupied homes potentially displaced by the project.

This impact is considered to be less than significant since substantial numbers of existing housing or residents would not be displaced, and replacement housing would not need to be constructed elsewhere. Caltrans would still need to comply with Mitigation Measure LU1a since it meets the legal obligations that arise under a law other than CEQA.

Mitigation Measure LU1a: Compensate Displaced Uses in Conformance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act

Caltrans or BCAG will compensate displaced residents in conformance with Federal and state laws (i.e., the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 Public Law 91-646, as amended April 2, 1987; California Government Code, Chapter 16, Section 7260, et seq. [the Uniform Relocation Act]). These laws require that relocation assistance be provided to any person, business, or nonprofit organization displaced because of the acquisition of real property by a public entity for public uses. Compliance with the federal act is required where federal funds are to be used in the acquisition or construction of the project. This assistance is not considered mitigation, per se, but an entitlement because compensation is required by other than environmental laws, and is provided regardless of the magnitude of the impact. The Federal Uniform Relocation Assistance Act of 1970 (as amended) and the California Relocation Assistance Act (Government Code Section 7260 et seq.) both require that, within a reasonable period of time prior to displacement, comparable replacement housing will be available or provided for each displaced person. Such assurance must be specifically given on every project requiring residential displacement. (California Department of Transportation 1997.)

Caltrans or BCAG shall carry out the relocation plan to help eligible displaced individuals move with as little inconvenience as possible. All rights and services provided under Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, shall be strictly adhered to. Persons displaced as a result of the project shall receive fair and equitable treatment and shall not suffer disproportionate injuries as a result of programs designed for the benefit of the public as a whole. Relocation resources will be made available to all commercial and residential displacees without discrimination. Appraisals to determine actual market value will be conducted for each property to be relocated once a final alignment has been selected and the NEPA Categorical Exclusion is signed. See Appendix D, "Summary of Relocation Benefits," for a more-detailed discussion of relocation assistance available to project displacees.

Impact LU2: Direct Land Use Impacts on Three to Four Nonresidential Parcels (No Full Acquisitions)

Outside and Inside Widening Alternatives

The nonresidential property acquisitions would be the same under the Outside and Inside Widening Alternatives. However, acquisitions would differ depending on whether conventional ramp intersections or roundabouts are implemented on East 1st Avenue.

With **conventional ramp intersections**, improvements to SR 99, East 1st Avenue, and the East 1st Avenue/SR 99 ramp intersections would result in temporary and permanent impacts on four nonresidential properties. A temporary construction easement would be required west of SR 99 in Bidwell Park in order to use existing paved roads for construction access (Figure 4-2a). No vegetation removal would be required in this easement for project construction. Construction activities could temporarily disrupt recreational uses of the portion of the park within the construction easements; however, disruption of uses would be temporary and limited to a small area of the park.

Permanent effects on nonresidential land uses resulting from right-of-way acquisition, which are summarized in Table 4-4 and depicted in Figures 4-2c and 4-2d, potentially include the following:

- A demonstration garden located on a parcel owned by the California Water Service Co. (APN 003-510-065) at the southeast corner of East 1st Avenue and Sheridan Avenue would lose a strip of landscaped area along East 1st Avenue and at its northwest and northeast corners. The purpose of the garden, which is open to the public, is to demonstrate drought-tolerant landscaping and water-conservation measures. Plantings surround a pump building in the center of the property, and gravel paths allow for public access through the garden for viewing plantings. The project would displace approximately one-third of the garden's plantings.
- A vacant parcel located at the northwest corner of East 1st Avenue and Sheridan Avenue would lose a strip of land along its East 1st Avenue frontage. This parcel is designated for low-density residential uses (4.5 dwelling units per acre) by the City's General Plan. The land loss (0.016 hectare [0.04 acre]) would not represent a substantial portion of the total area within the parcel and would not greatly diminish the development potential of the property.
- A small shopping center located along East 1st Avenue east of SR 99 (1078 East 1st Avenue) would lose a strip of land and parking lot along East 1st Avenue. This shopping center houses Finnegan's Jug Liquors and Spa Broker. Including spaces along the east and west side of the parking lot, this center currently provides 32 striped parking spaces for customers and employees. An informal (i.e., not striped) area for parking is also available on the west side of the parcel. Right-of-way acquisition for the project would result in the loss of diagonal parking along the front of the center (seven spaces) and vertical parking at the southeast corner of the center (up to three spaces). The project would also result in the loss of a narrow strip of an undeveloped portion of this parcel along East 1st Avenue. This portion of the parcel has been used as a Christmas tree lot in recent years.

With **roundabouts**, the project would result in the same impacts on nonresidential properties as those described above, although the acquisition of land from the vacant parcel at the northeast

corner of East 1st Avenue and Sheridan Way would be slightly larger, extending north along Sheridan Avenue (Table 4-5 and Figure 4-3a). Additionally, if roundabouts are adopted, the project would require strips of land from the Mendoza Insurance Agency property, located at the northeast corner of East 1st Avenue and Sheridan Avenue (1108 Sheridan Avenue). The right-of-way acquisition from this business would displace an estimated three parking spaces, reducing the lot's striped parking from 16 to 13 spaces, and could shorten or block the parking lot's exit onto Sheridan Avenue. The loss of parking would not greatly reduce the business's total parking, and street parking is also available for customers along Sheridan Avenue.

Although the project would not fully displace any businesses, this impact is considered to be significant since two affected businesses would experience parking and access impacts. Implementation of Mitigation Measures LU2a and LU2b would reduce these impacts to less than significant.

Mitigation Measure LU2a: Provide at Least 10 Additional Parking Spaces for Business at 1078 East 1st Avenue (Conventional Ramp Intersection and Roundabout)

BCAG or Caltrans will provide at least 10 additional paved and striped parking spaces on the west side of parcel to compensate for the loss of parking at the commercial center at 1078 East 1st Avenue (Finnegan's Jug Liquors, etc.).

Mitigation Measure LU2b: Provide Exit Driveway for Business at 1108 Sheridan Avenue (Roundabout)

BCAG or Caltrans will widen or otherwise alter the existing entrance to the business at 1108 Sheridan Avenue (Frank Mendoza Insurance Agency) to allow this driveway to also serve as an exit to compensate for the potential loss of the lot's current exit driveway (required for the roundabout option only).

Impact LU3: Construction-Related Impacts

Outside and Inside Widening Alternatives

Implementation of the Outside or Inside Widening Alternative, either with conventional intersections and roundabouts, would result in temporary construction-related impacts. These impacts include air quality impacts (such as diesel fumes and dust), noise from heavy equipment operation, and visual impacts during construction. These impacts, discussed in Chapters 6, 7, and 12, respectively, could temporarily reduce the quality of life in the neighborhoods adjacent to the project area. Some area residents have expressed concerns over quality-of-life issues during public meetings and through written comments on the project.

Construction of the project could also temporarily disrupt traffic circulation patterns on the portions of SR 99, East 8th Avenue, East 1st Avenue, Vallombrosa Avenue, Palmetto Avenue, Sarah Avenue, Sheridan Avenue, and Holben Avenue within the project area. Temporary effects could include increased congestion of affected roadways during construction and disrupted access to businesses along East 1st Avenue and Sheridan Avenue and homes along East 1st Avenue and the portions of Sarah Avenue and Sheridan Avenue near their intersections with East 1st Avenue. Daytime access to business and residences along East 1st Avenue, Sheridan Avenue, and Sarah Avenue would be retained during construction; some access would be disrupted at

night during construction (therefore, only late-hour businesses, such as Finnegan's Jug Liquors would be affected). Due to bridge construction that would be done from underneath, temporary closures to both Vallombrosa Avenue and Palmetto Avenue could occur during construction. Attempts would be made to avoid long-term closure of these streets, but closures could last up to six months under worst-case conditions. (Tatman pers. comm.)

During peak traffic hours, two lanes of traffic will be open in each direction on SR 99 during construction periods. At times during non-peak hours, lane closures would be required to accommodate various construction activities. SR 99 ramp closures could also occur during construction, but only during nonpeak hours and likely only at night. (Tatman pers. comm.)

Businesses and residences affected by construction activities would be notified at least 1 week in advance of any lane or roadway closures and impacts related to access. Personnel from emergency response services such as fire and police protection would also be notified 1–2 weeks in advance of any lane or roadway closures so that alternative routes can be taken.

This construction-related impact is considered to be significant. Implementation of a TMP, as called for by Mitigation Measure LU3a would reduce this impact to less than significant since it would control traffic during construction.

Mitigation Measure LU3a: Implement a Traffic Management Plan

BCAG or Caltrans will implement a TMP that will identify the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements. The TMP will specify time frames for roadway and ramp closures. On SR 99, all ramps and two lanes of traffic will be open in each direction during peak traffic periods. Any ramp or lane closures would occur during non-peak hours. If closures of Vallombrosa Avenue and Palmetto Avenue are needed, they may last for as long as 6 months and both streets would not be closed at the same time; measures may be implemented to allow these streets to stay open during construction. Daytime access to businesses along East 1st Avenue and Sheridan Avenue will be retained during construction. To the extent that business access must be disrupted, the disruption will occur only at night. BCAG or Caltrans will notify affected businesses and residences at least 1 week in advance of any lane or roadway closures or impacts related to access. Personnel of emergency response services such as fire and police protection will also be notified 1–2 weeks in advance of any lane or roadway closures so that alternative routes can be taken. To the extent possible, emergency vehicles would be allowed through roadway segments temporarily closed for construction purposes (such as Vallombrosa and Palmetto Avenues).

Impact LU4: Compatible with Planned Land Uses

Outside and Inside Widening Alternatives

The Outside and Inside Widening Alternatives are not anticipated to result in conflicts with planned land uses in the project area. No development proposals are currently pending for the two vacant parcels in the project area, and right-of-way acquisitions would only affect narrow strips along the outsides of these parcels.

Mitigation Measure

None proposed.

Impact LU5: Consistent with Local and Regional Plans and Policies

Outside and Inside Widening Alternatives

The Outside and Inside Widening Alternatives are consistent with the following relevant policies adopted by the City and BCAG.

City of Chico General Plan

T-I-18: Implement a program to install handicapped ramps at all intersections as street improvements are being installed.

Handicapped ramps would be installed at all intersections affected by the project. Thus, both alternatives, either with conventional intersections and roundabouts, are considered to be consistent with Policy T-I-18.

T-G-14: Promote safe efficient vehicle circulation.

One of the primary goals of the project is to alleviate safety problems on SR 99 and relieve congestion on SR 99 and East 1st Avenue, which would facilitate the more-efficient circulation of vehicles. Both alternatives, either with conventional intersections and roundabouts, are considered to be consistent with Policy T-G-14.

T-G-18: Coordinate local actions with state and county agencies to ensure consistency.

The proposed project is included in the adopted Butte County 2001-2025 RTP (Butte County Association of Governments 2001) and the approved 2000 FTIP. Both alternatives, either with conventional intersections and roundabouts, are considered to be consistent with Policy T-G-18.

T-I-42: Facilitate the safe movement of pedestrians, bicyclists, and vehicles. Actions that could enhance safety for pedestrians, bicyclists, and vehicles:

- ***Provide for bike and pedestrian crossings of arterials.***
- ***Provide traffic enforcement to deter traffic violations and ensure mobility, particularly in congested areas during commute and peak recreational hours.***
- ***Analyze pedestrian, bicycle, and vehicle accident reports to determine common locations and causes so as to plan for selective enforcement and engineering solutions (i.e., signing, speed bumps, traffic circles, medians) in problem areas to improve bicycle routing and traffic circulation.***
- ***Continue to enhance parking control enforcement efforts and abandoned vehicle enforcement and removal.***

Within the project area, crosswalks would be marked at several locations under both the Outside and Inside Widening Alternatives with conventional intersections. Where Sheridan Avenue

crosses East 1st Avenue, crosswalks would be marked across Sheridan Avenue on both sides, providing safer crossing of Sheridan Avenue for pedestrians and bicyclists. A crosswalk would also be provided for pedestrian and bicyclist crossings of Sarah Avenue where it meets East 1st Avenue. At the ramp intersections, crosswalks would be marked across all ramps. The existing crosswalk across East 1st Avenue at Sarah Way would be removed under the project, but the existing crosswalks at all four entrances to the East 1st Avenue/Neal Dow Avenue would remain.

Under the **roundabouts** option, Sarah Avenue would be closed and a cul-de-sac would be constructed. Thus, a sidewalk instead of a crosswalk would be provided for pedestrians traveling along the East 1st Avenue side of the cul-de-sac. According to the traffic study prepared for the project (Fehr & Peers 2003), roundabouts would yield mixed safety results for pedestrians attempting to cross East 1st Avenue at the roundabouts, as described in the following section from the report:

Roundabouts provide some benefits compared to signalized intersections since the legs of the roundabouts have a shorter crossing distance and the roundabout configuration minimizes the number of conflicting vehicles vehicle movements for pedestrians. However, the pedestrian crossings for roundabouts are uncontrolled, so pedestrians must rely on their judgement and motorists to yield the right-of-way. This is a problem particularly for visually impaired pedestrians, who cannot easily locate the crossing or hear the traffic approaching their location. Traffic signals, on the other hand, do assign right-of-way to pedestrians at a controlled crossing and can provide audible signals for the visually impaired.

The Outside and Inside Widening Alternatives are considered to be consistent with Policy T-I-42

T-G-21: Provide for increased connections between and within neighborhoods for bicycles, pedestrians and, where appropriate, automobiles.

Under both intersection options, the Outside and Inside Widening Alternatives would increase pedestrian connections between neighborhoods by providing continuous sidewalks and crosswalks along East 1st Avenue between Neal Dow Avenue and Holben Avenue. Currently, sidewalks are discontinuous along both sides of East 1st Avenue through the segment in the project area. Bicycle connections along East 1st Avenue would remain unchanged, with bicyclists continuing to use roadway shoulders; however, bicyclist safety would be enhanced by the improved operations of the intersections. These effects are considered consistent with Policy T-G-21.

Under the **roundabouts** option, the Outside and Inside Widening Alternatives would eliminate the connection of Sarah Avenue to East 1st Avenue by constructing a cul-de-sac on Sarah Avenue at its intersection with East 1st Avenue. Due to the length of Sarah Avenue between its intersections with East 1st Avenue and Palmetto Avenue, the cul-de-sac would somewhat reduce the connectivity of residents at the northern end of Sarah Avenue to other parts of the neighborhood. Pedestrian and bicycle access would still be available, however, and this effect is not considered inconsistent with Policy T-G-21.

Butte County Association of Governments Regional Transportation Plan

The proposed project is included in the adopted Butte County RTP, 2001–2025 (Butte County Association of Governments 2001) and the approved 2002 FTIP (approved by FHWA on October 4, 2002). Table 5-4 of the RTP identifies the proposed project as “auxiliary lanes SR 32 to East 1st; widen East 1st Avenue.” Page 16 of the FTIP identifies it as “Butte 99 Chico Aux. Lanes/Intersection (Chico-On SR 99 between SR 32 and East 1st Avenue and at East First Avenue – Widen ramps, construct aux. lanes, intersection improvements”. The Outside and Inside Widening Alternatives are considered to be consistent with this plan.

This impact is considered to be less than significant since the project is consistent with relevant policies.

Mitigation Measure

None proposed.

Impact LU6: No Impact on Community Cohesion

Outside and Inside Widening Alternatives

According to Caltrans guidelines for conducting community impact assessments (California Department of Transportation 1997), community cohesion is the degree to which residents have a *sense of belonging* to their neighborhood; a level of commitment of the residents of the community; or a strong attachment to neighbors, groups, or institutions, usually because of continued association over time. Communities are often delineated by physical barriers, such as major roadways or large open space areas.

Cohesive communities are indicated by specific social characteristics, such as long average lengths of residency, home ownership, frequent personal contact, ethnic homogeneity, high levels of community activity, and shared goals. Transportation projects may divide cohesive neighborhoods when such projects act as physical barriers or are perceived as psychological barriers by residents. A transportation project perceived as a physical or psychological barrier may isolate one portion of a homogeneous neighborhood. (California Department of Transportation 1997.)

Within the study area, SR 99 already serves to separate neighborhoods east and west of the freeway. Improvements under both the Outside and Inside Widening Alternatives would not increase or decrease the sense of separation created by the freeway. Near the freeway, East 1st Avenue also serves to separate neighborhoods north and south of the avenue. Although East 1st Avenue would be widened as part of project improvements, the increased width would not materially affect the existing physical barrier (East 1st Avenue) that already separates these neighborhoods. Conversely, improvements to the SR 99 ramp intersections that allow for safer pedestrian and bicycle crossings of East 1st Avenue would decrease the sense of separation that currently exists.

With **roundabouts**, the project would result in a cul-de-sac being constructed at the end of Sarah Way where it intersects with East 1st Avenue. The reduced access from Sarah Avenue to East 1st

Avenue could serve as a physical barrier to neighborhoods on the north side of East 1st Avenue; however East 1st Avenue already acts as a barrier and the cul-de-sac would only incrementally increase the sense of separation. Additionally, pedestrian and bicycle access would still be available from Sarah Avenue to nearby streets.

The community cohesion effects of the project are considered minor in the context of the existing barriers imposed by SR 99 and East 1st Avenue between neighborhoods in the study area. This impact is considered to be less than significant since the project would not physically divide an established community.

Mitigation Measure

None proposed.

Impact LU7: Access and Circulation Impacts

Outside and Inside Widening Alternatives

Both alternatives would generate the same access and circulation impacts. On a local and community level, both alternatives would improve access and circulation in the study area by relieving congestion and improving safety. However, in addition to these beneficial access and circulation impacts, adverse impacts could result from the project. Under both intersection options, the placement of curb, gutter, and sidewalk along East 1st Avenue would eliminate one of the two driveways used to enter and leave the commercial center occupied by Finnegan's Jug Liquors and Spa Broker. This change should not create major problems for these businesses because access would still be provided by the remaining driveway. Left turns out of the parking lot onto eastbound East 1st Avenue would also be prohibited; the property owner is not concerned about this left-turn restriction affecting the business at this center (Tatman pers. comm.). Right turns out the driveway, and left and right turns into the driveway, would still be possible, but eastbound traffic would need to turn right from the commercial center and then make a series of left turns back to East 1st Avenue. This impact is considered to be less than significant since changes in access from this business would be minor.

Under the ***roundabouts*** option, Sarah Avenue would be closed by the construction of a cul-de-sac at its intersection with East 1st Avenue. This closure would reduce access from East 1st Avenue to and from homes on Sarah Avenue between East 1st Avenue and Palmetto Avenue. The Sarah Avenue closure would also change circulation in this neighborhood by forcing vehicles attempting to reach or leave Sarah Avenue to use Neal Dow Avenue and Palmetto Avenue. For residents of Sarah Avenue, the street closure would create both costs, in the form of inconvenience, and benefits, in the form of less traffic. Residents seeking to reach East 1st Avenue and SR 99 would be required to circle around to Neal Dow Avenue rather than to turn from the northern end of Sarah Avenue onto East 1st Avenue. For some residents, this would mean traveling an additional three blocks, two of which are longer than normal city blocks, to reach East 1st Avenue. On the other hand, closing Sarah Avenue on one end would eliminate through traffic, resulting in less traffic and a safer street. The circulation impact is considered to be minor and less than significant.

Access to the parking lot of the Frank Mendoza Insurance Agency could also be affected by the **roundabouts** option by right-of-way-acquisition at the northeast corner of East 1st Avenue and Sheridan Avenue. The exit from the business's parking lot could be eliminated or blocked by roadway widening at the street corner. If this occurs, vehicles could still exit the parking lot through what is now the lot's entrance, but entrance widening may be required for safe usage. This potentially significant impact would be mitigated to less than significant with implementation of Mitigation Measure LU2b.

Mitigation Measure LU2b: Provide Exit Driveway for Business at 1108 Sheridan Avenue (Roundabout)

See Impact LU2 for a description of this measure.

Growth Inducement Impacts

Growth rates and patterns are influenced by various local, regional, and national forces that reflect ongoing social, economic, and technological changes. Ultimately, the amount and location of population growth and economic development that occurs in a specific area is controlled, to some extent, by local and county governments through zoning, land use plans and policies, and decisions regarding development applications. Local government and other regional, state, and federal agencies also make decisions about infrastructure (such as roads, water facilities, and sewage facilities) that may influence growth rates and the location of future development.

Transportation infrastructure is one component of the overall infrastructure that may serve to accommodate planned growth. This infrastructure may also serve to hasten or shift planned growth, or encourage and intensify unplanned growth in an area. Transportation projects may induce growth when they directly or indirectly promote, hasten, shift, or intensify planned growth or encourage unplanned growth in a community or region. Examples of growth-inducing transportation projects include construction of a new interchange on an existing freeway, which could shift and encourage growth in the vicinity of the new interchange, or construction of a new roadway through an undeveloped area, which could promote unplanned growth.

The primary intent of the project is to improve safety on SR 99 and on the on- and off-ramps leading to and from SR 32 and East 1st Avenue. Secondary goals include improving SR 99 mainline and ramp operations, relieving congestion on SR 99 through the project area, and alleviating congestion at the SR 99 on- and off-ramps at SR 32 and East 1st Avenue. Improvements provided by the Outside and Inside Widening Alternatives are not expected to induce growth within or outside of the study area for the following reasons.

- The proposed safety and congestion relief improvements are needed due to growth that has already occurred in the study area and region. Additionally, the improvements are necessary to improve existing local traffic flow and are not designed to facilitate future local or regional growth (Sellers pers. comm.).
- The project would not introduce a new transportation facility to the study area, nor would it provide new access to undeveloped areas. Thus, the project is not anticipated to hasten or shift planned or unplanned growth.

- The improved capacity provided by the auxiliary lanes on SR 99 would be limited to the short freeway section between SR 32 and East 1st Avenue. Therefore, the project would not increase the highway's capacity through Chico and would provide little incentive to develop areas north or south of the city. Additionally, the project would not address existing and future bottlenecks on SR 99 north or south of the project area that could serve as obstacles to future growth. A traffic study prepared for the project predicts that future bottlenecks could occur at various locations (such as at the East 20th Street on-ramp and the Skyway on-ramp) (Fehr & Peers 2003).
- Although access through the project area would be improved by auxiliary lanes on SR 99, and access to SR 99 at both ends of the project area would be enhanced by interchange and ramp improvements, the improved access provided by the project would be to and through areas that have already been largely developed.

Impact LU8: Displacement of Two to Seven Residents

Outside and Inside Widening Alternatives

The displacements would be the same under the Outside and Inside Widening Alternatives. However, displacements would differ depending on whether conventional ramp intersections or roundabouts are implemented on East 1st Avenue

With **conventional ramp intersections**, the project would displace the residents of one single-family home located at the southwest corner of East 1st Avenue and Sheridan Avenue (APN 003-501-025). With **roundabouts**, two additional single-family homes located at the southwest corner of East 1st Avenue and Sarah Avenue (APNs 045-192-042 and 045-192-061) would be displaced. Based on average household sizes for the Census tracts in which these homes are located, the potential change in population would range from two persons for the conventional ramps option to seven persons for the roundabout option. These population changes would be considered minor in the context of the current populations of these Census tracts and the study area. This impact is considered less than significant since the project would not displace a substantial number of people.

Mitigation Measure

None proposed.

Impact LU9: Minor Local Tax Revenue Impacts

Outside and Inside Widening Alternatives

The Outside and Inside Widening Alternatives would have the same local tax revenue impacts. However, impacts would slightly differ depending on whether conventional ramp intersections or roundabouts are implemented on East 1st Avenue.

The displacement of up to three residences and the acquisition of right-of-way required for the project could reduce property and sales tax revenues for the City, Butte County, and other local agencies. With **conventional ramp intersections**, the project would displace one single-family home and require the permanent acquisition of 0.197 hectare (0.49 acre) of residential land and

0.065 hectare (0.16 acre) of commercial land from 11 properties (Table 4-4). These property acquisitions would result in the loss of an estimated \$2,900 in property tax revenue, spread across a number of agencies. With **roundabouts**, the project would displace three single-family homes and require permanent right-of-way acquisitions of 0.315 hectare (0.78 acre) from 10 residential properties and 0.077 hectare (0.19 acre) from three commercial properties. Property tax revenues would be reduced by an estimated \$3,700 by these acquisitions. Although such revenue reductions would be adverse, they would not substantially affect the ability of local agencies and districts to provide public and educational services.

In addition to property tax revenue, sales tax revenues could also be reduced because of project-related effects on parking and access for businesses located in the small commercial center at 1078 East 1st Avenue. Potential effects on sales, which are discussed below under Impact LU10 would be minor because potential sales reductions are anticipated to be small and because the affected businesses generate a minor percentage of the City's total sales tax revenue.

This impact is considered an economic, not an environmental one, and, therefore, no significance conclusion is given.

Mitigation Measure

None proposed.

Impact LU10: Minor Local and Roadside Business Impacts

Outside and Inside Widening Alternatives

The Outside and Inside Widening Alternatives would have the same local and roadside business impacts. However, these impacts would differ slightly depending on whether conventional ramp intersections or roundabouts are constructed.

Right-of-way acquisition and changes in access could cause impacts on businesses located near the SR 99/East 1st Avenue intersections. The bulk of the impacts would be felt by the businesses located in the commercial center at 1078 East 1st Avenue (APN 045-150-068), which houses Finnegan's Jug Liquors and Spa Broker. Frank Mendoza Insurance Agency (1108 Sheridan Avenue, APN 003-480-066) could also experience impacts under the **roundabouts** option. Impacts related to parking and access are discussed under Impacts LU2 and LU7, respectively. This impact is considered an economic, not an environmental one, and, therefore, no significance conclusion is given.

Mitigation Measure

None proposed.

Impact LU11: Minor Beneficial Construction-Related Economic Impacts

Outside and Inside Widening Alternatives

The Outside and Inside Widening Alternatives would have similar construction-related economic impacts. The construction of proposed improvements would generate temporary economic

activity in the City and the region, including purchases of goods and services required for construction and employment of workers needed for construction. The increased economic activity would prompt secondary economic activity as construction-related revenue and employee income that would be respend in sectors throughout the local and regional economy. The extent of the economic impact of construction-related expenditures on the local and regional economy would depend on the proportion of construction expenditures that would occur in the local and regional area and on the residential location of persons employed by construction contractors. Because construction contractors would be selected through competitive bidding procedures, no attempt has been made to estimate the potential economic effect on Chico or Butte County.

The cost to acquire right-of-way and construct improvements for the Outside Widening Alternative is estimated to total \$14.3 million (in 2000 dollars). For the Inside Widening Alternative, it is estimated to total \$18.9 million (in 2000 dollars), or approximately \$4.6 million more than estimated for the Outside Widening Alternative. Project construction would likely occur in phases, with the timing of construction under each phase dependent upon the availability of funding.

This impact is considered an economic, not an environmental one, and, therefore, no significance conclusion is given.

Mitigation Measure

None proposed.

4.2.3 No-Project Alternative

No construction would occur under this alternative. Therefore, no land use impacts or displacements would occur. No construction-related air quality, noise, or visual quality impacts or disruption to traffic circulation and access would occur. Also, no community impacts would occur. The No-Project Alternative is inconsistent with the adopted 2001–2025 RTP and BCAG’s Chico Corridor Study in Butte County on SR 99 (Quincy Engineering 2001) since it would not provide auxiliary lanes on SR 99.

Chapter 5 Transportation

The information below is summarized from the project's traffic report (Fehr & Peers Associates, Inc. 2003); this report is available for review at the BCAG office. This section addresses freeway mainline and ramp junction operations and arterial intersection operations under existing, 2007, and 2027 conditions. It also addresses impacts on bicyclists and pedestrians in the project area, as well as short-term construction-related safety concerns.

5.1 Setting

Automobiles are the primary travel mode for most trips in the study area. The area is also accessible by bus transit and, to a lesser degree, by walking or bicycling.

5.1.1 Existing Roadway Network

Since most trips in the study area are made by automobile, the roadway system is the focus of this analysis. This analysis includes the SR 99 freeway between the SR32 separation and the East 1st Avenue undercrossing and East 1st Avenue between Sheridan Avenue and Sarah Avenue.

SR 99 is a major regional highway connecting Chico with Oroville, Yuba City, and Marysville to the south and Red Bluff and Interstate 5 to the north. The SR 99 freeway runs in a northwest/southeast direction through the middle of the City of Chico with the downtown area (including California State University at Chico [CSUC]) southwest of the freeway and the regional mall and residential areas northeast of the freeway. The freeway provides one of three connections northeast of downtown over Big Chico Creek which runs through the middle of the City of Chico in a northeast/southwest direction. As a result, SR 99 is an important route for both interregional and local traffic. Increasing demand for the freeway between SR 32 and East 1st Avenue has led to short-term congestion during peak times and high accident rates.

East 1st Avenue is a two-lane arterial that runs from the Esplanade to Madrone Avenue. The centrally-located street provides the major access between SR 99 and CSUC. Additionally, this route serves the adjacent residential and neighborhood commercial areas. East 1st Avenue provides a local connection between both sides of the freeway although local street undercrossings are also provided about 0.4 kilometer (0.25 mile) south at Palmetto Avenue and about 0.5 kilometer (0.33 mile) north at East 5th Street.

5.1.2 Methodology

The traffic operations analysis addresses freeway and intersection operations. Key assumptions related to this analysis are listed below:

- Operations analysis for freeway facilities and signalized intersections were conducted using CORSIM and VISSIM, traffic analysis software programs that are consistent with the procedures and methodologies documented in the *Highway Capacity Manual* (HCM) (Transportation Research Board 2000).

- The analysis evaluated the a.m. and p.m. peak hours.
- A peak-hour factor of 0.90 was applied to all freeway and arterial facilities.
- A free-flow speed of 65 miles per hour (mph) was used for SR 99. Although the posted speed limit is 60 mph, travel speeds during the floating-car surveys of travel time were 65 to 68 mph.
- Based on the traffic counts, the a.m. and p.m. peak hour truck volume percentages for SR 99 were determined to be 4% and 2% for the southbound direction, 3% and 1% for the northbound direction, respectively. For the SR 32 on-ramp and East 1st Avenue, a truck percentage of 1% was used for both peak hours.
- According to the Project Study Report (PSR), a May 1998 survey showed that 70% of the northbound SR 32 on-ramp traffic and 25% of the northbound mainline traffic exited at the East 1st Avenue off-ramp during the p.m. peak hour. Based on the traffic volumes reported in the PSR, 45% of the off-ramp volume originated at the upstream on-ramp and 55% originated from the mainline. The latter set of percentages is assumed to hold for both northbound and southbound directions and for both peak hours.

Level of Service Criteria

The analysis results include a descriptive term known as level of service (LOS). The LOS is a measure of traffic operating conditions, which varies from LOS A (the best) to LOS F (the worst) as described in Tables 5-1 through 5-3 below.

Table 5-1. Freeway Weaving and Ramp Merge and Diverge LOS Criteria

LOS	Description	Density (vplpm)
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤ 10
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 10 to 20
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 20 to 28
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 28 to 35
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 43
F	Represents a breakdown in flow.	> 43

Source: Transportation Research Board 2000.

Table 5-2. Signalized Intersection LOS Criteria

LOS	Description	Average Control Delay (seconds/vehicle)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 to 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 to 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 to 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 to 80
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80

Source: Transportation Research Board 2000.

Table 5-3. Unsignalized Approach LOS Criteria

LOS	Description	Average Control Delay (seconds/vehicle)
A	Little or no conflicting traffic.	≤ 10
B	The approach begins to notice absence of available gaps.	> 10 to 15
C	The approach begins experiencing delay for available gaps.	> 15 to 25
D	The approach experiences queuing due to a reduction in available gaps.	> 25 to 35
E	Extensive queuing due to insufficient gaps.	> 35 to 50
F	Insufficient gaps of suitable size to allow traffic demand to cross safely through a major traffic stream.	> 50

Source: Transportation Research Board 2000.

Minimum Acceptable LOS

The analysis evaluation criteria are used to determine acceptable traffic operating conditions. Caltrans has identified LOS E as the concept LOS for SR 99 in the study area (Caltrans 1989). According to the *City of Chico General Plan* (Blaney Dyett 1999), LOS D should be maintained for arterial intersections during peak hours. LOS E is acceptable only for built-out areas that are served by transit after finding that a better LOS cannot be attained practically or feasibly and that the uses that cause the lower LOS have a clear, overall public benefit. For this study, the LOS D criterion was used for all signalized and unsignalized intersections.

Study Conditions

This study includes the following scenarios:

- Existing conditions
- Existing with project conditions
- Year 2007 no-project conditions
- Year 2007 with-project conditions
- Year 2027 no-project conditions
- Year 2027 with-project conditions

5.1.3 Existing Conditions

An analysis of existing traffic operations in the study area was conducted to provide reviewers with a context for how a.m. and p.m. peak-hour traffic operations are projected to change over time. In addition, existing traffic safety was also evaluated.

The operations analysis included the following freeway and arterial facilities.

Freeway Ramp Junctions

- Southbound SR 32 off-ramp
- Southbound East 1st Avenue on-ramp
- Northbound SR 32 on-ramp
- Northbound East 1st Avenue off-ramp

Arterial Intersections

- East 1st Avenue/Sheridan Avenue
- East 1st Avenue/southbound SR 99 ramps
- East 1st Avenue/northbound SR 99 ramps
- East 1st Avenue/Sarah Avenue

Figure 5-1 displays the existing geometrics, traffic control, and peak-hour traffic volumes for the selected analysis locations. As depicted in the figure, SR 99 has two mixed-flow lanes in each direction through the study area. The SR 99/East 1st Avenue interchange has a diamond configuration.

Freeway Operations

The operation of the freeway is measured by examining the density (vehicles per lane per mile) at the midpoint of the ramp influence areas, which are located 230 meters (750 feet) upstream or downstream from the ramp gore point (that is, where the left-hand side of the ramp joins the right side of the freeway) as described in the *Highway Capacity Manual*. The results are shown in Table 5-4.

Table 5-4. Existing Conditions—Freeway LOS and Density

Direction	Location	LOS/Density ^a	
		A.M. Peak Hour	P.M. Peak Hour
Northbound	SR 32 on-ramp	C/26	E/37
	East 1 st Avenue off-ramp	C/25	E/35
Southbound	East 1 st Avenue on-ramp	D/29	D/34
	SR 32 off-ramp	C/28	D/32

^a Average density reported in passenger cars per lane-mile.

The results of the freeway analysis reflect current conditions. During the morning peak hour, northbound traffic operates at LOS C, and southbound traffic operates at LOS D. During the evening peak hour, northbound traffic operates at LOS E, and southbound traffic is at LOS D. LOS E means that any disruption (slow moving truck, roadway debris, etc.) can cause the traffic flow to break down into stop-and-go conditions. Such a breakdown in flow occasionally occurs at the northbound on-ramp from SR 32 due to a slow-moving vehicle or a platoon of vehicles from the on-ramp. The breakdown also occurs at the northbound off-ramp to East 1st Avenue

when traffic backs up from the signalized intersection to the freeway. Based on the Caltrans LOS criteria for SR 99, the freeway between SR 32 and East 1st Avenue is operating at an acceptable LOS.

Arterial Intersection Operations

The LOS for the East 1st Avenue intersections in the vicinity of the interchange is shown in Table 5-5.

Table 5-5. Existing Conditions—Intersection LOS and Delay

Intersection	Control	LOS/Delay ^a	
		A.M. Peak Hour	P.M. Peak Hour
East 1 st Avenue/Sheridan Avenue	Two-way stop	A/4	E/42
East. 1 st Avenue/Southbound SR 99 ramps	Signal	B/12	D/46
East 1 st Avenue/Northbound SR 99 ramps	Signal	C/26	C/28
East 1 st Avenue/Sarah Avenue	Two-way stop	A/6	A/4

^a Average control delay is reported in seconds per vehicle.

During the a.m. peak hour, the four study intersections operate at acceptable conditions. In the p.m. peak hour, the LOS's for the ramp terminal intersections are acceptable at LOS D or better. However, queues on the northbound off-ramp occasionally back up to the freeway, and queues from eastbound East 1st Avenue at the southbound ramps intersection back up to the upstream signal at Sherman Avenue/Mildred Avenue. The queued vehicles on East 1st Avenue at the ramp intersections block the adjacent unsignalized intersections resulting in unacceptable LOS, primarily at Sheridan Avenue which experiences LOS E conditions in the p.m. peak hour.

Traffic Safety

Traffic safety was evaluated for the SR 99 corridor between SR 32 and East 1st Avenue. This evaluation consisted of collecting and reviewing SR 99 accident rate data provided by Caltrans. Table 5-6 shows the three-year accident history from July 1998 to June 2001.

Table 5-6. Freeway Accident History—Accident Rates

Location	Total Accidents	Total Fatalities	Actual Accident Rate ^a	Average Accident Rate ^{a,b}
Northbound – Cherokee Creek Bridge to East 1 st Avenue undercrossing (Post Mile R30.243 to R33.281)	143	0	1.56	1.00
Southbound – Lassen Avenue undercrossing to East 20 th Street undercrossing (Post Mile R31.498 to R35.305)	135	0	1.24	0.92
Northbound on-ramp from SR 32 (Post Mile R32.541)	20	0	2.34	0.45
Northbound off-ramp to East 1 st Avenue (Post Mile R33.163)	17	0	1.45	1.50
Southbound on-ramp from East 1 st Avenue (Post Mile R33.170)	16	0	1.55	0.80
Southbound off-ramp to SR 32 (Post Mile R32.580)	5	0	0.60	0.90

Source: Caltrans District 3 TASAS Table B, July 1, 1998 to June 30, 2001.

Note: Bold font indicates an actual accident rate that is higher than the average accident rate.

^a For mainline sections, the accident rate is the number of accidents per million vehicle-miles. For ramps, the accident rate is the number of accidents per million vehicles.

^b The average statewide accident rate for similar facilities.

The number of accidents on the SR 99 mainline in the study area is higher than for similar facilities statewide, as indicated below:

- In the northbound direction, the accident rate is more than 50% higher than the statewide average for similar facilities.
- The accident rate in the southbound direction is lower than in the northbound direction, but still higher than average.
- The accident rate for the northbound on-ramp from SR 32 is more than five times higher than average.
- The southbound on-ramp from East 1st Avenue is also higher than average (nearly twice as high), but not as high as the SR 32 on-ramp.

Table 5-7 categorizes the accidents within 0.8 kilometer (0.5 mile) of the on- and off-ramps according to the type of accident. The most frequent type of accident is a rear-end crash; this is an indicator of congested conditions (that is, stop-and-go traffic). The short merging areas at the on-ramps contribute to the high number of rear-end accidents. Rear-end crashes on the mainline near the on-ramps are likely caused by through vehicles slowing to let on-ramp traffic merge. Rear-end crashes on the on-ramps are likely caused by vehicles slowing abruptly when drivers cannot find an acceptable gap. Rear-end crashes at the northbound off-ramp are caused by freeway traffic decelerating rapidly on the downhill grade prior to the end of the long queue at the signal for East 1st Avenue. At the SR 32 southbound off-ramp, the percentage of rear-end crashes is lower since the queue at the signal is shorter.

Table 5-7. Freeway Accident History—Number of Accidents by Type

Location	Accident Type			Total
	Rear-End	Sideswipe	Other ^a	
Northbound near SR 32 on-ramp (R32.291 – 32.791)	47 (81%)	5 (9%)	6 (10%)	58
Northbound near East 1 st Avenue off-ramp (R32.913 – R33.413)	28 (82%)	2 (6%)	4 (12%)	34
Southbound near East 1 st Avenue on-ramp (R32.920 – R33.420)	40 (71%)	4 (7%)	12 (21%)	56
Southbound near SR 32 off-ramp (R32.330 – R32.830)	7 (50%)	1 (7%)	6 (43%)	14

Source: Caltrans District 3 TASAS Table B, July 1, 1998 to June 30, 2001.

^a This category includes the following TASAS accident types: hit object, overturn, auto/pedestrian, and other.

Transit System

Fixed-route bus service in the Chico urban area is provided by the Chico Area Transit System (CATS) and Butte County Transit. CATS Route #4 provides hourly bus service in both directions on East 1st Avenue. In the study area, stops are located at Holben Avenue and Neal Dow Avenue. Butte County Transit does not provide service in the study area.

Bicycle/Pedestrian System

Due to safety considerations, bicycle and pedestrian traffic is prohibited on the SR 99 freeway. The existing volume of bicyclists and pedestrians on East 1st Avenue at SR 99 is shown in Figure 5-1. East 1st Avenue does not provide separate bicycle paths (Class I) or pavement-delineated bicycle lanes (Class II). Instead, bicycle traffic must share the roadway with motorized vehicles (Class III). The *Chico Urban Area 1998 Bicycle Plan* (City of Chico 1999) does not designate East 1st Avenue as an official bicycle route. However, a Class III bicycle route is shown on

Sheridan Avenue in the study area. No improvements to the bicycle system are planned for the study area.

Sidewalks are provided along East 1st Avenue from west of the study area up to the Sarah Avenue intersection. No sidewalks are provided east of Sarah Avenue. Additionally, signalized pedestrian crossings are provided parallel to East 1st Avenue at the ramp terminal intersections.

5.1.4 Environmental Impacts and Mitigation Measures

This section presents the methodology used and the analysis results for the existing with project, future (2007 and 2027) no-project, and future (2007 and 2027) with-project conditions.

Methodology

Baseline

The baseline conditions used to evaluate project impacts are existing conditions and 2007 no-project conditions.

Travel Demand Forecasts

The City of Chico travel demand model was used to generate future traffic volume for this study. Two model runs of future conditions (2018) were made: one for no- project conditions and one for with-project conditions. Both runs assumed that Manzanita Avenue would have four lanes crossing Bidwell Park even though a recently approved widening project will provide only two lanes. This assumption was made at the direction of the Project Development Team since the City of Chico General Plan shows four lanes for Manzanita Avenue and a subsequent widening project is expected to be needed to handle future demand. If Manzanita Avenue remains two lanes at Bidwell Park, the demand for SR 99, the nearest parallel route, will be greater than the model runs predicted, and, as a result, traffic operations in the study area will be worse than what is reported below.

The horizon years for the travel demand model do not match the analysis years for the traffic operations study for this project. The model has a base year of 1998 and a future year of 2018. Existing traffic volumes were counted in 2002. The project is expected to be constructed in 2007, and the future conditions analysis is conducted for 20 years after construction or 2027 (as required for all Caltrans projects). The following adjustment process was used to forecast future traffic volumes to 2027.

The model volumes for 2002 were interpolated between the base year volumes (1998) and the future year volumes (2018). Then, the difference method was applied using the existing traffic counts to account for base year model discrepancies, that is the forecasted volume was calculated as the sum of the existing volume and the difference between the future and base-year model volumes. Since the 2018 model volumes are for the build-out of the City of Chico, traffic volumes on the local area streets (that is, East 1st Avenue) should not vary significantly between 2018 and 2027. Regional traffic is expected to continue to grow due to development outside the City; therefore, an annual growth rate of 2% was applied to the regional highways (SR 99 and SR 32) between 2018 and 2027. The forecasted volumes for 2007 were calculated by linear interpolation between the 2002 count volumes and the 2027 forecast volumes.

The traffic volume forecasts were checked against historical trends for SR 99 (see Figure 5-2). Using the 1990 and 2000 annual average daily traffic volumes from Caltrans' Annual Traffic Volumes on State Highways, the estimated annual growth rate from 1990 to 2000 was 1.6% per year. For 2002 to 2027, the traffic volumes developed for this study show an average annual growth rate of 1.1% for no-project conditions and 1.7% for with-project conditions. The with-project growth rate is similar to historical trends while the no-project is slightly lower due to the capacity constraints on SR 99 that would occur without the project.

The average traffic volumes based on the counts collected in 2002 are shown in Figure 5-1. The travel demand forecasts for intersection and freeway volumes under no-project and with-project conditions are shown in Figures 5-3, 5-4, and 5-5 for 2007 conditions and Figures 5-6, 5-7, 5-8, and 5-9 for 2027 conditions.

Planned Project Improvements

A detailed description of the project improvements is provided below.

No-Project Alternative

- No improvements are made to the SR 99 freeway between SR 32 and East 1st Avenue, and no changes are made to the East 1st Avenue interchange.

Outside Widening Alternative

- An auxiliary lane would be provided in the northbound and southbound directions of the SR 99 freeway between SR 32 and East 1st Avenue. Auxiliary lanes connect successive on- and off-ramps, which requires merging and diverging traffic to make a lane change to enter or exit the freeway. The additional lanes would be constructed by widening to the outside of the existing lanes with the newly-constructed lane as the auxiliary lane.
- The ramps at each end of the auxiliary lane would be widened and realigned to provide standard Caltrans merging tapers. Provisions for ramp metering would be provided on both on-ramps, and two-lane off-ramps would be provided.
- The northbound approach of the East 1st Avenue/SR 99 ramps intersection would be widened to provide an exclusive left-turn lane, a shared left/through lane, and an exclusive right-turn pocket.
- East 1st Avenue would be widened at the SR 99 freeway according to Options A, B, C, D, or E described below.

Inside Widening Alternative

- As in the previous alternative, a full auxiliary lane would be provided in the northbound and southbound directions of the SR 99 freeway between SR 32 and East 1st Avenue. In this case, the additional lanes would be constructed by widening into the existing median and shifting the through lanes so that the existing shoulder lane is the auxiliary lane.
- The other improvements to the freeway ramps and East 1st Avenue that are listed in the previous alternative would also be constructed under this alternative.

From a traffic operations perspective, the proposed freeway improvements of the two project alternatives are similar. Therefore, the results of the freeway analysis are usually described according to no-project and with-project conditions. An exception occurs for the discussion of

weaving section length since the distance between the on-ramp and off-ramp gore points is longer for the Outside Widening Alternative than for the Inside Widening Alternative.

There are a number of potential configurations for the improvements to East 1st Avenue as shown in Figures 5-10, 5-11, and 5-12. These options are described below:

Option A

- The PSR recommended widening westbound East 1st Avenue from the northbound SR 99 ramps to west of Sheridan Avenue. This improvement provides the two receiving lanes for the dual left-turn from the northbound off-ramp and the required taper to merge back to one westbound lane west of the interchange.

Option B

- As in Option A, a second westbound travel lane would be provided on East 1st Avenue from the northbound SR 99 ramps to west of Sheridan Avenue.
- In addition, capacity would be increased in the eastbound direction by providing a second lane from west of Sheridan Avenue to east of Sarah Avenue.

Option C

- As in Option B, a second westbound lane would be provided on East 1st Avenue from the northbound SR 99 ramps to west of Sheridan Avenue, and a second eastbound lane would be provided from west of Sheridan Avenue to east of Sarah Avenue.
- In addition, East 1st Avenue between the northbound and southbound ramps would be widened to six lanes to provide full-length left-turn pockets extending from ramp intersection to ramp intersection.

Preliminary traffic analysis showed poor operations in 2027 for East 1st Avenue with Option C, so the following additional option was developed.

Option D

- As in Option C, a second westbound lane would be provided on East 1st Avenue from the northbound SR 99 ramps to west of Sheridan Avenue and the undercrossing would be widened to six lanes to provide full-length left-turn lanes.
- In addition, the capacity of southbound ramps intersection would be increased. In the eastbound direction, East 1st Avenue would be widened between Sheridan Avenue and the southbound ramps so that the approach has an exclusive right-turn lane, not just a right-turn pocket.
- At the undercrossing, the eastbound shoulder lane would go through and the eastbound inside lane would turn left to the northbound on-ramp. In the westbound direction, two left-turn lanes and two through lanes would be provided.

Additional alternatives were developed to test the effect of restricting access at Sheridan Avenue and Sarah Avenue. Options C-1 and D-1 have similar configurations as Options C and D with left-turns and side-street through movements prohibited at Sheridan Avenue and Sarah Avenue except for the eastbound left-turn at Sarah Avenue.

At the initial public meeting, local residents proposed that roundabouts be considered for the ramp terminal intersections. As a result, the following option was developed.

Option E

- Two-lane modern roundabouts would be constructed at the ramp terminal intersections.
- Each entry and exit leg at the roundabouts would be two lanes so that East 1st Avenue would be four lanes from east of Sarah Avenue to west of Sheridan Avenue.
- To accommodate the roundabouts, the intersections at Sarah Avenue and Sheridan Avenue would be modified to permit only right-in and right-out movements.

An additional roundabout design option was considered to improve the capacity of the northbound off-ramp. Option E-1 revises Option E by providing a right-turn bypass lane from the northbound off-ramp and reducing eastbound exit leg of the northbound ramps intersection to one lane. Sarah Avenue at East 1st Avenue would also be cul-de-saced under Option E-1.

The initial intersection design options, Options A, B, C, and E, are analyzed under existing, 2007, and 2027 conditions. The subsequent design options, Options C-1, D, D-1, and E-1, that were developed to address operational problems with the initial options under 2027 conditions are analyzed only under 2027 conditions.

Existing Conditions

This section presents the results of the existing no-project and with-project traffic operations analysis for the study area freeway facilities and arterial intersections with Options A, B, C, and E.

Freeway Operations

Under existing with-project conditions, a full auxiliary lane would be constructed in both directions of SR 99 for all interchange options. As a result, the impact to freeway traffic operations for each option is nearly identical. Therefore, the results of the with-project freeway operations analysis are only reported for Option A.

Table 5-8 compares the levels of service for existing no-project and with-project conditions. For with-project conditions, freeway operations improve to LOS C or better for both directions during both peak hours. For northbound SR 99, the LOS improves from E to C during the p.m. peak hour as a result of the additional capacity provided by the auxiliary lane. Similarly, the LOS in the southbound direction during the p.m. peak hour improves from D to B. The auxiliary lane improves traffic operations by increasing the distance over which vehicles can merge and diverge and by providing a dedicated lane for the high-volume, on-ramp to off-ramp movement.

Table 5-8. Existing Conditions—Freeway LOS and Density^a

Direction	No Project		With Project ^b	
	A.M.	P.M.	A.M.	P.M.
Northbound	C/C	E/E	B/17	C/23
Southbound	D/C	D/D	B/19	C/21

Source: Fehr & Peers Associates 2003.

^a The ramp junction LOS's (on-ramp/off-ramp) are reported for no-project conditions and the weaving section LOS and density are reported for with-project conditions. Average density is reported in passenger cars per lane-mile.

^b The with-project results are similar for all design options. Option A results are reported in the table.

In addition to the HCM LOS analysis, the operation of the weaving sections were also analyzed according to the Caltrans "LOS C Method" documented in the Highway Design Manual (Section 504.7). The methodology determines the minimum length between successive on- and off-ramps required to provide LOS C operations based on the total weaving volume and without regard to arrival rate of on-ramp traffic (that is, the effect of ramp metering is not taken into account). The results of the "LOS C Method" are shown in Table 5-9.

Table 5-9. Existing Conditions—Freeway Weaving Analysis LOS C Method^a

Direction	Alternative ^b	Weaving Section Length (meters)	Minimum Weaving Section Length to Maintain LOS C (meters)	
			A.M.	P.M.
Northbound	Outside Widening	640	295	287
	Inside Widening	600		
Southbound	Outside Widening	567	287	351
	Inside Widening	550		

Source: Fehr and Peers Associates 2003.

^a The minimum weaving section length in meters to maintain LOS C conditions is the number of weaving vehicles times 0.3 according to the LOS C Method (Highway Design Manual, Section 504.7).

^b The demand volume for weaving vehicles is the same for all interchange design options.

Although the freeway geometry under the two build alternatives is similar, they differ in the length of the weaving section between SR 32 and East 1st Avenue. The distance between painted gores is 40 and 17 meters (131 and 56 feet) longer under the Outside Widening alternative versus the Inside Widening Alternative for the northbound and southbound directions, respectively. For existing with-project conditions, the minimum weaving section length to maintain LOS C is much less than the weaving section length for both alternatives during both peak hours.

Arterial Intersection Operations

The existing traffic volumes shown in Figure 5-1 were used to analyze the intersection operations for Options A, B, and C. The demand volume from eastbound East 1st Avenue was increased by 5% over the traffic count shown in Figure 5-1 during model calibration and validation to match observed queues that extend back from SR 99 to Sherman Avenue/Mildred Avenue. For Option E, the existing traffic volumes were modified as a result of the right-in, right-out turn restrictions at the Sheridan Avenue and Sarah Avenue intersections. The intersection turning movement volumes for Option E are shown in Figure 5-12.

Traffic operations results for the arterial intersections are shown in Table 5-10. For all improvement options, the study intersections during the a.m. peak hour operate at LOS B conditions or better. Under Option A, the p.m. peak hour LOS does not improve compared to the no-project conditions for the two intersections west of the freeway. Option A only widens the

westbound lanes of East 1st Avenue, not the eastbound lanes, so the high-volume movement from eastbound East 1st Avenue to southbound SR 99 has a similar level of delay as in no-project conditions. For the other three design options, all study intersections operate at LOS B or better during the p.m. peak hour.

Table 5-10. Existing Conditions—Intersection LOS and Delay^a

Intersection	Control	No Project		Option A		Option B		Option C		Option E	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
East 1 st Avenue/ Sheridan Avenue	Two-way stop	A/4	E/42	A/7	E/47	A/2	A/4	A/2	A/4	A/2	A/3
East 1 st Avenue/ Southbound SR 99	Signal (yield) ^b	B/12	D/46	B/14	D/50	A/10	B/14	A/9	B/11	A/4	A/5
East 1 st Avenue/ Northbound SR 99	Signal (yield) ^b	C/26	C/28	B/15	B/15	B/13	B/17	B/12	B/14	A/4	A/7
East 1 st Avenue/ Sarah Avenue	Two-way stop	A/6	A/4	A/2	A/2	A/2	A/2	A/2	A/2	A/1	A/1

Source: Fehr & Peers Associates 2003.

Note: Bold font indicates a level of service worse than the City of Chico's LOS D criteria.

^a Average control delay is measured in seconds/vehicle.

^b For Option E, the roundabout intersections are yield-controlled.

2007 Conditions

This section presents the results of the 2007 traffic operations analysis for the study area freeway facilities and arterial intersections under no-project conditions and with-project conditions with Options A, B, C, and E. Traffic operations for 2007 were analyzed only for the p.m. peak hour since the traffic volumes are higher during this period than for the a.m. peak hour.

Freeway Operations

Similar to the existing with-project analysis, the results of freeway operations analysis for 2007 conditions are reported for no-project and with-project conditions. The with-project values reported below are for Option A.

Table 5-11 compares the levels of service for 2007 no-project and with-project conditions. For with-project conditions, freeway operations improve to LOS C or better for both directions during the p.m. peak hour.

Table 5-11. 2007 Conditions—Freeway LOS and Density^a

Direction	No Project	With Project ^b
Northbound	F/E	C/27
Southbound	E/E	C/23

Source: Fehr & Peers Associates 2003.

^a The ramp junction LOS's (on-ramp/off-ramp) are reported for no-project conditions and the weaving section LOS and density are reported for with-project conditions. Average density is reported in passenger cars per lane-mile. The reported results are for the p.m. peak hour.

^b The with-project results are similar for all design options. Option A results are reported in the table.

Arterial Intersection Operations

The 2007 traffic volumes shown in Figures 5-3, 5-4, and 5-5 were used to analyze the intersection operations for no-project conditions, with-project (Options A, B, and C) conditions, and with-project (Option E) conditions, respectively.

Traffic operations results for the arterial intersections are shown in Table 5-12. Similar to existing conditions, the p.m. peak hour LOS under Option A does not improve compared to the no-project conditions for the two intersections west of the freeway. For the other three design options, all study intersections operate at LOS B or better.

Table 5-12. 2007 Conditions—Intersection LOS and Delay^a

Intersection	Control	No Project	Option A	Option B	Option C	Option E
East 1 st Avenue/ Sheridan Avenue	Two-way stop	F/>50	F/>50	A/8	A/8	A/4
East 1 st Avenue/ Southbound SR 99	Signal (yield) ^b	F/>80	F/>80	B/15	B/14	A/6
East 1 st Avenue/ Northbound SR 99	Signal (yield) ^b	C/23	B/20	B/16	B/16	B/10
East 1 st Avenue/ Sarah Avenue	Two-way stop	A/6	A/3	A/3	A/3	A/2

Source: Fehr & Peers Associates 2003.

Note: Bold font indicates a level of service worse than the City of Chico's LOS D criteria.

^a Average control delay is measured in seconds/vehicle.

^b For Option E, the roundabout intersections are yield-controlled.

2027 Conditions

This section presents the results of the 2027 traffic operations analysis for the study area under no-project and with-project alternatives. Figure 5-6 shows the peak-hour traffic volumes and traffic controls for the no-project alternative. Figures 5-7 and 5-8 show the with-project alternative with Options A through D and the with-project alternative with Option E, respectively. Finally, Figure 5-9 shows the peak-hour traffic volumes for with-project with Options C-1 and D-1.

Freeway Operations

With the forecasted increase in traffic volumes, the peak-hour traffic demand for the freeway will exceed the capacity by 2027. Table 5-13 shows the freeway volume served under no-project and with-project conditions during the p.m. peak hour (the lower a.m. peak hour demand volumes are not as likely to exceed capacity). For no-project conditions, only 81% of the demand is served in the northbound direction and only 88% is served in the southbound direction. The bottleneck is located at the on-ramp merging areas (SR 32 in the northbound direction and East 1st Avenue in the southbound direction).

Additionally, not all traffic demand is served under with-project conditions. As shown in Table 5-13, 92% of the demand is served for northbound SR 99 under the p.m. peak hour. This is higher than no-project conditions due to the increased capacity provided by the auxiliary lane. Serving 100% of the peak-hour traffic demand is not possible because of capacity limitation on the two-lane freeway section upstream of the SR 32 on-ramp. Therefore, the freeway volume is constrained for northbound SR 99 during the p.m. peak hour such that the entire traffic demand cannot reach the study area. The full traffic demand could be served if additional through capacity (such as a third through lane) were provided. With a third through lane, traffic operations in the study area would be affected; additional freeway capacity would be provided, yet more volume would reach the weaving section between SR 32 and East 1st Avenue and the off-ramp to East 1st Avenue.

Table 5-13. 2027 No-Project and With-Project Conditions—P.M. Peak Hour Freeway Traffic Demand Served

Location	No Project			With-Project (Options A–D) ^a		
	Demand (vph)	Volume (vph)	Percent Served	Demand (vph)	Volume (vph)	Percent Served
Northbound SR 99 at SR 32 undercrossing	4,160	3,380	81%	4,645	4,255	92%
Southbound SR 99 at East 1 st Avenue undercrossing	3,650	3,215	88%	3,935	3,935	100%

^a Although the results for Option A are reported, the results for Options B through D are similar. Option E has congestion caused by backups at the northbound off-ramp to East 1st Avenue; therefore, only 84% of the demand is served.

The volume served on northbound SR 99 at the SR 32 undercrossing as shown in Table 5-13 provides an estimate of the capacity of the freeway at this location of 4,255 vehicles per hour (vph). The year in which the demand exceeds the capacity was estimated using straight-line interpolation. The existing (2002) volume served is 3,149 vph and the forecasted volume for 2027 is 4,645 vph. Assuming a constant growth rate, the demand will exceed the capacity of the freeway by about 2020.

Table 5-14 shows the ramp junction LOS for the 2027 no-project conditions. As expected, the freeway operates at LOS E and F since the capacity of the freeway cannot accommodate the demand volumes. This would result in freeway congestion that would extend to adjacent interchanges and spread outside the peak hours.

Table 5-14. 2027 No-Project Conditions—Freeway LOS and Density^a

Direction	Location	A.M. Peak Hour	P.M. Peak Hour
Northbound	SR 32 on-ramp	F/43	F/48
	East 1 st Avenue off-ramp	F/43	F/44
Southbound	East 1 st Avenue on-ramp	E/41	F/47
	SR 32 off-ramp	E/39	E/42

Source: Fehr & Peers Associates 2003.

Note: Bold font indicates LOS F conditions.

^a Average density reported in passenger cars per lane-mile.

For with-project conditions, the freeway weaving section between SR 32 and East 1st Avenue was analyzed. The results for all options are displayed in Table 5-15. For the a. m. peak hour, the freeway operates at LOS C in the northbound direction and LOS D in the southbound direction for all options. For Option A, the northbound direction has LOS E conditions and the southbound direction has LOS D conditions. Although the freeway is operating at capacity in the northbound direction (LOS E), travel speeds are still high, 57 mph, and only minor congestion occurs. Under Options B through D-1, the LOS in the southbound direction falls to E since the capacity of the East 1st Avenue intersection at the southbound ramps is increased. For Option E, traffic backs up from the northbound off-ramp to East 1st Avenue causing LOS F conditions on northbound SR 99 during the p.m. peak hour. With the exception of Option E, ramp metering of the upstream on-ramps maintains stable flow between SR 32 and East 1st Avenue with LOS E conditions. As a result, all options except Option E meet the LOS E criteria for SR 99.

Table 5-15. 2027 With-Project Conditions—Freeway LOS and Density^a

Direction	Option A		Option B		Option C		Option C-1	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Northbound	C/27	E/37	C/27	E/38	C/27	E/37	C/26	E/37
Southbound	D/30	D/34	D/32	E/35	D/32	E/36	D/32	E/38
Direction	Option D		Option D-1		Option E		Option E-1	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Northbound	C/26	E/37	C/26	E/37	C/28	F/98	C/27	E/38
Southbound	D/32	E/37	D/33	E/38	D/32	D/31	D/32	D/33

Source: Fehr & Peers Associates 2003.

Note: Bold font indicates LOS F conditions.

^a Average density reported in passenger cars per lane-mile.

The freeway weaving sections were also analyzed according to the “LOS C Method” for 2027 with-project conditions. As shown in Table 5-16, the weaving section lengths provided by the Outside Widening alternative meet the minimum weaving section lengths to maintain LOS C. For the Inside Widening Alternative, only the southbound direction in the p.m. peak hour fails to meet the minimum weaving section length (by one meter). Although the weaving section would operate at LOS C or better according to these results, this analysis method takes into account only the volume of weaving traffic (that is, vehicles from the on-ramp to the downstream freeway and from the upstream freeway to the off-ramp). The high volume of through freeway traffic and on-ramp to off-ramp traffic causes the LOS E conditions described above.

Table 5-16. 2027 With-Project Conditions—Freeway Weaving Analysis LOS C Method^a

Direction	Alternative ^b	Weaving Section Length (meters)	Minimum Weaving Section Length to Maintain LOS C (meters)	
			A.M. Peak Hour	P.M. Peak Hour
Northbound	Outside Widening	640	502	499
	Inside Widening	600		
Southbound	Outside Widening	567	454	551
	Inside Widening	550		

Source: Fehr and Peers Associates 2002.

Note: Bold font indicates a minimum weaving section length greater than the weaving section length provided.

^a The minimum weaving section length in meters to maintain LOS C conditions is the number of weaving vehicles times 0.3 according to the LOS C Method (Highway Design Manual, Section 504.7).^b The demand volume for weaving vehicles is the same for all interchange design options.

Arterial Intersection Operations

The results of the intersection traffic operations analysis are shown in Table 5-17. Under no-project conditions, the northbound ramps intersection will operate at LOS E during the a.m. peak hour. In the p.m. peak hour, all intersections will operate at LOS F as a result of high demand volumes from the northbound off-ramp and eastbound East 1st Avenue (only about 85% of the demand volume is served).

For the with-project conditions, all intersections operate at LOS F during both a.m. and p.m. peak hours under Option A. The single through lane for eastbound East 1st Avenue does not provide enough capacity to handle the demand associated with providing the freeway auxiliary lane. The addition of the second eastbound through lane improves a.m. peak hour operations

under Options B and C, such that the northbound ramps intersection improves to LOS E. Compared to Option A, the percent demand served during the p.m. peak hour improves with Option B and again with Option C; however, all intersections still operate at LOS F. The capacity constraint is the southbound ramps intersection. Traffic backs up on the eastbound approach waiting to turn right and on the westbound approach waiting to turn left onto the freeway on-ramp. This, in turn, causes the adjacent intersections to fail.

Option D was developed to address the operational problems found with Option C. Between the ramp intersections, two westbound left-turn lanes are provided and the number of eastbound through lanes is reduced to one. With these improvements, all intersections operate at LOS B or better in the a.m. peak hour and LOS B at the northbound ramps; however, the southbound ramps intersection is still at LOS F. To further improve the p.m. peak hour LOS, turn movements at Sheridan Avenue and Sarah Avenue were restricted as described below for Options C-1 and D-1. These revised options have better operations, but Option C-1 still has unacceptable levels of service at the northbound ramps intersection during both peak periods. Option D-1 is the only option that provides an acceptable LOS for all but one of the East 1st Avenue intersections and serves nearly 100% of the traffic demand.

Option E, the roundabout interchange option, has an acceptable LOS during the a.m. peak hour (LOS D or better). However, both roundabout intersections operate at LOS F during the p.m. peak hour caused by capacity constraints on the northbound off-ramp and eastbound East 1st Avenue. A revised option, Option E-1, which adds a right-turn bypass lane to the northbound off-ramp, was also analyzed. Although this improves the operation of the roundabout on the east side of the interchange to LOS B for both peak hours, the roundabout on the other side of the interchange continues to operate poorly, LOS E in the a.m. peak hour and LOS F in the p.m. peak hour.

Arterial Corridor Impacts

The traffic demand for East 1st Avenue is significantly higher for with-project conditions than for no-project conditions. Since East 1st Avenue is not planned to be widened to four lanes according to the City of Chico's General Plan, the forecasted traffic volumes will use the existing two-lane roadway. Due to capacity limitations outside the study area, East 1st Avenue may not be able to deliver the forecasted demand volumes to, or accept the forecasted demand volumes from, the project area. The possibility of capacity constraints on East 1st Avenue outside of the study area are discussed below.

The saturation flow rate for a lane of traffic at an intersection is about 1,900 vph. The actual capacity will be lower depending primarily on approach signal green time and roadway geometry (for example, providing left or right turn pockets). The demand volumes for East 1st Avenue at the study area boundaries vary from 830 to 1,610 vph, with most volumes near 1,100 vph (see Figures 5-7, 5-8, and 5-9). Although a quantitative analysis was not conducted for the adjacent intersections, congested conditions typically begin in the 1,200 vph range for major street approaches to signalized intersections on two-lane streets (this assumes a minor street critical movement volume of 300 vph since an intersection with two signal phases has a critical movement capacity of approximately 1,500 vph). For most locations, the volumes will not reach 1,000 vph until near the design year. However, the eastbound approach volume at Sheridan Avenue is already at 1,100 vph; so congestion could be a problem much sooner for this direction.

Table 5-17. 2027 Conditions—Intersection Level of Service, Delay^a, and Percent Served

Intersection	Control	No Project		Option A		Option B		Option C		Option C-1	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
East 1 st Avenue/ Sheridan Avenue	Two-way stop	D/33 95%	F/>50 80%	F/>50 91%	F/>50 79%	A/7 99%	F/>50 90%	A/6 101%	F/>50 92%	A/3 97%	A/5 100%
East 1 st Avenue/ Southbound SR 99	Signal	D/41 96%	F/>80 80%	F/>80 89%	F/>80 80%	B/15 96%	F/>80 88%	B/12 97%	F/>80 90%	A/10 94%	B/14 97%
East 1 st Avenue/ Northbound SR 99	Signal	E/60 96%	F/>80 80%	F/>80 92%	F/>80 88%	E/62 95%	F/>80 91%	E/58 97%	F/>80 92%	F/>80 92%	E/56 96%
East 1 st Avenue/ Sarah Avenue	Two-way stop	F/52 97%	F/>50 81%	F/>50 88%	F/>50 88%	F/>50 92%	F/>50 87%	F/>50 94%	F/>50 90%	F/>50 88%	D/52 97%
Intersection	Control	No Project		Option D		Option D-1		Option E		Option E-1	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
East 1 st Avenue/ Sheridan Avenue	Two-way stop	D/33 95%	F/>50 80%	A/7 100%	F/>50 90%	A/3 99%	F/>50 94%	C/20 99%	F/>50 88%	D/31 97%	F/>50 90%
East 1 st Avenue/ Southbound SR 99	Signal (yield) ^b	D/41 96%	F/>80 80%	B/13 99%	F/>80 91%	A/10 100%	C/23 95%	D/32 100%	F/>50 91%	E/47 97%	F/>50 92%
East 1 st Avenue/ Northbound SR 99	Signal (yield) ^b	E/60 96%	F/>80 80%	B/19 99%	C/22 95%	B/16 99%	C/21 97%	E/37 100%	F/>50 91%	B/13 99%	B/11 95%
East 1 st Avenue/ Sarah Avenue	Two-way stop	F/52 97%	F/>50 81%	A/6 99%	A/5 95%	A/2 99%	A/2 97%	C/22 99%	A/9 92%	B/12 98%	A/9 95%

Source: Fehr & Peers Associates 2003.

Note: Bold font indicates a level of service worse than the City of Chico's LOS D criteria.

^a Average control delay is measured in seconds/vehicle.

^b For Options E and E-1, the roundabout intersections are yield-controlled.

The resulting delays on East 1st Avenue will likely encourage motorists to divert to Palmetto Avenue or East 5th Street to reach the other side of the freeway.

Neal Dow Avenue, a two-lane collector street, intersects East 1st Avenue about 152.4 meters (500 feet) east of the northbound SR 99 ramps intersection. The existing intersection is controlled by a two-phase traffic signal (left-turns are permissive, not protected), and left-turn pockets are provided on East 1st Avenue. The demand volume is higher in the westbound direction, so if this approach became congested, the queue would extend back into the SR 99 interchange. A long westbound queue would interfere with signal operations at the interchange (under Options A–D) or potentially block a roundabout intersection (Option E). Since Neal Dow Avenue is a minor street, East 1st Avenue should receive the majority of the green time so that the westbound approach will not be congested. If problems do occur, the intersection could be improved by coordinating the signal with the interchange signals, revising the signal phasing to provide protected left turns, adding lanes to the intersection approaches, or replacing the signal with a roundabout (particularly for Option E).

Sherman Avenue/Mildred Avenue intersects East 1st Avenue about 365.8 meters (1,200 feet) west of the southbound SR 99 intersection. Similar to Neal Dow Avenue, the intersection is signalized, operates with permissive left turns, and has left-turn pockets on East 1st Avenue. This intersection needs to deliver 1,610 vph to the eastbound direction during the p.m. peak hour to meet the forecasted demand. Although the demand volumes for Sherman Avenue and Mildred Avenue are likely to be low since these streets serve low-density residential neighborhoods, any interruption for the eastbound approach will likely prevent the full volume from being served. Therefore, the Sherman Avenue/Mildred Avenue may serve as a constraint and limit the volume that can enter the study area on eastbound East 1st Avenue.

The next major intersection on East 1st Avenue west of SR 99 is at Mangrove Avenue, which is about 762 meters (2,500 feet) from the freeway. Under current conditions, the intersection is congested and long queues occur on the westbound approach during the p.m. peak hour. The City of Chico plans to widen the approaches to this intersection in the near future to reduce the existing congestion. The intersection operations were analyzed to determine if the additional traffic delivered by the interchange improvements can be accommodated and the forecasted demand be delivered to the freeway (see Table 5-18). Under no-project conditions (that is, the Mangrove Avenue intersection is widened, but the SR 99 auxiliary lane is not built and the East 1st Avenue interchange is not improved), the p.m. peak-hour LOS is C. With the additional traffic under with-project conditions, the LOS drops to D; however, this is within the City's LOS criteria. The maximum queue for the westbound approach at Mangrove Avenue is 99.1 meters (325 feet) under no-project conditions. Under with-project conditions, the maximum queue length more than doubles, to 213.36 meters (700 feet). Yet, this is much less than the 762 meters (2,500 feet) between Mangrove Avenue and SR 99; therefore, downstream traffic operations would not adversely affect the movement of vehicles at the East 1st Avenue interchange. Also, since about 100% of the traffic is served at the intersection, the high eastbound demand volume can be delivered to Sherman Avenue/Mildred Avenue and the freeway.

Table 5-18. 2027 P.M. Peak Hour Conditions—Mangrove Avenue Intersection

Alternative	LOS/Delay ^a	Average Maximum Queue Length (feet) ^b
No-Project	C/28	325
With-Project	D/36	700

Source: Fehr and Peers Associates 2002.

^a Average control delay is measured in seconds/vehicle.

^b Average maximum queue length for the westbound approach.

Conclusions

The freeway widening alternatives, Outside Widening and Inside Widening, have similar traffic operations in the design year (2027). The auxiliary lanes with ramp metering at the on-ramps provide enough capacity to handle the demand volumes that can reach the freeway section between SR 32 and East 1st Avenue. The improvements to the ramp tapers and grades should provide safer conditions and reduce the existing high accident rates on the freeway and ramps.

Of the options analyzed, Options D-1 and E-1 have the best traffic operations. Therefore, these two options are evaluated in the impact analyses that follow. The following list summarizes the differences in traffic operations between these two options:

- In terms of freeway operations, both perform similarly and operate acceptably although Option E-1 has a better LOS in the southbound direction during the p.m. peak hour since traffic is constrained at the roundabout on East 1st Avenue from entering the freeway.
- Intersection LOS is better with the signalized intersections under Option D-1: the ramp terminal intersections operate at LOS B or better during the a.m. peak hour and LOS C or better during the p.m. peak hour. In contrast, the southbound ramp intersection under Option E-1 operates at LOS E and F during the a.m. and p.m. peak hours, respectively.
- Although both Options D-1 and E-1 have similar travel times on East 1st Avenue during the p.m. peak hour, the a.m. peak hour travel times are up to 35 seconds longer for Option E-1.
- Both options have long queues on the eastbound approach to the interchange during the p.m. peak hour, but Option E-1 also has a long queue on the southbound off-ramp during the a.m. peak hour.

From an overall traffic operations standpoint, Option D-1 is slightly better than Option E-1.

Options D-1 and E-1 have different traffic safety considerations for East 1st Avenue.

- The roundabout intersections under Option E-1 reduce the possibility of severe accidents since vehicles must travel at a slower speed through the roundabout and the number of conflict points is reduced.
- Option D-1 gives pedestrians the right-of-way using traffic signals. The roundabouts in Option E-1 have uncontrolled pedestrian crossing which can be especially difficult for the visually-impaired to use.
- Based on a FHWA publication on roundabouts (U.S. Department of Transportation 2000), a study on roundabouts in 15 towns in France found that a higher percentage of accidents at roundabouts involved bicyclists than accidents at conventional intersections (7.3% of roundabout accidents involved bicyclists versus 3.7% of accidents at conventional

intersections). This report states, “At double-lane and larger roundabouts where bicycles are typically traveling on the outside part of the circulatory roadway, bicyclists face a potential conflict with exiting vehicles where the bicyclist is continuing to circulate around the roundabout...Bicyclists are less visible and therefore more vulnerable to the merging and exiting conflicts that happen at double-lane roundabouts.”

From a safety standpoint, Option E-1 may result in fewer severe vehicular accidents, although Option D-1 may be safer for visually-impaired pedestrians.

5.1.5 Significance Thresholds

Acceptable levels of service as defined below are based on Caltrans’ policy for SR 99 and Policies T-G-11 and T-G-12 of the City of Chico General Plan (see the “Minimum Acceptable Levels of Service” section above). An impact is considered to be significant if any of the following would occur.

- Project implementation changes the LOS on any component of SR 99 (mainline, weaving segments, or ramp junctions) from acceptable levels (LOS A, B, C, D, and E) to an unacceptable level (F), or worsens an unacceptable level
- Project implementation changes LOS at the East 1st Avenue intersections in the study area from acceptable levels (LOS A, B, C, and D) to unacceptable levels (LOS E and F), or worsens an unacceptable LOS
- Project implementation disrupts existing or planned transit operations and facilities of the Chico Area Transit System
- Project implementation disrupts existing or planned bicycle or pedestrian facilities contained in the City of Chico General Plan
- Project construction results in unacceptable traffic safety concerns
- Project implementation substantially increases hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (such as farm equipment)
- Project implementation results in inadequate emergency access
- The project is in conflict with adopted policies, plans, or programs supporting alternative transportation (such as bus turnouts and bicycle racks)

Impact T1: Construction-Related Safety Concerns

Outside Widening Alternative with Option D-1 or E-1

During construction of the proposed improvements, motorists, bicyclists, and pedestrians may experience delays and be required to take alternative routes to their destinations. This impact is considered significant since the proposed project has the potential to result in temporary construction-related safety concerns. Implementation of Mitigation Measure LU3a is expected to reduce this impact to a less-than-significant level since it would ensure that an adequate level of traffic safety is maintained throughout construction.

Mitigation Measure LU3a: Implement a Traffic Management Plan

See Impact LU3 for a description of this mitigation measure.

Inside Widening Alternative with Option D-1 or E-1

This alternative would result in the same impact and require the same mitigation as the Outside Widening Alternative.

Impact T2: Existing with Project—Acceptable LOS for the Freeway

Outside Widening Alternative with Option D-1 or E-1

The freeway weaving sections would operate at LOS B in the a.m. peak hour and LOS C in the p.m. peak hour under existing conditions with the construction of the auxiliary lanes (Table 5-8). The project would not degrade existing LOS (which is E during the p.m. peak hour in the northbound direction) from an acceptable to an unacceptable level. Therefore, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

Inside Widening Alternative with Option D-1 or E-1

This alternative would result in the same impact as the Outside Widening Alternative.

Impact T3: Existing with Project—Acceptable LOS at All Arterial Intersections

Outside Widening Alternative with Option D-1 or E-1

As shown in Table 5.4-11, all study intersections would operate at LOS B or better during both the a.m. and p.m. peak hours under Option C. Similar or better operations would occur under Option D-1 which has a higher capacity than Option C at all study intersections. Construction of the Option D-1 improvements would improve a.m. and p.m. peak-hour traffic operations compared to existing conditions, under which LOS E occurs at the Sheridan Avenue intersection during the p.m. peak hour. The project would not degrade existing LOS from an acceptable to an unacceptable level (the minimum acceptable LOS is considered E for the East 1st Avenue intersections). Therefore, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

Inside Widening Alternative with Option D-1 or E-1

This alternative would result in the same impact as the Outside Widening Alternative.

Impact T4: Existing with Project—Disruption in Class III Bicycle Route on Sheridan Avenue

Outside Widening Alternative with Option D-1 or E-1

The proposed project includes providing bicycle lanes (Class II facilities) along East 1st Avenue within the project boundaries. In addition, sidewalks will be maintained on both sides of the East 1st Avenue undercrossing. However, the proposed project would cause a discontinuity in the

existing Class III bicycle route on Sheridan Avenue as shown in the *Chico Urban Area 1998 Bicycle Plan*. Option D-1 prohibits through movements from Sheridan Avenue at East 1st Avenue to improve capacity and safety. Therefore, this impact is considered to be significant since an existing bicycle route would be disrupted. Implementation of Mitigation Measure T4a is expected to reduce this impact to a less-than-significant level since it would provide a continuous bicycle route from East Fifth Avenue to Palmetto Avenue parallel to the existing route on Sheridan Avenue.

Mitigation Measure T4a: Relocate the Class III Bicycle Route to Sherman Avenue/Mildred Avenue

The existing Class III bicycle lane on Sheridan Avenue between East Fifth Avenue and Palmetto Avenue would be relocated one block west to Sherman Avenue to avoid the vicinity of the SR 99 interchange. This would involve removing the bicycle route signs on Sherman Avenue and placing them on the relocated route. This alternate route starts at East Fifth Avenue at the north end and follows Sherman Avenue to East 1st Avenue. The route crosses East 1st Avenue at a signalized intersection and follows Mildred Avenue, Marguerite Avenue, and Macy Avenue before reaching Palmetto Avenue.

Inside Widening Alternative with Option D-1 or E-1

This alternative would result in the same impact and require the same mitigation as the Outside Widening Alternative.

Impact T5: 2007—Acceptable LOS for the Freeway

Outside Widening Alternative with Option D-1 or E-1

The freeway weaving sections would operate at LOS C in the p.m. peak hour under 2007 conditions with the construction of the auxiliary lanes (Table 5-11). Under 2007 no-project conditions, the northbound freeway operates at LOS F during the p.m. peak hour. The project would not degrade existing or 2007 no-project LOS from an acceptable to an unacceptable level. Therefore, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

Inside Widening Alternative with Option D-1 or E-1

This alternative would result in the same impact as the Outside Widening Alternative.

Impact T6: 2007—Acceptable LOS at All Arterial Intersections

Outside Widening Alternative with Option D-1 or E-1

As shown in Table 5-12, all study intersections would operate at LOS B or better during both the a.m. and p.m. peak hours under Option C. Similar or better operations would occur under Option D-1 which has a higher capacity than Option C at all study intersections. Construction of the Option D-1 improvements would improve a.m. and p.m. peak-hour traffic operations compared to 2007 no-project conditions, under which LOS F occurs at the Sheridan Avenue and

southbound SR 99 ramps intersections during the p.m. peak hour. The project would not degrade existing or 2007 no-project LOS from an acceptable to an unacceptable level (the minimum acceptable LOS is considered E for the East 1st Avenue intersections). Therefore, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

Inside Widening Alternative with Option D-1 or E-1

This alternative would result in the same impact as the Outside Widening Alternative.

Impact T7: 2027—Acceptable LOS for the Freeway

Outside Widening Alternative with Option D-1

The freeway weaving sections would operate at LOS D or better in the a.m. peak hour and LOS E in the p.m. peak hour under 2027 conditions with the construction of the auxiliary lanes (Table 5-15). Under 2027 no-project conditions, the northbound freeway operates at LOS F during the p.m. peak hour. The project would not degrade existing or 2007 no-project LOS from an acceptable to an unacceptable level. Therefore, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

Outside Widening Alternative with Option E-1

As shown in Table 5-15, this alternative would operate at LOS D or better during the a.m. peak hour and LOS E or better during the p.m. peak hour. The p.m. peak hour LOS is better than the LOS for Option D-1 in the southbound direction during the p.m. peak hour. The project would not degrade existing or 2007 no-project LOS from an acceptable to an unacceptable level. Therefore, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

Inside Widening Alternative with Option D-1 or E-1

This alternative would result in the same impacts associated with D-1 or E-1 as the Outside Widening Alternative.

Impact T8: 2027—Improved LOS at Arterial Intersections

Outside or Inside Widening Alternative with Option D-1

As shown in Table 5-17, all study intersections would operate at LOS B or better during the a.m. peak hours under Option D-1. During the p.m. peak hour, all intersections except Sheridan Avenue would operate at LOS C or better.

Under Option D-1, the East 1st Avenue/Sheridan Avenue intersection would operate at LOS F during the p.m. peak hour resulting from queues on the eastbound approach to the southbound SR 99 ramps intersection that frequently block the eastbound and northbound movements at this intersection. Table 5-17 indicates that LOS F would occur at this intersection even under no-project conditions due to background growth that is expected to occur by 2027. The proposed project would improve traffic operations by increasing the percent of vehicles served at this intersection from 80% under no-project conditions to 94% under Option D-1.

The queues at the East 1st Avenue/Sheridan Avenue intersection mostly affect the northbound Sheridan Avenue approach, which individually operates at LOS F. However, this approach has a relatively low volume of 155 vph compared to 1,575 vph for the eastbound East 1st Avenue approach. The other approaches to the intersection, including both East 1st Avenue approaches, operate at LOS C or better. Although the Sheridan Avenue intersection operates at LOS F on average, the majority of the vehicles passing through the intersection experience LOS C or better conditions.

In summary, construction of the Option D-1 improvements would improve a.m. and p.m. peak-hour traffic operations compared to existing and 2007 no-project conditions at the signalized SR 99 ramp intersections. Option D-1 would slightly improve traffic operations at the northbound Sheridan Avenue approach to East 1st Avenue, but this intersection would degrade from LOS E (under existing conditions as indicated in Table 5-5) to F due to increases in background growth. This impact is considered to be less than significant since the project would result in acceptable LOS at all intersections except at the East 1st Avenue/Sheridan Avenue intersection, where it would improve traffic operations.

Mitigation Measure

None proposed.

Impact T9: 2027—Unacceptable LOS at the East 1st Avenue/Southbound SR 99 Ramp Intersection

Outside or Inside Widening Alternative with Option E-1

As shown in Table 5-17, the LOS for the southbound SR 99 ramps intersection is at E during the a.m. peak hour. According to General Plan policy, this may be considered acceptable since the area is built-out and served by transit. The southbound SR 99 ramp intersection would operate at LOS F during the p.m. peak hour. This intersection operation deficiency is caused by insufficient capacity for the eastbound approach to the roundabout intersection at the southbound SR 99 ramps. Therefore, peak-hour conditions would spread to multiple hours.

Table 5-17 shows that the East 1st Avenue/Sheridan Avenue intersection would operate at LOS F under both no-project conditions and with Option E-1. As noted under Impact T8, this degradation from E under existing conditions to F is caused by background growth. The project would increase the percent of vehicles served from 80 to 90.

This impact is considered to be significant since the southbound SR 99 ramp intersections would operate at LOS F under Option E-1 (the minimum acceptable LOS is E). This impact can be reduced to less than significant with Mitigation Measure T9a.

Mitigation Measure T9a: Construct Option D-1

The LOS at the southbound SR 99 ramps intersection can be improved to acceptable levels during both peak periods with the construction of Option D-1. The measure replaces the double-lane roundabouts at the ramp intersections with signals and a six-lane roadway at the East 1st Avenue undercrossing.

5.1.6 No-Project Alternative

The No-Project Alternative would not result in any construction-related impacts since no improvements would occur. Permanent impacts associated with the No-Project Alternative are described below.

Unacceptable freeway operations under the No-Project Alternative in 2007 are expected to occur in the northbound direction during the p.m. peak hour. The LOS F conditions result from long traffic queues on the northbound off-ramp to East 1st Avenue and weaving conditions between the SR 32 on-ramp and the East 1st Avenue off-ramp. The proposed freeway auxiliary lane and northbound off-ramp intersection widening (which are included under all interchange design options) would provide LOS C or better which are acceptable traffic operations.

Table 5-12 shows that under the No-Project Alternative in 2007, the Sheridan Avenue and southbound SR 99 ramps intersections would operate at LOS F during the p.m. peak hour. Therefore, peak-hour conditions would spread to multiple hours. Any of the proposed interchange design options except Option A would provide acceptable peak-hour intersection operations. Of these options, Option B would be least costly.

Unacceptable freeway operations under the No-Project Alternative in 2027 are expected to occur in the northbound direction during the a.m. peak hour and both southbound and northbound directions during the p.m. peak hour. The LOS F conditions result from traffic long queues on the northbound off-ramp to East 1st Avenue and weaving conditions between SR 32 and East 1st Avenue interchanges. All proposed design options would result in acceptable freeway LOS in 2027.

Table 5-17 shows that under the No-Project Alternative in 2027, the northbound SR 99 ramps intersection would operate at LOS E and the Sarah Avenue intersection would operate at LOS F during the a.m. peak hour. During the p.m. peak hour, all study intersections would operate at LOS F and only about 80% of the demand volume would be served. Therefore, peak-hour conditions would spread to multiple hours. Option D-1 would provide the best intersection operations of the build alternatives. Under Option D-1, all intersections would operate at LOS B or better in the a.m. peak hour, and all but one intersection (at East 1st Avenue/Sheridan Avenue where the LOS would be F) would operate at LOS C or better in the p.m. peak hour. The degradation in LOS at the East 1st Avenue/Sheridan Avenue intersection is caused by background growth.

Chapter 6 Air Quality

The information below is summarized from the project Air Quality Technical Report (Jones & Stokes 2003a); this report is available for review at BCAG offices. This chapter addresses construction-related and operational emissions.

6.1 Setting

6.1.1 Physical Setting

Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The following discussion describes relevant characteristics of the air basin and offers an overview of conditions affecting pollutant ambient air concentrations in the basin.

Climate and Topography

The project is located in Chico, in Butte County, in the Northern Sacramento Valley Air Basin (NSVAB). Chico lies in the middle of the Sacramento Valley, 160.1 kilometers (100 miles) northeast of Sacramento and 70.1 meters (230 feet) above sea level. The area has a moderate year-round climate where the average daily temperature remains above freezing and winds have a mean hourly speed of 16.1 kilometers (10 miles) per hour. The average annual temperature is around 62°F, and the annual precipitation averages about 66.0 centimeters (26 inches).

The NSVAB may be described as a bowl, bound on the north and west by the Coastal Mountain Ranges and on the east by the southern portion of the Cascade Range and the northern portion of the Sierra Nevada. These mountain ranges reach heights in excess of 1,828.8 meters (6,000) feet above sea level. During summer, the wide, flat expanse of the Sacramento Valley provides an ideal environment for the formation of photochemical smog. In addition, the prevailing winds in the Sacramento Valley blow from south to north, driven by the marine air traveling through the Carquinez Strait. These winds can transport pollutants from the broader Sacramento area and from the San Francisco Bay Area to the NSVAB. The mountain ranges that surround the NSVAB provide a physical barrier to continued movement of the air mass, thereby significantly hindering the dispersal of pollutants.

6.1.2 Regulatory Setting

The proposed project is located in the Butte County Air Quality Management District (BCAQMD). The BCAQMD has jurisdiction over air quality issues throughout the county. It administers air quality regulations developed at the federal, state, and local levels. Federal, state, and local air quality regulations applicable to the proposed project are described below.

Federal Requirements

The federal Clean Air Act (CAA), enacted in 1970 and amended twice thereafter (including the 1990 amendments), establishes the framework for modern air pollution control. U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards

(NAAQS) for criteria pollutants (Table 6-1). Criteria pollutants include carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, ozone, particulate matter less than or equal to 10 microns in diameter (PM10), particulate matter less than or equal to 2.5 microns in diameter (PM2.5), and lead. O₃, PM10, and PM2.5 generally are considered to be regional pollutants because they or their precursors affect air quality on a regional scale. Pollutants such as CO, nitrogen dioxide, sulfur dioxide, and lead are considered to be local pollutants because they tend to accumulate in the air locally. PM10 and PM2.5 also are considered to be localized pollutants.

Areas are classified as either *attainment* or *nonattainment* with respect to state and federal ambient air quality standards. These classifications are made by comparing actual monitored air pollutant concentrations to state and federal standards. Table 6-1 summarizes the attainment status of Butte County for each pollutant. Table 6-2 summarizes the local air quality monitoring data taken from the monitors in Chico.

The CAA requires states to submit a state implementation plan (SIP) for areas designated as nonattainment for federal air quality standards. The SIP, which is reviewed and approved by EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to denial of federal funding and permits. In cases where the SIP is submitted by the state but fails to demonstrate achievement of the standards, EPA is directed to prepare a federal implementation plan.

Transportation Conformity

The concept of transportation conformity was introduced in the 1977 federal CAA. Transportation conformity requires that no federal dollars be used to fund a transportation project unless it can be clearly demonstrated that the project would not cause or contribute to violations of the NAAQS. Conformity requirements were made substantially more rigorous in the CAA amendments of 1990, and the transportation conformity regulation that details implementation of the new requirements was issued in November 1993. Typically, conformity for transportation projects is assessed by evaluating whether a project is included in a conforming RTP and transportation improvement program (TIP).

State Requirements

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the California Air Resources Board (ARB) and local air pollution control districts. State standards are to be achieved through district-level air quality management plans that are incorporated into the SIP.

The California CAA requires local and regional air pollution control districts that are not attaining one or more of the state ambient air quality standards for ozone, CO, sulfur dioxide, or nitrogen dioxide to expeditiously adopt plans specifically designed to attain these standards. Each plan must be designed to achieve an annual 5% reduction in districtwide emissions of each nonattainment pollutant or its precursors.

Recently enacted amendments to the California CAA impose additional requirements designed to ensure an improvement in air quality within the next 5 years. More specifically, local districts with moderate air pollution that did not achieve "transitional nonattainment" status by December

Table 6-1. Ambient Air Quality Standards Applicable in California and the Attainment Status of Butte County

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Butte County	
			California	National	California	National	California	National	California	National
Ozone	O ₃	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years	Nonattainment	Nonattainment
		8 hours	NA	0.08	NA	157	NA	If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded	No state standard	No designation
Carbon monoxide (Lake Tahoe only)	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Unclassified/ attainment
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Unclassified/ attainment
		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA	NA	NA
Nitrogen dioxide	NO ₂	Annual average	NA	0.053	NA	100	NA	If exceeded	No state standard	Attainment
		1 hour	0.25	NA	470	NA	If exceeded	If exceeded	Attainment	No federal standard
Sulfur dioxide	SO ₂	Annual average	NA	0.03	NA	80	NA	If exceeded	No state standard	Attainment
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment
		1 hour	0.25	NA	655	NA	NA	NA	Attainment	No federal standard
Hydrogen sulfide	H ₂ S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA	Unclassified	No federal standard
Vinyl chloride	C ₂ H ₃ Cl	24 hours	0.010	NA	26	NA	If equaled or exceeded	NA	No designation	No federal standard
Inhalable particulate matter	PM10	Annual geometric mean	NA	NA	20	NA	If exceeded	NA	Nonattainment	No federal standard
		Annual arithmetic mean	NA	NA	NA	50	NA	If exceeded	No state standard	Unclassified
		24 hours	NA	NA	50	150	If exceeded	If average 1% over 3 years is exceeded	Nonattainment	Unclassified
	PM2.5	Annual geometric mean	NA	NA	12	NA	If exceeded	NA	No designation	No federal standard
		Annual arithmetic mean	NA	NA	NA	15	NA	If exceeded	No state standard	No designation
		24 hours	NA	NA	NA	65	NA	If average 2% over 3 years is exceeded	No state standard	No designation
Sulfate particles	SO ₄	24 hours	NA	NA	25	NA	If equaled or exceeded	NA	Attainment	No federal standard
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year	No state standard	No designation
		30 days	NA	NA	1.5	NA	If equaled or exceeded	NA	Attainment	No federal standard

Source: ARB, "Area Designations for State and National Ambient Air Quality Standards."

Notes: All standards are based on measurements at 25°C and 1 atmosphere pressure.

National standards shown are the primary (health effects) standards.

NA = not applicable.

31, 1997 must implement the more stringent measures applicable to districts with serious air pollution.

Local and Regional Implementation of Federal Requirements

The air quality management agencies of direct importance to Butte County include EPA, ARB, and the BCAQMD. EPA has established federal ambient air quality standards for which ARB and the BCAQMD have primary implementation responsibility. ARB and the BCAQMD are also responsible for ensuring that state ambient air quality standards are met. BCAG develops the RTP in consultation with the BCAQMD. The RTP includes projects that strive to meet the goals and objectives of the NAAQS.

Because of the regional nature of the ozone conditions in the Sacramento Valley, the BCAQMD is also coordinating efforts with the Sacramento Valley Air Basin Control Council's Technical Advisory Committee, the Sacramento Area Council of Governments, and the Sacramento Metropolitan AQMD.

Existing Air Quality Conditions

Air quality monitoring data for the Chico area are summarized in Table 6-2. These data are the most recent available, from the 1999–2001 monitoring period. Chico experienced occasional violations of the state ozone standard during the 3-year monitoring period. The federal and state CO standards were not violated. The state 24-hour PM10 standard was violated about 10% of the time in Chico; the state annual PM10 standard of 20 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) was also exceeded. The federal 24-hour standard for PM2.5 was exceeded three times during the monitoring period.

If a pollutant concentration is lower than the state or federal standard, the area is classified as being in attainment for that pollutant. If a pollutant violates the standard, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified. Butte County is classified as a nonattainment area for the state and federal ozone standards and the state PM10 standard.

**Table 6-2. Ambient Air Quality Monitoring Data from
Chico-Manzanita Avenue Monitoring Station**

Pollutant Standards		1999	2000	2001
Ozone (O₃)				
	Maximum 1-hour concentration (ppm)	0.135	0.096	0.098
	Number of Days Standard Exceeded			
	NAAQS (1-hour) > 0.12 ppm	1	0	0
	CAAQS (1-hour) > 0.09 ppm	7	1	1
Carbon Monoxide (CO)				
	Maximum 8-hour concentration (ppm)	5.4	4.0	4.3
	Maximum 1-hour concentration (ppm)	7.1	5.2	6.4
	Number of Days Standard Exceeded			
	NAAQS (8-hour) ≥ 9.0 ppm	0	0	0
	NAAQS (1-hour) ≥ 35 ppm	0	0	0
	CAAQS (8-hour) ≥ 9.0 ppm	0	0	0
	CAAQS (1-hour) ≥ 20 ppm	0	0	0
Particulate Matter (PM₁₀)				
	Maximum 24-hour concentration (µg/m ³)	95.0	81.0	105.0
	2 nd highest 24-hour concentration (µg/m ³)	81.0	77.0	101.0
	Average arithmetic mean concentration (µg/m ³)	28.6	27.4	28.0
	Average geometric mean concentration (µg/m ³)	26	24	24
	Number of Days Standard Exceeded			
	NAAQS (24-hour) > 150 µg/m ³	0	0	0
	CAAQS (24-hour) > 50 µg/m ³ *	7	9	5
Particulate Matter (PM_{2.5})				
	Maximum 24-hour concentration (µg/m ³)	73.0	98.0	65.0
	2 nd highest 24-hour concentration (µg/m ³)	60.0	70.0	56.0
	Average arithmetic mean concentration (µg/m ³)	17.5	15.8	13.0
	Number of Days Standard Exceeded			
	NAAQS (24-hour) > 65 µg/m ³	1	2	0

Source: California Air Resources Board 2002; Environmental Protection Agency 2002.

*Recorded every 6 days.

Ozone

Ozone is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, called reactive organic gases (ROG), and oxides of nitrogen (NO_x) react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem.

Ozone is a regional pollutant. Because photochemical reactions take time to occur, high ozone levels often occur downwind of the emission source. Because the predominant wind direction in the Sacramento Valley is from the south, Butte County is a receptor of regional pollutants, such as ozone, from the Sacramento area. Ozone conditions in Butte County therefore result from a combination of locally generated emissions and transported emissions.

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period. EPA

recently replaced the 1-hour ozone standard with an 8-hour standard of 0.08 ppm, with the exception of areas classified as nonattainment for ozone, which must also attain the 1-hour ozone standard.

Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, whereas the federal 1-hour standard is 35 ppm. Both state and federal standards for the 8-hour averaging period are 9 ppm.

Inhalable Particulate Matter

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials.

PM10 sources in the NSVAB comprise both rural and urban sources, including agricultural burning, discing of agricultural fields, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

The federal and state ambient air quality standard for particulate matter applies to two classes of particulates: PM2.5 and PM10.

The state PM10 standards are 50 μm^3 as a 24-hour average and 20 μm^3 as an annual geometric mean. The federal PM10 standards are 150 μm^3 as a 24-hour average and 50 μm^3 as an annual arithmetic mean. The federal PM2.5 standards are 15 μm^3 for the annual average and 65 μm^3 for the 24-hour average. On June 20, 2002, the ARB adopted a new annual PM2.5 standard of 12 μm^3 for the 24-hour averaging period.

6.2 Environmental Impacts and Mitigation Measures

6.2.1 Methodology

The proposed project would generate construction-related and operational emissions. The methodology used to evaluate construction and operational effects is described below.

Construction Impact Assessment Methodology

Construction is a source of dust and exhaust emissions, which can have substantial temporary impacts on local air quality (i.e., exceed state air quality standards for PM10). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut and fill operations, and the construction of roadways. Dust emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A major portion of dust emissions for the proposed project would likely be caused by construction traffic on temporary construction roads.

Construction emissions are estimated by using the road construction model. The road construction 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. 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.

Emission thresholds are contained in the Indirect Source Review Guidelines produced by BCAQMD (Butte County Air Quality Management District 1997). BCAQMD has three levels of emission thresholds, as described below, and depending on the emissions produced from the proposed project, different mitigation measures are required at different levels. Emission thresholds are presented in Table 6-3.

- **Level A:** Indirect sources which have the potential to emit less than 25 pounds per day of ROG or NO_x, or less than 80 pounds per day of PM10, would be subject to the recommended list of standard mitigation measure unless exempted in writing by the applicable planning agency. The project proponent would be required to coordinate with the planning agencies to identify feasible mitigation measures.
- **Level B:** Indirect sources which have the potential to emit 25 pounds per day of ROG or NO_x, or 80 pounds per day of PM10, would select as many supplemental mitigation measures as are feasible, in addition to the recommended list of standard mitigation measures. The project proponent would be required to coordinate with the planning agencies to identify feasible mitigation measures.
- **Level C:** Indirect sources which have the potential to emit 137 pounds per day or greater of ROG, NO_x, or PM10, would select as many supplemental mitigation measures as are feasible, in addition to the recommended list of standard mitigation measures. The project proponent would be required to coordinate with the planning agencies to identify feasible mitigation measures. Depending on factors specific to the project, an environmental impact report may also be necessary under CEQA.

Table 6-3. Emission Thresholds (pounds/day)

Level	ROG	NO _x	PM10
A	<25	<25	<80
B	>25<137	>25<137	>80<137
C	>137	>137	>137

Source: Butte County Air Quality Management District 1997.

Operational Impact Assessment Methodology

The primary operational emissions associated with the proposed project are CO, PM₁₀, ROG and NO_x emitted as vehicle exhaust. The effects of CO emissions were evaluated through CO dispersion modeling, as described below. The effects of PM₁₀ and ozone precursors (ROG and NO_x) were evaluated through the conformity process, as described below.

Carbon Monoxide Dispersion Modeling

Predicting the ambient air quality impacts of pollutant emissions requires an assessment of the transport, dispersion, chemical transformation, and removal processes that affect pollutant emissions after their release from a source. Gaussian dispersion models are frequently used for such analyses. The term "Gaussian dispersion" refers to a general type of mathematical equation used to describe the horizontal and vertical distribution of pollutants downwind from an emission source.

The ambient air quality effects of traffic emissions were evaluated using the CALINE4 dispersion model (Benson 1989). CALINE4 is a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway link analyzed in the model is treated as a sequence of short segments. Each segment of a roadway link is treated as a separate emission source producing a plume of pollutants which disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments.

Traffic volumes and operating conditions used in the modeling were obtained from the traffic analysis prepared for this project (Fehr & Peers Associates 2003). CO modeling was conducted using p.m. peak-hour traffic volumes.

CO modeling was performed for the following scenarios at the following locations since they operate at LOS D or worse based on the project traffic analysis. (The construction year was not modeled because all intersections and links are expected to have LOS C or better and, therefore, there would not be enough vehicle idling to cause any air quality impacts.):

- Option D-1 at East 1st Avenue/Sheridan Avenue – 2027
- Option E-1 at East 1st Avenue/Sheridan Avenue – 2027
- Option E-1 at East 1st Avenue/SR 99 southbound on- and off-ramps – 2027

Option D-1 calls for widening the SR 99 ramp intersections with East 1st Avenue with signalized intersections. Through and left-turn movements from Sheridan and Sarah Avenues, left-turns to Sheridan Avenue, and westbound left-turns to Sarah Avenue would be prohibited under option D-1. Option E-1 calls for the construction of double-lane roundabouts at East 1st Avenue; a right-turn bypass lane is also provided at the northbound off-ramp.

CO concentrations were estimated at 6 receptor locations located near the intersections. Receptors were chosen based on the CO protocol developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997). Figure 6-1 shows the modeling network and receptors used for the proposed interchange analysis. Receptor heights were set at 5.9 feet.

The project Air Quality Technical Report contains more detailed information on the modeling process.

Transportation Conformity

The proposed project is located in an area designated nonattainment for the federal O₃ precursor standards. Because O₃ precursors are regional pollutants, the proposed project must be evaluated under the transportation conformity requirements described earlier. An affirmative regional conformity determination must be made before the proposed action can proceed. Such a determination is not required if the proposed action is described in the approved RTP and the TIP and has not been altered in design concept or scope. As noted under Impact AQ3, the proposed action is included in an approved and conforming MTP and MTIP, and the design concept and scope of the proposed action have not been changed since the action was evaluated as part of the MTP.

6.2.2 Significance Thresholds

Appendix G of the State CEQA Guidelines provides guidance for evaluation of project effects on air quality. Based on these guidelines and professional standards, the proposed project would result in a significant impact on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality management plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

In addition to the above significant criteria, emission thresholds are contained in the Indirect Source Review Guidelines produced by BCAQMD (Butte County Air Quality Management District 1997), as described above in the “Methodology” section.

Impact AQ1: Temporary Increase in ROG, NO_x, and PM₁₀ Construction-Related Emissions during Grading and Construction Activities

Outside and Inside Widening Alternatives

Implementation of either the Outside or Inside Widening Alternative would result in the construction of new roads and embankments, as well as intersection improvements. Typically, there are four activities associated with road construction: 1) grubbing/land clearing, 2) grading/excavation, 3) drainage/utilities/sub-grade, and 4) paving. The construction is broken down into 3 phases and the emissions estimate associated with each phase would be similar. The road construction model was used to estimate construction-related ROG, NO_x, and PM₁₀ emissions and the results are shown in Table 6-4. These emissions exceed the Level A and Level B significance thresholds for criteria pollutants. This impact is considered to be significant.

Implementation of Mitigation Measure AQ1a is required by BCAQMD as mitigation to reduce construction emissions to less than significant.

Table 6-4. Construction Emission Estimates (pounds/day)

Construction Phase	ROG	NO _x	PM ₁₀
Grubbing/land clearing	5	31	11
Grading/excavation	14	97	14
Drainage/utilities/sub-grade	2	20	1
Paving	3	24	1
Maximum	14	97	14

Source: Road Construction Model Version 4.1.

Note: PM₁₀ estimates assume 50% control of fugitive dust from watering and associated dust control measures.

Mitigation Measure AQ1a: Implement Construction Mitigation Measures to Reduce Construction Emissions, as Required by BCAQMD

BCAG, Caltrans, or the contractor shall ensure that the following measures are implemented during construction of the proposed project:

I. PM₁₀ Controls:

- a. Use alternatives to open burning of vegetative material on the project site unless otherwise deemed infeasible by BCAQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel.
- b. Use adequate dust control measures that are implemented in a timely and effective manner during all phases of project development and construction.
- c. Water all active construction sites at least twice daily. The frequency of watering should be based on the type of operation, soil, and wind exposure.
- d. Use chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- e. Limit the speed of on-site vehicles to 15 miles per hour (mph) on unpaved roads.
- f. Suspend land clearing, grading, earth moving, or excavation activities when winds exceed 20 mph.
- g. Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut-and-fill operations, and hydroseed the area.
- h. Treat constructed slopes with erosion control measures, including planting vegetation cover, after they are completed.
- i. Cover inactive storage piles.
- j. During initial grading, earth moving, or site preparation, construct a construction entrance similar to the Caltrans Temporary Erosion Control Detail (part of the Caltrans Erosion

Control Best Management Practices) where construction equipment leaves paved areas. This detail utilizes a layer of crushed rock at entrances to minimize dust and the tracking of dirt in areas adjacent to the work area.

- k. Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person will respond and take corrective action within 24 hours. The telephone number of BCAQMD will also be visible to ensure compliance with BCAQMD Rules 201 and 207 (Nuisance and Fugitive Dust Emissions).
- l. Before project completion, demonstrate that all ground surfaces are covered or treated sufficiently to minimize fugitive dust emissions.

II. Streets:

- a. To minimize idling time, institute temporary traffic control as appropriate during all phases of construction to improve traffic flow as deemed appropriate by the City of Chico Department of Public Works and/or Caltrans.
- b. To minimize idling time, schedule construction activities that affect traffic flow to off-peak hours as much as practicable.

Impact AQ2: No Violations of CO NAAQS

Outside and Inside Widening Alternatives

CO concentrations were estimated for six sensitive receptor locations, including residences and other locations where individuals could be exposed. Sensitive receptors were identified during a project site visit.

Table 6-5 summarizes the CO modeling results for the Outside and Inside Widening Alternatives. No violations of either the 1-hour or the 8-hour CO state standard would occur under any of the future conditions scenarios. On the basis of assumptions about improvements in vehicle emission technology and the turnover in the vehicle fleet, estimated future CO concentrations for each project condition and averaging time would be well below the thresholds established for the state and federal ambient CO standards. Therefore, this impact is considered to be less than significant.

Table 6-5. CO Modeling Concentrations (ppm) Results

Receptors ^a	Option D-1 - 2027		Option E-1 - 2027	
	1-hour	8-hour	1-hour	8-hour
1	7.6	5.6	8.4	6.1
2	7.5	5.5	8.6	6.3
3	7.7	5.7	9.1	6.6
4	7.1	5.2	9.7	7.1
5	6.8	5.0	8.0	5.9
6	6.7	5.0	7.9	5.8
Ambient Standards	20 ^b	9.0	20 ^b	9.0

Note: Background concentrations of 6.2 ppm and 4.6 ppm were added to the modeling 1-hour and 8-hour results, respectively.

^b The federal 1-hour standard is 35 ppm.

^a See Figure 6-1 for location of receptors.

Mitigation Measure

None proposed.

Impact AQ3: Transportation Conformity Achieved

Outside Widening Alternative

The proposed project is included in the adopted Butte County Regional Transportation Plan, 2001–2025 (RTP) (Butte County Association of Governments 2001) and the approved 2002 Federal Transportation Improvement Program (FTIP) (approved by FHWA on October 4, 2002). Table 5-4 of the RTP identifies the proposed project as “auxiliary lanes SR 32 to East 1st; widen East 1st Avenue.” Page 16 of the FTIP identifies it as “Butte 99 Chico Aux. Lanes/Intersection (Chico-On SR 99 between SR 32 and East 1st Avenue and at East First Avenue – Widen ramps, construct aux. lanes, intersection improvements”. Therefore, the design concept and scope of the project have not changed from what was analyzed for air quality conformity, and the project is a conforming transportation project.

Mitigation Measure

None proposed.

6.2.3 No-Project Alternative

Under the No-Project Alternative, no interchange or intersection improvements would be constructed along SR 99 between SR 32 and East 1st Avenue. The No-Project Alternative would maintain the existing interchange and intersection configurations. Therefore, no construction-related emissions would occur.

Under this alternative, the project traffic study (Fehr & Peers Associates 2003) shows that the traffic volumes would be less than under options D-1 and E-1 with the same LOS. Therefore, no violations of CO NAAQS are expected under this alternative.

Chapter 7 Noise

The information below is summarized from the project Noise Study Report (Jones & Stokes 2003i); this report is available for review at BCAG offices. This report can be consulted for more information on environmental acoustics and definitions of commonly used noise terminology.

Because federal funds may be used for noise abatement, this chapter describes FHWA's noise analysis procedures that are used to determine the need for noise abatement and evaluates operational noise impacts under NEPA. This chapter also describes CEQA construction- and operations-related noise impacts based on the City of Chico's noise policies.

7.1 Setting

7.1.1 Regulatory Setting

Federal Highway Administration Regulations

23 CFR 772 provides procedures for conducting noise studies for highway projects and implementing noise abatement measures to help to protect the public health and welfare, supply noise abatement criteria (NAC), and establish requirements for information to be given to local officials for use in planning and designing highways. Under this regulation, noise abatement must be considered for a type 1 project if the project is predicted to result in a traffic noise impact. A type 1 project is defined in 23 CFR 772 as a federal or federal-aid highway project proposed for construction on a new location or the physical alteration of an existing highway that significantly changes the horizontal or vertical alignment or increases the number of through traffic lanes. FHWA has clarified its interpretation of type 1 projects by stating that a type 1 project is any project that has the potential to increase noise levels at adjacent receivers. This includes projects to add interchange, ramp, auxiliary, or truck-climbing lanes to an existing highway. A project to widen an existing ramp by a full lane width is also considered to be a type 1 project. Caltrans extends this definition to include state-funded highway projects. The project alternatives evaluated in this chapter are considered to be type 1 projects because they involve federal funding and adding auxiliary lanes to the existing mainline highway.

A traffic noise impact is considered to occur when the project results in a substantial noise increase or when the predicted noise levels approach or exceed the NAC specified in the regulation. 23 CFR 772 does not specifically define what constitutes a substantial increase or the term approach; instead, it leaves interpretation of these terms to the states.

Noise abatement measures that are reasonable and feasible and likely to be incorporated into the project, as well as noise impacts for which no apparent solution is available, must be identified before adoption of the final environmental document for a project. Table 7-1 summarizes FHWA's NAC.

Table 7-1. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level (dBA- $L_{eq}[h]$)	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 Exterior	Developed lands, properties, or activities not included in categories A or B above
D	—	Undeveloped lands
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Primary consideration is given to exterior areas. In situations in which no exterior activities are affected by traffic noise, the interior criterion (activity category E) is used as the basis for noise abatement consideration.

Caltrans' noise analysis policy, as described in the Construction Noise and Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Protocol) (Caltrans 1998), specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction projects. NAC specified in the Protocol are the same as those specified in 23 CFR 772. As directed by FHWA, the Protocol specifically defines the terms "substantial noise increase" and "approach or exceed". The Protocol states that a substantial noise increase occurs when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA- $L_{eq}(h)$. The Protocol also states that a sound level is considered to approach an NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA, but 65 dBA is not). These Caltrans' definitions have been explicitly reviewed and approved by FHWA.

Where traffic noise impacts are identified, noise abatement must be considered for reasonableness and feasibility as required by 23 CFR 772 and the Protocol. According to the Protocol, a noise barrier must be designed to provide at least 5 dB noise reduction to be considered feasible from an acoustical perspective. Other factors that can also restrict feasibility include:

- topography;
- access requirements for driveways, ramps, and other access points;
- presence of local cross streets;
- other noise sources in the area; and
- safety considerations.

The overall reasonableness of noise abatement is determined by considering factors such as:

- cost;
- absolute noise levels;
- change in noise levels;

- noise abatement benefits;
- date of development along the highway;
- environmental impacts of abatement construction;
- opinions of affected residents;
- input from the public and local agencies; and
- social, legal, and technological factors.

The Protocol defines a procedure for assessing the reasonableness of noise barriers from a cost perspective. A cost-per-residence allowance is calculated based on a base allowance of \$17,000 per benefited residence (i.e., residences that receive at least 5 dB of noise reduction from the noise barrier). Additional allowance dollars are added based on:

- absolute noise levels,
- change in noise levels,
- achievable noise reduction, and
- date of construction.

The total allowance is calculated by multiplying the allowance per benefited residence by the number of benefited residences. If the total allowance for all noise barriers evaluated is more than 50% of the estimated total project construction cost, the allowance per residence is modified to a reduced value.

National Environmental Policy Act

Guidance from FHWA in the document entitled “Highway Traffic Noise Analysis and Abatement Policy and Guidance” (FHWA 1995) states that if a traffic noise impact is identified under 23CFR772, the significance of the impact under NEPA must be identified. FHWA does not define specific thresholds for the significance of noise impacts and states that the determination of significance is based on the consideration of the context and intensity of the impact as defined in the Council on Environmental Quality Regulation 40CFR1508.27 (FHWA 1995). The FHWA guidance document states that the evaluation of “context” relates to the number of people affected while the “intensity” relates to the absolute noise levels associated with the impact.

California Environmental Quality Act

CEQA is the foundation of environmental law and policy in California. The main objectives of CEQA are to disclose the significant environmental effects of proposed activities to decision-makers and the public and to identify ways to avoid or reduce those effects by requiring implementation of feasible alternatives or mitigation measures. Under CEQA, a substantial noise increase may result in a significant adverse environmental effect; if so, the noise increase must be mitigated or identified as a noise impact for which it is likely that no or only partial mitigation is available. Specific economic, social, environmental, legal, and technological conditions can make mitigation measures for noise infeasible.

7.2 Methodology

Study methods and procedures used in this analysis are consistent with requirements and guidance provided in 23 CFR 772 and the Protocol.

7.2.1 Potential Receiver Locations

A field investigation of the project area was conducted to identify uses in the project area that could be subject to traffic noise impacts from the project alternatives. Single-family residences located along the project alignment are identified as activity category B land uses as defined in Table 7-1. Commercial uses located in the project area are considered to be activity category C land uses. Residences are uses where the activity category E interior NAC would apply where there is no exterior use.

As stated in the Protocol, noise abatement is only considered where frequent human use occurs and where a lowered noise level would be of benefit. As a matter of practice, frequent human use is considered to occur at exterior locations where people are exposed to highway noise for at least one hour on a regular basis. As an extension of this concept, impacts are only assessed in detail at locations where frequent human use occurs and where a lowered noise level would be of benefit. Accordingly, impacts are typically assessed at locations with defined outdoor activity areas, such as residential backyards, patios, and parks with defined activity areas (e.g., playgrounds and picnic tables). Activity areas in Bidwell Park in the project vicinity are primarily trails. As such, use is transitory with the exposure of users typically being less than one hour. Bidwell Park in the vicinity of the highway is therefore not considered to be an area of frequent human use.

No activity category C land uses in the project area are considered to have outdoor activity areas with frequent human use that would benefit from a lowered noise level, and in no case does the activity category E interior criterion apply to activity category C land uses. Accordingly, detailed evaluation of traffic noise impacts and abatement is not considered warranted at activity category C land uses in the project area.

Activity category B land uses adjacent to the freeway include single-family residences located directly adjacent to SR 99 between Vallombrosa Avenue and East 1st Avenue. Single-family residences are also located along East 1st Avenue and East 8th Street. Bidwell Park is located between East 8th Street and Vallombrosa Avenue. The roadway is elevated, situated approximately 6.1 meters (20 feet) above the ground. No existing noise barriers are located between the roadway and adjacent noise-sensitive land uses.

7.2.2 Receivers Selected for Impact and Abatement Assessment

Detailed traffic noise modeling and impact assessment were conducted only at activity category B land uses where frequent human use occurs and where a lowered noise level would be of benefit.

A detailed assessment of impacts and abatement at activity category B land uses located adjacent to SR 99 was conducted analyzing noise abatement provided by 2.4-meter (8-foot), 3.1-meter

(10-foot), 3.7-meter (12-foot), and 4.1-meter (14-foot) noise barriers. Detailed noise impact assessment was conducted at the following four areas in the project area:

- **Area 1:** residences located east of SR 99 between Bidwell Park and East 1st Avenue (Figures 7-1a and 7-1b).
- **Area 2:** residences located east of SR 99 at the SR 99 northbound on-ramp/East 8th Street interchange (Figure 7-1a).
- **Area 3:** residences located west of SR 99 between Bidwell Park and East 1st Avenue (Figures 7-1a and 7-1b).
- **Area 4:** residences located west of SR 99 at the SR 99 southbound off ramp/East 8th Street interchange (Figure 7-1a)

7.2.3 Noise Monitoring

The existing noise environment in the project area was characterized by conducting short-term and long-term noise monitoring.

Short-Term Monitoring

Short-term monitoring was conducted on Thursday, October 24, 2002, using Larson-Davis Model 812 Precision Type 1 sound level meters (serial numbers 0430 and 0432, and 0239) placed 1.5 meters (5 feet) above the ground on a tripod. Measurements were typically taken for approximately 10 minutes at each position. At some locations, measurements were repeated to verify the measurement. The short-term monitoring focused on activity category B land uses. The short-term measurement positions are the lettered positions identified in Figures 7-1a and 7-1b. Table 7-2 summarizes the sound level and traffic data collected during the short-term monitoring session.

In addition to the short-term monitoring data shown in Table 7-2, additional short-term measurements were taken on October 25, 2002, at locations well away from SR 99 to characterize background sound levels in the project area. The background sound level is the sound level in the area without meaningful influence from noise from SR 99. Table 7-3 summarizes the measured background sound levels.

Long-Term Monitoring

Long-term monitoring was conducted using a Larson-Davis Model 700 Type 2 sound level meter (serial number 1406) placed along the right-of-way line at Bidwell Park. At the long-term site, the meter was housed in a watertight steel case with a microphone extension from the case. The sound meter microphone was supported about 0.9 meter (3 feet) aboveground on nearby fencing. The purpose of these measurements was to quantify variations in sound level throughout the day, rather than absolute sound levels at a specific receptor of concern. The long-term sound level data were collected over one 36-hour period beginning on October 24, 2002. Weather conditions were generally cool and calm. Once the data were collected in the sound meter, the meter was connected to a computer with an RS-232 interface and the data were downloaded. Figure 7-2 summarizes the results of the long-term monitoring.

The 24-hour pattern of traffic noise levels is typical of a freeway with a strong morning peak and consistent noise levels throughout the day. As expected, traffic noise levels drop off during the

evening and nighttime hours. Table 7-4 summarizes the average L_{eq} sound levels measured in each hour of the day over the 36-hour long-term monitoring period. The differences between the sound levels measured during each hour and the maximum noise hour (8:00 a.m.) sound levels are also shown. These values are provided for general reference and can be used to estimate worst noise hour noise levels from measurements not taken during the worst noise hour.

Table 7-3. Summary of Background Sound Level Measurements

Location	Time	Duration (hours)	Measured Sound Level (dB- L_{eq})
End of Calgary Lane (off of East 1 st Avenue)	12:33 p.m.	0.25	51.6
823 Karen Drive (off of Palmetto Avenue)	12:38 p.m.	0.25	47.5

Table 7-4. Summary of Long Term Noise Monitoring

Time	Weekday (1-Hour dB- L_{eq})			Maximum Noise Hour dB- L_{eq} minus Hourly dB- L_{eq}
	Thursday	Friday	Average	
12 a.m.	NA	49.7	49.7	11.5
1 a.m.	NA	50.7	50.7	10.5
2 a.m.	NA	49.5	49.5	11.7
3 a.m.	NA	54.5	54.5	6.7
4 a.m.	NA	54.5	54.5	6.7
5 a.m.	NA	56.3	56.3	4.9
6 a.m.	NA	59.3	59.3	1.9
7 a.m.	NA	60.8	60.8	0.4
8 a.m.	NA	61.2	61.2	0
9 a.m.	NA	59.7	59.7	1.5
10 a.m.	NA	59.1	59.1	2.1
11 a.m.	NA	59.3	59.3	1.9
12 p.m.	59.4	59.4	59.4	1.8
1 p.m.	59.0	58.9	59.0	2.2
2 p.m.	59.5	59.1	59.3	1.9
3 p.m.	59.6	59.4	59.5	1.7
4 p.m.	60.1	61.0	60.6	0.6
5 p.m.	60.0	60.3	60.2	1
6 p.m.	58.8	59.9	59.4	1.8
7 p.m.	57.6	59.0	58.3	2.9
8 p.m.	56.8	57.7	57.3	3.9
9 p.m.	56.3	57.1	56.7	4.5
10 p.m.	53.5	56.0	54.8	6.4
11 p.m.	52.3	54.9	53.6	7.6
11 p.m.	59.4	49.7	54.6	6.6

7.2.4 Traffic Noise Modeling of Existing Noise Levels

Key inputs to the traffic noise model are the locations of roadways, shielding features (such as topography), and receivers. Drawings provided by the project engineers, Quincy Engineering; a digitizing table; and the digitizing module of the FHWA Traffic Noise Model were used to produce three-dimensional representations of key inputs of the four areas described above (Areas 1–4). Each direction of traffic on the mainline highway was digitized as single or double lanes along the lane centerlines, and shielding from the existing edge of the roadway was modeled using barriers.

Table 7-2. Summary of Field-Measured Data

Receiver	Measurement	Date	Start Time	Duration (minutes)	Measured Sound Level (dB-L _{eq})	Traffic Volumes (Scaled to 1 Hour)											
						Northbound Lanes			Northbound Off-Ramp Lanes			Southbound Lanes			Southbound On-Ramp Lanes		
						Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks	Autos	Medium Trucks	Heavy Trucks
A	1	10/24/02	12:45 p.m.	10:00	61.2	1,788	36	36	864	0	6	1,680	66	36	804	12	6
	2	10/24/02	12:58 p.m.	10:00	62.2	1,830	72	36	732	0	6	1,824	60	60	762	0	12
B	1	10/24/02	3:36 p.m.	10:00	63.5	2,628	84	54	1,014	6	0	2,376	24	36	822	18	0
	2	10/24/02	3:50 p.m.	10:00	63.1	2,430	36	36	1200	6	0	1,998	24	54	930	0	0
C	1	10/24/02	3:36 p.m.	10:00	66.1	2,628	84	54	1,014	6	0	2,376	24	36	822	18	0
	2	10/24/02	3:50 p.m.	7:43	65.9	2,430	36	36	1,200	6	0	1,998	24	54	930	0	0
D	1	10/24/02	4:21 p.m.	10:00	65.8	2,190	18	6	1,050	6	0	2,190	42	48	762	6	0
E	1	10/24/02	12:45 p.m.	9:24	65.8	1,788	36	36	864	0	6	1,680	66	36	804	12	6
	2	10/24/02	12:58 p.m.	9:47	66.3	1,830	72	36	732	0	6	1,824	60	60	762	0	12
F	1	10/24/02	1:35 p.m.	10:00	66.8	1,740	24	72	762	12	0	1,698	36	30	702	6	6
G	1	10/24/02	1:35 p.m.	7:24	65.8	1,740	24	72	762	12	0	1,698	36	30	702	6	6
H	1	10/24/02	4:21 p.m.	9:29	68.0	2,190	18	6	1,050	6	0	2,190	42	48	762	6	0

When a freeway and residents are both located at the same elevation, the presence of residential building structures between the freeway and the residences located several rows into the neighborhood from the freeway can reduce the propagation of noise from the freeway to those residences. This effect is substantially diminished when the freeway is elevated relative to the residences as is the case here. With the freeway located more than 6.1 meters (20 feet) above the residences, sight lines are maintained between most of the residences evaluated and the freeway. Accordingly, a detailed evaluation of the noise-reducing effects of the buildings was not considered warranted. The net effect is that calculated barrier noise reductions for residences several rows deep into the neighborhood may be high by about 1 dB. This may result in a slightly conservative evaluation of noise barriers. As the assessment shows, even the highest barriers evaluated do not result in the minimum 5 dB noise reduction at the farthest receivers evaluated. Therefore, even if the estimated noise level reductions achieved with barriers is slightly overestimated, it would have virtually no effect on the number of benefited residences assumed in the reasonableness conclusions, as described below.

Sound32, the Caltrans version of the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) was used in this analysis. Digitized roadway, receiver, and barrier locations were entered into the model, then traffic volumes that were counted during the short-term measurement period were scaled up to 1 hour and entered into the model. Table 7-5 summarizes the measured and modeled noise levels.

Table 7-5. Measured and Modeled Noise Levels

Receiver	Measurement	Area (Figures 7-1a and 71b)	Measured Sound Level (dB- $L_{eq}[h]$)	Modeled Sound Level (dB- $L_{eq}[h]$)	Measured Minus Modeled Sound Levels	K Factor Used in Model
A	1	3	61.2	64.5	3.3	0
	2	3	62.2	64.8	2.6	0
B	1	1	63.5	63.5	0	0
	2	1	63.1	63.2	0.1	0
C	1	1	66.1	65.1	-1	0
	2	1	65.9	65.0	-0.9	0
D	1	1	65.8	64.7	-1.1	0
E	1	3	65.8	67.4	1.6	0
	2	3	66.3	65.4	-0.9	0
F	1	3	66.8	65.8	-1	0
G	1	NA	65.8	66.9	1.1	0
H	1	NA	68.0	66.9	-1.1	0

In general, modeled and predicted results are considered to be in reasonable agreement when they are within 2 to 3 dB of each other. The measured and modeled results are therefore considered to be in reasonable agreement. The slight over prediction at Position A may be due to the fact that both the edge of the northbound off ramp and the edge of the mainline freeway are providing shielding between the mainline traffic and the measurement position. When two barriers are located between a source and receiver Sound32 only calculates the shielding from the most effective barrier. Because of this and because the ramp configuration will change with implementation of the project, use of a calibration factor in this situation is not considered appropriate. Accordingly, no model calibration has been used in this assessment.

7.2.5 Existing Noise Environment

The existing noise environment in the project area is dominated by noise from traffic traveling on SR 99. Tables 7-2 through 7-4 summarize sound level measurements taken in the project area. Table 7-6 summarizes the noise modeling results for existing conditions. These results indicate that of the 71 analyzed receivers, 21 approach or exceed the activity category B NAC of 67 dB- $L_{eq}[h]$ (15 exceed and 11 approach), while 45 receivers are below the activity category B NAC. Existing sound levels are in the range of 61 to 69 dB- $L_{eq}(h)$.

7.3 Environmental Impacts and Mitigation Measures (NEPA)

7.3.1 Methodology

Traffic volumes used to model traffic noise under design-year conditions were provided by the project traffic engineers, Fehr & Peers Associates, for each scenario. Truck percentages were estimated from truck counts collected by Jones & Stokes staff during the short-term monitoring episodes. Design-year truck percentages were assumed to be the same as existing percentages. Receiver locations assessed using the calibrated Sound32 model are indicated in Figures 7-1a and 7-1b. These receiver locations include the measurement locations (lettered positions) and additional receiver locations that are numbered for each modeling area (Areas 1–4).

Table 7-6 summarizes the traffic noise modeling results for design-year conditions for each scenario. Predicted noise levels for existing conditions shown in Table 7-6 are typically higher than the measured values for existing conditions shown in Table 7-2. This is because the results in Table 7-6 are based on peak hour traffic conditions, whereas the results in Table 7-2 are for measurements taken during off-peak traffic conditions.

Impact N1 (NEPA): Up to 3dB Increase in Existing Noise Levels/Predicted Traffic Noise Levels Approach or Exceed the Noise Abatement Criteria for Category B Land Uses

Outside and Inside Widening Alternatives

Traffic noise impacts were identified by determining if design-year (2027) noise levels would approach or exceed the NAC or would be 12 dB or more over existing conditions. Table 7-6 indicates that traffic noise impacts would occur under all of the scenarios at activity category B land uses in Areas 1–4. No impacts resulting from substantial increases in noise were identified. Because there are no activity category C land uses with outdoor-use areas with frequent human use that would benefit from a lowered noise level, no impacts on activity category C land uses were identified.

Table 7-6 summarizes the results of the traffic noise modeling for future design-year conditions under the Inside Widening Alternative (D-1), Outside Widening Alternative (D-1), Inside Widening Alternative (E-1), and Outside Widening Alternative (E-1) (see Chapter 5 for an explanation of the options D and E). In general, projected traffic volumes with option E-1 (roundabout) are projected to be slightly greater along East 1st Avenue than with D-1 (signalized intersection). At all modeled receivers, there is no more than a 1-dB difference between traffic

Table 7-6. Summary of Traffic Noise Impacts under 23 CFR 772 (L_{eq})

Receiver	Type of Development	Activity Category NAC (dB-Leq [h])	Existing Worst Noise Hour Noise Level (dB-Leq [h])	Predicted Worst Noise Hour Noise Level (dB-L _{eq} [h]) ^a					Noise Increase (dB) Relative to Existing Conditions						Impact Type ^b				Area Located
				Future No-Project Alternative	D-1		E-1		Future No-Project Alternative	D-1		E-1		D-1		E-1			
					Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative		Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative				
East of SR 99																			
14A	Residence	B (67 dB)	66	67	68	68	68	68	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 2	
14B	Residence	B (67 dB)	65	67	68	67	67	67	2	3	2	2	2	A/E	A/E	A/E	A/E	Area 2	
14C	Residence	B (67 dB)	64	66	66	66	66	66	2	2	2	2	2	A/E	A/E	A/E	A/E	Area 2	
14D	Residence	B (67 dB)	62	64	65	65	65	65	2	3	3	3	3	None	None	None	None	Area 2	
13A	Residence	B (67 dB)	67	67	68	68	68	68	0	1	1	1	1	A/E	A/E	A/E	A/E	Area 1	
13B	Residence	B (67 dB)	65	65	67	67	67	67	0	2	2	2	2	A/E	A/E	A/E	A/E	Area 1	
13C	Residence	B (67 dB)	61	62	63	63	63	63	1	2	2	2	2	None	None	None	None	Area 1	
12A	Residence	B (67 dB)	67	67	68	68	68	68	0	1	1	1	1	A/E	A/E	A/E	A/E	Area 1	
12B	Residence	B (67 dB)	64	65	66	66	66	66	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 1	
12C	Residence	B (67 dB)	61	62	63	63	63	63	1	2	2	2	2	None	None	None	None	Area 1	
11A	Residence	B (67 dB)	66	66	68	68	68	68	0	2	2	2	2	A/E	A/E	A/E	A/E	Area 1	
11B	Residence	B (67 dB)	64	64	65	66	65	66	0	1	2	1	2	None	A/E	None	A/E	Area 1	
11C	Residence	B (67 dB)	61	62	63	63	63	63	1	2	2	2	2	None	None	None	None	Area 1	
9A	Residence	B (67 dB)	67	67	68	67	68	67	0	1	0	1	0	A/E	A/E	A/E	A/E	Area 1	
9B	Residence	B (67 dB)	64	65	66	66	66	66	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 1	
9C	Residence	B (67 dB)	62	62	63	63	63	63	0	1	1	1	1	None	None	None	None	Area 1	
8C	Residence	B (67 dB)	62	63	64	64	64	64	1	2	2	2	2	None	None	None	None	Area 1	
7A	Residence	B (67 dB)	66	67	66	66	66	66	1	0	0	0	0	A/E	A/E	A/E	A/E	Area 1	
7B	Residence	B (67 dB)	63	65	65	65	65	65	2	2	2	2	2	None	None	None	None	Area 1	
7C	Residence	B (67 dB)	62	63	63	63	63	63	1	1	1	1	1	None	None	None	None	Area 1	
6A	Residence	B (67 dB)	64	66	66	65	66	65	2	2	1	2	1	A/E	None	A/E	None	Area 1	
5A	Residence	B (67 dB)	65	66	66	65	66	65	1	1	0	1	0	A/E	None	A/E	None	Area 1	
4A	Residence	B (67 dB)	66	67	66	67	66	67	1	0	1	0	1	A/E	A/E	A/E	A/E	Area 1	
4B	Residence	B (67 dB)	63	64	65	65	65	65	1	2	2	2	2	None	None	None	None	Area 1	
4C	Residence	B (67 dB)	61	63	63	63	63	63	2	2	2	2	2	None	None	None	None	Area 1	
2A	Residence	B (67 dB)	67	68	68	68	68	69	1	1	1	1	2	A/E	A/E	A/E	A/E	Area 1	
2B	Residence	B (67 dB)	65	66	66	66	66	66	1	1	1	1	1	A/E	A/E	A/E	A/E	Area 1	
2C	Residence	B (67 dB)	63	64	65	65	65	65	1	2	2	2	2	None	None	None	None	Area 1	
1A	Residence	B (67 dB)	68	69	69	69	69	69	1	1	1	1	1	A/E	A/E	A/E	A/E	Area 1	
1B	Residence	B (67 dB)	68	69	70	70	70	70	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 1	
1C	Residence	B (67 dB)	68	68	69	69	69	69	0	1	1	1	1	A/E	A/E	A/E	A/E	Area 1	
1D	Residence	B (67 dB)	67	68	69	69	69	69	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 1	
A	Residence	B (67 dB)	66	67	68	68	68	68	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 1	
F	Residence		67	67	68	68	68	68	0	1	1	1	1	A/E	A/E	A/E	A/E	Area 1	
West of SR 99																			
33A	Residence	B (67 dB)	66	67	68	68	68	68	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 4	
33B	Residence	B (67 dB)	66	67	68	68	68	68	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 4	
33C	Residence	B (67 dB)	66	68	69	69	69	69	2	3	3	3	3	A/E	A/E	A/E	A/E	Area 4	
32A	Residence	B (67 dB)	67	67	68	68	68	68	0	1	1	1	1	A/E	A/E	A/E	A/E	Area 3	
32B	Residence	B (67 dB)	64	64	65	65	65	65	0	1	1	1	1	None	None	None	None	Area 3	
32C	Residence	B (67 dB)	62	62	63	63	63	63	0	1	1	1	1	None	None	None	None	Area 3	
31A	Residence	B (67 dB)	66	66	67	69	67	69	0	1	3	1	3	A/E	A/E	A/E	A/E	Area 3	
31B	Residence	B (67 dB)	63	63	65	65	65	65	0	2	2	2	2	None	None	None	None	Area 3	
31C	Residence	B (67 dB)	61	62	63	63	63	63	1	2	2	2	2	None	None	None	None	Area 3	
30B	Residence	B (67 dB)	62	63	64	65	64	65	1	2	3	2	3	None	None	None	None	Area 3	
30C	Residence	B (67 dB)	61	61	63	63	63	63	0	2	2	2	2	None	None	None	None	Area 3	
27A	Residence	B (67 dB)	66	66	67	67	67	67	0	1	1	1	1	A/E	A/E	A/E	A/E	Area 3	
27B	Residence	B (67 dB)	63	64	65	65	65	65	1	2	2	2	2	None	None	None	None	Area 3	
27C	Residence	B (67 dB)	61	62	63	63	63	63	1	2	2	2	2	None	None	None	None	Area 3	
26A	Residence	B (67 dB)	65	66	67	67	67	67	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 3	

Table 7-6. Continued

Receiver	Type of Development	Activity Category NAC (dB-Leq [h])	Existing Worst Noise Hour Noise Level (dB-Leq [h])	Predicted Worst Noise Hour Noise Level (dB-L _{eq} [h]) ^a					Noise Increase (dB) Relative to Existing Conditions					Impact Type ^b				Area Located
				Future No-Project Alternative	D-1		E-1		Future No-Project Alternative	D-1		E-1		D-1		E-1		
					Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative		Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative			
25A	Residence	B (67 dB)	65	66	66	66	66	66	1	1	1	1	1	A/E	A/E	A/E	A/E	Area 3
25B	Residence	B (67 dB)	63	64	65	65	65	65	1	2	2	2	2	None	None	None	None	Area 3
25C	Residence	B (67 dB)	61	62	63	63	63	63	1	2	2	2	2	None	None	None	None	Area 3
24A	Residence	B (67 dB)	64	66	65	65	65	65	2	1	1	1	1	None	None	None	None	Area 3
24B	Residence	B (67 dB)	63	64	65	65	64	65	1	2	2	1	2	None	None	None	None	Area 3
24C	Residence	B (67 dB)	61	62	63	63	63	63	1	2	2	2	2	None	None	None	None	Area 3
22A	Residence	B (67 dB)	65	66	68	68	68	68	1	3	3	3	3	A/E	A/E	A/E	A/E	Area 3
22B	Residence	B (67 dB)	63	64	65	65	65	65	1	2	2	2	2	None	None	None	None	Area 3
22C	Residence	B (67 dB)	61	63	63	63	63	63	2	2	2	2	2	None	None	None	None	Area 3
21A	Residence	B (67 dB)	66	67	68	68	68	68	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 3
21B	Residence	B (67 dB)	65	66	66	66	66	66	1	1	1	1	1	A/E	A/E	A/E	A/E	Area 3
21C	Residence	B (67 dB)	63	64	64	64	64	64	1	1	1	1	1	None	None	None	None	Area 3
20A	Commercial	C (72 dB)	68	69	68	68	68	69	1	0	0	0	1	None	None	None	None	Area 3
20B	Residence	B (67 dB)	69	70	71	71	71	71	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 3
20C	Residence	B (67 dB)	68	69	70	70	70	70	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 3
20D	Residence	B (67 dB)	68	69	70	70	70	70	1	2	2	2	2	A/E	A/E	A/E	A/E	Area 3
B	Residence	B (67 dB)	64	65	65	65	65	65	1	1	1	1	1	None	None	None	None	Area 3
C	Residence	B (67 dB)	65	65	67	66	67	66	0	2	1	2	1	A/E	A/E	A/E	A/E	Area 3
D	Residence	B (67 dB)	65	65	67	68	67	68	0	2	3	2	3	A/E	A/E	A/E	A/E	Area 3

Notes: Receiver with letter (A) indicates noise measurement/modeling location, receiver with number (1A) indicates noise modeling location.

Shading clarifies groups of receivers.

^a Predicted design year 2027.

^b None = no impacts identified.

A/E = noise abatement criterion threshold approached or exceeded.

noise levels predicted under each scenario, with the Outside Widening Alternative (D-1 and E-1) typically showing the higher noise level.

Predicted increases in traffic noise under design-year conditions relative to existing conditions are typically less than 2 dB in most cases, with four occurrences of a 3 dB increase in noise for the Inside Widening Alternative (D-1 and E-1), and seven occurrences of a 3 dB increase in noise for the Outside Widening Alternative (D-1 and E-1). These latter increases are attributed to predicted increases in traffic volumes and shifting of traffic closer to adjacent receivers resulting from outside widening of the freeway. Increases in traffic noise are not considered substantial because they are less than 12 dB. Modeling results in Table 7-6 indicate that predicted traffic noise levels approach or exceed the NAC of 67 dBA- $L_{eq}(h)$ for activity category B land uses, which include residences located in Areas 1–4 and Bidwell Park.

Because traffic noise impacts are predicted to occur at activity category B land uses, noise abatement must be considered.

Preliminary Noise Abatement Analysis

As stated in the Protocol, noise abatement is considered only where noise impacts are predicted, where frequent human use occurs, and where a lowered noise level would be of benefit. As a matter of practice, abatement is only considered for places where people are exposed to highway noise for 1 hour or more on a regular basis. Potential noise abatement measures identified in the Protocol include:

- avoiding the impact by using design alternatives, such as altering the horizontal and vertical alignment of the project;
- constructing noise barriers;
- acquiring property to serve as a buffer zone;
- using traffic management measures to regulate types of vehicles and speeds; and
- acoustically insulating public use or nonprofit institutional structures.

Based on the configuration and location of the project, noise barrier abatement is the primary form of noise abatement considered. Noise abatement was evaluated for residences in Areas 1 through 4. Noise abatement was not evaluated for Bidwell Park because it is not considered to be an area of frequent human use.

Construction of new noise barriers was considered at several locations. Barrier heights ranging from 8 to 14 feet (2.4 to 4.1 meters) high in 0.6-meter (2-foot) increments were considered. Barrier heights are relative to the elevation at the edge of shoulder. Based on guidance in chapter 1100 of the *Highway Design Manual*, barriers at the edge of pavement are limited to 4.1 meters (14 feet) high. The following is a description of each preliminary noise barrier configuration considered (see Figures 7-3a and 7-3b):

- **Noise Barrier 1** (East of SR 99/Bidwell Park to East 1st Avenue): This barrier would be a new barrier constructed at the edge of shoulder adjacent to northbound SR 99 and near the private property lines adjacent to East 1st Avenue ramps. The barrier would extend from Bidwell Park to East 1st Avenue.

- **Noise Barrier 2** (East of SR 99/East 8th Street): This barrier would be a new barrier constructed at the edge of shoulder adjacent to northbound SR 99 and near the private property lines adjacent to the SR 32 ramps. The barrier would extend from East 8th Street to the middle of the northbound SR 99 on-ramp.
- **Noise Barrier 3** (West of SR 99/Bidwell Park to East 1st Avenue): This barrier would be a new barrier constructed at the edge of shoulder adjacent to southbound SR 99 and near the private property lines adjacent to the East 1st Avenue ramps. The barrier would extend from Bidwell Park to East 1st Avenue.
- **Noise Barrier 4** (West of SR 99/East 8th Street): This barrier would be a new barrier constructed at the edge of shoulder adjacent to southbound SR 99 and near the private property lines adjacent to the SR 32 ramps. The barrier would extend from East 8th Street to the middle of the southbound SR 99 off-ramp.

Because of the small differences in predicted noise between the scenarios, noise barrier feasibility and reasonableness have been assessed for D-1 (Outside and Inside Widening Alternatives) traffic conditions only. The results for the roundabout scenarios would be similar. Table 7-7 summarizes the results of the analysis for each noise barrier evaluated.

Noise Abatement Feasibility and Reasonable Cost Allowances

In accordance with the Protocol, a barrier must provide a design noise level reduction of 5 dBA to be considered acoustically feasible. For each noise barrier found to be feasible under this criterion, reasonable cost allowances were evaluated. Table 7-8 summarizes the reasonable-allowance calculations based on the procedure identified in the Protocol. The total allowance for the highest noise barriers considered is \$2,848,000 for the Inside Widening Alternative, and \$2,883,000 for the Outside Widening Alternative. Because this value is less than 50% of the total estimated project construction cost, modification of the total allowance is not required.

For a noise barrier to be considered reasonable from a cost perspective, the total estimated cost of the noise barrier should be equal to or below the total allowance calculated for that noise barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the noise barrier, such as traffic control, drainage modification, and retaining walls. Table 7-8 shows the estimated cost of each barrier evaluated. The estimated costs of the 4.1-meter-high (14-foot-high) barrier 1 and barrier 3 are less than the calculated allowances. All other costs exceed the calculated allowances. Therefore, the preliminary noise abatement decision is that only the 4.1-meter-high (14-foot-high) barrier 1 and barrier 3 are reasonable and feasible. The final noise abatement decision is made after public review of the project. Other factors including the opinions of impacted residents, input from public and local agencies, social, and economic, environmental, legal, and technological considerations are used to make the final noise abatement decision. A wall with an estimated cost that is greater than the allowance can be deemed reasonable if other factors listed above support making this conclusion.

The design of noise barriers presented in this report is preliminary only and has been conducted at a level appropriate for environmental review. Information on the physical characteristics of potential abatement measures (such as physical location, length, and height of noise barriers) is preliminary. Inclusion of noise barriers in the project design and the final design of those noise barriers (if included) will be decided based on the information contained in this report, final project design, and other pertinent information received during the public review process. The

Table 7-7. Feasibility Analysis (Noise Reduction) of Noise Barriers - 23 CFR 772 Analysis

Receiver	Type of Development	Activity Category NAC (dB-Leq[h])	Noise Reduction with 2.4-Meter (8-Foot) Barrier Relative to Future Project (No Wall) Conditions				Noise Reduction with 3.1-Meter (10-Foot) Barrier Relative to Future Project (No Wall) Conditions				Noise Reduction with 3.7-Meter (12-Foot) Barrier Relative to Future N-Project (No Wall) Conditions				Noise Reduction with 4.1-Meter (14-Foot) Barrier Relative to Future Project (No Wall) Conditions			
			D-1		E-1		D-1		E-1		D-1		E-1		D-1		E-1	
			Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative
East of SR 99																		
14A	Residence	B (67 dB)	-5	-5	-5	-5	-6	-6	-6	-6	-7	-7	-7	-7	-8	-8	-8	-8
14B	Residence	B (67 dB)	-3	-3	-3	-3	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
14C	Residence	B (67 dB)	-2	-2	-2	-2	-2	-2	-2	-2	-3	-3	-3	-3	-3	-3	-3	-3
14D	Residence	B (67 dB)	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
13A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-4	-5	-4	-5	-5	-5	-5	-5
13B	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-4	-4	-4	-4
13C	Residence	B (67 dB)	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-3	-3	-3	-3	-3
12A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-5	-4	-5	-5	-6	-5	-6	-6	-7	-6	-7
12B	Residence	B (67 dB)	-2	-2	-2	-2	-4	-4	-4	-4	-5	-5	-5	-5	-5	-6	-6	-6
12C	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-4	-4	-4	-4
11A	Residence	B (67 dB)	-3	-4	-3	-4	-4	-5	-4	-5	-5	-6	-5	-6	-6	-7	-6	-7
11B	Residence	B (67 dB)	-2	-2	-2	-2	-4	-3	-4	-3	-5	-5	-5	-5	-6	-5	-6	-5
11C	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
9A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5	-6	-6	-6	-6
9B	Residence	B (67 dB)	-2	-3	-2	-3	-4	-4	-4	-4	-5	-5	-5	-5	-6	-6	-6	-6
9C	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
8C	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
7A	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
7B	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-3	-4	-3	-4	-4	-4	-4	-4
7C	Residence	B (67 dB)	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4
6A	Residence	B (67 dB)	-3	-2	-3	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
5A	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
4A	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-4	-5	-4	-5
4B	Residence	B (67 dB)	-1	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-3
4C	Residence	B (67 dB)	-1	0	-1	0	-1	-1	-1	-1	-2	-1	-2	-1	-2	-2	-2	-2
2A	Residence	B (67 dB)	-1	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-4	-3
2B	Residence	B (67 dB)	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1
2C	Residence	B (67 dB)	0	0	0	0	0	0	0	0	0	0	-1	0	-1	-1	-1	-1
1A	Residence	B (67 dB)	-1	-2	-2	-2	-2	-2	-3	-3	-2	-3	-3	-3	-5	-3	-6	-4
1B	Residence	B (67 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1C	Residence	B (67 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1D	Residence	B (67 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-4	-5	-5	-5	-5	-5
F	Residence		-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5	-6	-6	-6	-6
G	Park	C (72 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West of SR 99																		
33A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-6	-4	-6	-4	-7	-6	-7	-6
33B	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-4	-4	-4	-4	-5	-5	-5	-5
33C	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
32A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5	-5	-5	-5	-5
32B	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-3	-3	-3	-3	-4	-4	-4	-4
32C	Residence	B (67 dB)	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-3	-3	-3	-3	-3
31A	Residence	B (67 dB)	-3	-4	-3	-4	-4	-5	-4	-5	-5	-6	-5	-6	-6	-7	-6	-7
31B	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
31C	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-3	-4	-3	-4	-4	-4	-4
30B	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
30C	Residence	B (67 dB)	-2	-2	-2	-2	-3	-2	-3	-2	-4	-3	-4	-3	-4	-4	-4	-4
27B	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5
27C	Residence	B (67 dB)	-2	-2	-2	-2	-3	-2	-3	-2	-4	-3	-4	-3	-4	-4	-4	-4

Table 7-7. Continued

Receiver	Type of Development	Activity Category NAC (dB-Leq[h])	Noise Reduction with 2.4-Meter (8-Foot) Barrier Relative to Future Project (No Wall) Conditions				Noise Reduction with 3.1-Meter (10-Foot) Barrier Relative to Future Project (No Wall) Conditions				Noise Reduction with 3.7-Meter (12-Foot) Barrier Relative to Future N-Project (No Wall) Conditions				Noise Reduction with 4.1-Meter (14-Foot) Barrier Relative to Future Project (No Wall) Conditions			
			D-1		E-1		D-1		E-1		D-1		E-1		D-1		E-1	
			Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative
26A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5	-6	-6	-6	-6
25A	Residence	B (67 dB)	-3	-3	-3	-3	-4	-4	-4	-4	-5	-5	-5	-5	-5	-5	-5	-5
25B	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-5	-4	-5	-4
25C	Residence	B (67 dB)	-1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4
24A	Residence	B (67 dB)	-2	-2	-2	-2	-3	-3	-3	-3	-4	-4	-4	-4	-4	-5	-4	-5
24B	Residence	B (67 dB)	-2	-2	-2	-2	-2	-3	-2	-3	-3	-3	-3	-3	-4	-4	-4	-4
24C	Residence	B (67 dB)	-1	-1	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	-3	-3	-3	-3
22A	Residence	B (67 dB)	-2	-1	-2	-1	-3	-3	-3	-3	-4	-3	-4	-3	-4	-4	-4	-4
22B	Residence	B (67 dB)	-1	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2	-3	-2	-3	-2
22C	Residence	B (67 dB)	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-2	-2	-2	-2
21A	Residence	C (72 dB)	-1	-1	-1	-1	-1	-1	-1	-1	-2	-1	-2	-1	-2	-1	-2	-1
21B	Residence	B (67 dB)	0	0	0	0	0	0	0	0	-1	0	0	0	-1	-1	-1	-1
21C	Residence	B (67 dB)	0	0	0	0	0	0	0	0	-1	0	-1	0	-1	-1	-1	-1
20A	Commercial	C (72 dB)	-1	-1	-1	-2	-1	-2	-1	-2	-2	-3	-2	-3	-3	-3	-3	-3
20B	Residence	B (67 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20C	Residence	B (67 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20D	Residence	B (67 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	Residence	B (67 dB)	-2	-2	-2	-2	-2	-3	-2	-3	-3	-3	-3	-3	-4	-4	-4	-4
C	Residence	B (67 dB)	-3	-3	-3	-3	-4	-3	-4	-3	-5	-4	-5	-4	-6	-5	-6	-5
D	Residence	B (67 dB)	-3	-4	-3	-4	-4	-5	-4	-5	-5	-6	-5	-6	-5	-7	-5	-7
H	Park	C (72 dB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total ^a			1	1	1	1	1	5	1	5	17	16	16	16	31	31	31	31

Note: Receiver with letter (A) indicates noise measurement/modeling location, receiver with number (1A) indicates noise modeling location.

indicates receivers receiving a 5 dB or greater noise reduction by noise barrier.

clarifies groups of receivers.

^a Total number of receivers receiving 5 dB or more noise reduction by barrier, by alternative.

Table 7-8. Summary of SR 99 Noise Barrier Feasibility and Reasonableness Allowances

Noise Barrier	Height (meters [feet])	Provides 5 dB of Noise Reduction?	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance	Estimated Barrier Cost	Is Barrier Cost Reasonable?
Inside Widening Alternative							
Barrier 1. East of SR 99/ Bidwell Park to East 1 st Avenue	2.4 (8)	No	0	\$33,000	\$0	Not calculated	N
	3.1 (10)	Yes	0	\$31,000	\$0	\$976,500	N
	3.7 (12)	Yes	22	\$33,000	\$682,000	\$1,134,000	N
	4.3 (14)	Yes	42	\$33,000	\$1,386,000	\$1,323,000	Y
Barrier 2. East of SR 99/ East 8 th Street	2.4 (8)	Yes	1	\$31,000	\$31,000	\$158,400	N
	3.1 (10)	Yes	1	\$33,000	\$33,000	\$204,600	N
	3.7 (12)	Yes	1	\$33,000	\$33,000	\$237,600	N
	4.3 (14)	Yes	2	\$33,000	\$66,000	\$277,200	N
Barrier 3. West of SR 99/ Bidwell Park to East 1 st Avenue	2.4 (8)	No	0	\$33,000	\$0	Not calculated	N
	3.1 (10)	Yes	0	\$33,000	\$0	Not calculated	N
	3.7 (12)	Yes	24	\$35,000	\$840,000	\$1,134,000	N
	4.3 (14)	Yes	38	\$35,000	\$1,330,000	\$1,323,000	Y
Barrier 4. West of SR 99/ East 8 th Street	2.4 (8)	No	0	\$31,000	\$0	Not calculated	N
	3.1 (10)	Yes	1	\$31,000	\$31,000	\$167,400	N
	3.7 (12)	Yes	1	\$33,000	\$33,000	\$194,400	N
	4.3 (14)	Yes	2	\$33,000	\$66,000	\$226,800	N
Outside Widening Alternative							
Barrier 1. East of SR 99/ Bidwell Park to East 1 st Avenue	2.4 (8)	No	0	\$31,000	\$0	Not calculated	N
	3.1 (10)	Yes	4	\$31,000	\$124,000	\$976,500	N
	3.7 (12)	Yes	23	\$33,000	\$759,000	\$1,134,000	N
	4.3 (14)	Yes	42	\$33,000	\$1,386,000	\$1,323,000	Y
Barrier 2. East of SR 99/ East 8 th Street	2.4 (8)	No	1	\$31,000	\$31,000	Not calculated	N
	3.1 (10)	Yes	1	\$33,000	\$33,000	\$204,600	N
	3.7 (12)	Yes	1	\$33,000	\$33,000	\$237,600	N
	4.3 (14)	Yes	2	\$33,000	\$66,000	\$277,200	N
Barrier 3. West of SR 99/ Bidwell Park to East 1 st Avenue	2.4 (8)	No	0	\$33,000	\$0	Not calculated	N
	3.1 (10)	Yes	10	\$33,000	\$330,000	\$976,500	N
	3.7 (12)	Yes	20	\$35,000	\$700,000	\$1,134,000	N
	4.3 (14)	Yes	39	\$35,000	\$1,365,000	\$1,323,000	Y
Barrier 4. West of SR 99/ East 8 th Street	2.4 (8)	No	0	\$31,000	\$0	Not calculated	N
	3.1 (10)	Yes	0	\$31,000	\$0	Not calculated	N
	3.7 (12)	Yes	0	\$31,000	\$0	Not calculated	N
	4.3 (14)	Yes	2	\$33,000	\$66,000	\$226,800	N

final design must also be checked independently to confirm that it meets the requirements of chapter 1100 of the *Highway Design Manual*, especially the minimum and maximum height requirements and the truck exhaust intercept requirements specified in section 1102.3.

7.4 Environmental Impacts and Mitigation Measures (CEQA)

7.4.1 Methodology

Detailed noise monitoring and modeling was conducted to characterize existing noise conditions in the project area. Tables 7-2 through 7-4 summarize the results of short-term and long term monitoring. Table 7-9 summarizes traffic noise modeling results relative to the City's noise standards (L_{dn}).

7.4.2 Significance Thresholds

Thresholds of significance for noise impacts have been established for this assessment based on the CEQA Environmental Checklist found in Appendix G of the State CEQA Guidelines and on professional judgment. Noise standards found in the City's General Plan were used as the basis for assessing the significance of noise impacts associated with the proposed alternatives.

The City of Chico's noise ordinance establishes maximum noise limits allowed within the City based on the land use of the property generating the noise. The ordinance is only enforced once a citizen complaint has been received. These maximum noise limits are described below:

- **Residential property noise limits:** Noise shall not exceed, at any point outside of the property plane, 70 dBA between the hours of 7:00 a.m. and 9:00 p.m. or 60 dBA between the hours of 9:00 p.m. and 7:00 a.m. on any residential property. Where Caltrans requires construction during nighttime hours, construction activity shall be staged so that it does not occur over an extended period of time (i.e. more than 14 days at a time).
- **Commercial and industrial property noise limits:** Noise shall not exceed 70 dBA at any point outside the property plane.
- **Public property noise limits:** Noise shall not exceed 60 dBA at a distance of 7.6 meters (25 feet) or more from the source.

Noise due to construction is exempt from the noise ordinance, provided that construction occurs between the hours of 7:00 a.m. and 9:00 p.m., Monday through Saturday, and between 10:00 a.m. and 6:00 p.m., Sundays and holidays, and does not exceed 83 dBA 7.6 meters (25 feet) from the source or 86 dBA at any point outside of the property plane of the project.

A conditional noise permit may be granted to temporarily exempt a particular source of noise from the noise ordinance, provided that compliance is impractical or unreasonable. The director of public works may also issue a permit exempting any special event conducted on public property at which noise is produced by any mechanical or amplifying equipment from the noise ordinance, provided the event is "of interest to a substantial number of persons residing in the city," is "open to all persons residing in the city, subject only to the payment of a reasonable fee,

if any by person attending the event,” and compliance with the noise ordinance would “reasonably interfere with the conduct of the event.”

The City has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. The City’s General Plan (Blaney Dyett 1999) is a document required by state law that serves as a City’s “blue print” for land use and development. The City’s Noise Element, updated in 1999 and revised in 2000, contains planning guidelines relating to noise. The goals and policies contained in the General Plan are applicable throughout the City. The following is a brief discussion of the General Plan policies and noise ordinance regulations implemented by the City of Chico to protect its citizens from adverse noises.

Policy N-I-2 of the City’s Noise Element addresses noise from roadway improvement projects within the City. Where existing noise-sensitive land uses may be exposed to increased noise levels due to roadway improvement projects as a result of factors such as increased roadway capacity and increases in travel speeds, the City has established criteria for the assessment of the significance of roadway improvement projects. Policy N-I-2 states the following:

- where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant;
- where existing traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise sensitive uses, a +3 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant; and
- where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise sensitive uses, a +1.5 dB L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.

The City’s General Plan Noise Element states that analysis of noise increases associated with roadway improvement projects listed above is based on a comparison of future with-project conditions to future no-project conditions.

The City’s General Plan Noise Elements defines noise-sensitive land uses as being residences, hotels/motels, schools, libraries, churches, hospitals and nursing homes. Outdoor activity areas are considered to be the portion of the parcel where outdoor activities generally occur (i.e., patios of residences and outdoor instructional areas of schools).

Based on these City noise standards, a noise impact is considered significant if:

- construction noise would exceed construction noise limits in the City of Chico noise ordinance,
- traffic noise would exceed the significance thresholds listed in the City’s General Plan, or
- the project would be inconsistent with local policies related to noise.

Table 7-9. Summary of Traffic Noise Impacts under CEQA (L_{dn})

Receiver	Type of Development	Significant Increase in Noise per City Standard ^a	Predicted Worst Noise Hour Noise Level (dB-L _{dn} [h]) ^b					Noise Increase (dB) Relative to Future No-Project Conditions				Impact Type ^c				Area
			Future No-Project Alternative	D-1		E-1		D-1		E-1		D-1		E-1		
				Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative			
East of SR 99																
14A	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 2
14B	Residence	+1.5 dB Ldn	69	70	69	69	69	1	0	0	0	LTS	LTS	LTS	LTS	Area 2
14C	Residence	+1.5 dB Ldn	68	68	68	68	68	0	0	0	0	LTS	LTS	LTS	LTS	Area 2
14D	Residence	+3 dB Ldn	66	67	67	67	67	1	1	1	1	LTS	LTS	LTS	LTS	Area 2
13A	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
13B	Residence	+1.5 dB Ldn	67	69	69	69	69	2	2	2	2	LTS	LTS	LTS	LTS	Area 1
13C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
12A	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
12B	Residence	+1.5 dB Ldn	67	68	68	68	68	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
12C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
11A	Residence	+1.5 dB Ldn	68	70	70	70	70	2	2	2	2	LTS	LTS	LTS	LTS	Area 1
11B	Residence	+1.5 dB Ldn	66	67	68	67	68	1	2	1	2	LTS	LTS	LTS	LTS	Area 1
11C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
9A	Residence	+1.5 dB Ldn	69	70	69	70	69	1	0	1	0	LTS	LTS	LTS	LTS	Area 1
9B	Residence	+1.5 dB Ldn	67	68	68	68	68	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
9C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
8C	Residence	+3 dB Ldn	65	66	66	66	66	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
7A	Residence	+1.5 dB Ldn	69	68	68	68	68	-1	-1	-1	-1	LTS	LTS	LTS	LTS	Area 1
7B	Residence	+3 dB Ldn	67	67	67	67	67	0	0	0	0	LTS	LTS	LTS	LTS	Area 1
7C	Residence	+3 dB Ldn	65	65	65	65	65	0	0	0	0	LTS	LTS	LTS	LTS	Area 1
6A	Residence	+1.5 dB Ldn	68	68	67	68	67	0	-1	0	-1	LTS	LTS	LTS	LTS	Area 1
5A	Residence	+1.5 dB Ldn	68	68	67	68	67	0	-1	0	-1	LTS	LTS	LTS	LTS	Area 1
4A	Residence	+1.5 dB Ldn	69	68	69	68	69	-1	0	-1	0	LTS	LTS	LTS	LTS	Area 1
4B	Residence	+1.5 dB Ldn	66	67	67	67	67	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
4C	Residence	+3 dB Ldn	65	65	65	65	65	0	0	0	0	LTS	LTS	LTS	LTS	Area 1
2A	Residence	+1.5 dB Ldn	70	70	70	70	71	0	0	0	1	LTS	LTS	LTS	LTS	Area 1
2B	Residence	+1.5 dB Ldn	68	68	68	68	68	0	0	0	0	LTS	LTS	LTS	LTS	Area 1
2C	Residence	+3 dB Ldn	66	67	67	67	67	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
1A	Residence	+1.5 dB Ldn	71	71	71	71	71	0	0	0	0	LTS	LTS	LTS	LTS	Area 1
1B	Residence	+1.5 dB Ldn	71	72	72	72	72	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
1C	Residence	+1.5 dB Ldn	70	71	71	71	71	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
1D	Residence	+1.5 dB Ldn	70	71	71	71	71	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
A	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
F	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 1
West of SR 99																
33A	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 4
33B	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 4

Table 7-9. Continued

Receiver	Type of Development	Significant Increase in Noise per City Standard ^a	Predicted Worst Noise Hour Noise Level (dB-L _{dn} [h]) ^b					Noise Increase (dB) Relative to Future No-Project Conditions				Impact Type ^c				Area
			Future No-Project Alternative	D-1		E-1		D-1		E-1		D-1		E-1		
				Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	Inside Widening Alternative	Outside Widening Alternative	
33C	Residence	+1.5 dB Ldn	70	71	71	71	71	1	1	1	1	LTS	LTS	LTS	LTS	Area 4
32A	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
32B	Residence	+1.5 dB Ldn	66	67	67	67	67	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
32C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
31A	Residence	+1.5 dB Ldn	68	69	71	69	71	1	3	1	3	LTS	S	LTS	S	Area 3
31B	Residence	+1.5 dB Ldn	65	67	67	67	67	2	2	2	2	S	S	S	S	Area 3
31C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
30B	Residence	+3 dB Ldn	65	66	67	66	67	1	2	1	2	LTS	S	LTS	S	Area 3
30C	Residence	+3 dB Ldn	63	65	65	65	65	2	2	2	2	S	S	S	S	Area 3
27A	Residence	+1.5 dB Ldn	68	69	69	69	69	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
27B	Residence	+1.5 dB Ldn	66	67	67	67	67	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
27C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
26A	Residence	+1.5 dB Ldn	68	69	69	69	69	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
25A	Residence	+1.5 dB Ldn	68	68	68	68	68	0	0	0	0	LTS	LTS	LTS	LTS	Area 3
25B	Residence	+1.5 dB Ldn	66	67	67	67	67	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
25C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
24A	Residence	+1.5 dB Ldn	68	67	67	67	67	-1	-1	-1	-1	LTS	LTS	LTS	LTS	Area 3
24B	Residence	+1.5 dB Ldn	66	67	67	66	67	1	1	0	1	LTS	LTS	LTS	LTS	Area 3
24C	Residence	+3 dB Ldn	64	65	65	65	65	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
22A	Residence	+1.5 dB Ldn	68	70	70	70	70	2	2	2	2	S	S	S	S	Area 3
22B	Residence	+1.5 dB Ldn	66	67	67	67	67	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
22C	Residence	+3 dB Ldn	65	65	65	65	65	0	0	0	0	LTS	LTS	LTS	LTS	Area 3
21A	Residence	+1.5 dB Ldn	69	70	70	70	70	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
21B	Residence	+1.5 dB Ldn	68	68	68	68	68	0	0	0	0	LTS	LTS	LTS	LTS	Area 3
21C	Residence	+3 dB Ldn	66	66	66	66	66	0	0	0	0	LTS	LTS	LTS	LTS	Area 3
20A	Commercial	NA	71	70	70	70	71	-1	-1	-1	0	LTS	LTS	LTS	LTS	Area 3
20B	Residence	+1.5 dB Ldn	72	73	73	73	73	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
20C	Residence	+1.5 dB Ldn	71	72	72	72	72	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
20D	Residence	+1.5 dB Ldn	71	72	72	72	72	1	1	1	1	LTS	LTS	LTS	LTS	Area 3
B	Residence	+1.5 dB Ldn	67	67	67	67	67	0	0	0	0	LTS	LTS	LTS	LTS	Area 3
C	Residence	+1.5 dB Ldn	67	69	68	69	68	2	1	2	1	S	LTS	S	LTS	Area 3
D	Residence	+1.5 dB Ldn	67	69	70	69	70	2	3	2	3	LTS	S	LTS	S	Area 3

Notes: Receiver with letter (A) indicates noise measurement/modeling location, receiver with number (1A) indicates noise modeling location.

Shading clarifies groups of receivers.

^a Future with project minus future no project.

^b Predicted design year 2027.

^c LTS = less than significant.

S = significant.

Impact N2 (CEQA): Exposure of Noise Sensitive Land Uses to Construction Noise

Outside and Inside Widening Alternatives

During construction of the project, noise from construction activities (primarily operation of heavy equipment) may intermittently dominate the noise environment in the immediate area of construction. Construction noise is regulated by Caltrans' standard specifications (section 7-1.01I, "Sound Control Requirements"), which state that noise levels generated during construction shall comply with applicable local, state, and federal regulations and that all equipment shall be fitted with adequate mufflers according to the manufacturers' specifications.

Table 7-10 summarizes noise levels produced by construction equipment that is commonly used on roadway-construction projects. Construction equipment is expected to generate noise levels ranging from 70 to 90 dB at a distance of 15 meters (50 feet), and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 7-10. Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 Feet from Source
Air compressor	81
Backhoe	80
Ballast equalizer	82
Ballast tamper	83
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, derrick	88
Crane, mobile	83
Dozer	85
Generator	81
Grader	85
Impact wrench	85
Jack hammer	88
Loader	85
Paver	89
Pile driver (impact)	101
Pile driver (sonic)	96
Pneumatic tool	85
Pump	76
Rail saw	90
Rock drill	98
Roller/sheep's foot	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Spike driver	77
Tie cutter	84
Tie handler	80
Tie inserter	85
Truck	88

Source: Federal Transit Administration 1995.

In general, significant noise impacts from construction are not anticipated because construction would be conducted in accordance with Caltrans' standard specifications and would be short-term, intermittent, and dominated by local traffic noise. However, there may be instances where construction activity in close proximity to noise sensitive land uses could result in significant noise impacts (i.e. noise levels that are in excess of the City's construction noise limits specified in the City's noise ordinance). Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure N2a: Employ Noise-Reduction Construction Measures

Caltrans shall incorporate the following measures into the construction contract specifications:

- The construction contractor shall be prohibited from undertaking construction activities within 304.8 meters (1,000 feet) of residences between the hours of 9 p.m. and 7 a.m., unless required by Caltrans. Where Caltrans requires construction during nighttime hours, construction activity shall be staged so that it does not occur over an extended period of time (i.e., more than 14 days at a time).
- The construction contractor shall be required to use equipment with sound control devices no less effective than those provided on the original equipment
- The construction contractor shall be prohibited from using equipment with unmuffled exhaust.
- As directed by Caltrans, the contractor shall implement appropriate additional noise mitigation measures so that construction noise limits in the City noise ordinance are not exceeded, including but not limited to changing the location of stationery construction equipment, shutting off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationery construction noise sources.

Impact N3 (CEQA): Exposure of Noise Sensitive Land Uses to a Significant Increase in Traffic Noise at Three Receivers

Outside and Inside Widening Alternatives

Table 7-9 summarizes predicted noise levels for future with-project conditions and compares them to noise levels under future no-project conditions. These results indicate that all scenarios are expected to result in significant increases in traffic noise levels at three receiver locations west of SR 99. Consequently, this impact is considered significant. Implementation of Mitigation Measure N3a would reduce this impact to a less-than-significant level.

Mitigation Measure N3a: Employ Traffic Noise-Reduction Design Features in the Design of the Proposed Project

Noise-reduction design features that would reduce this impact to a less-than-significant level include:

- **Noise Barriers.** Table 7-7 summarizes the noise reduction resulting from noise barriers of differing heights. Any of the wall heights evaluated (2.4–4.1 meters [8–14 feet]) would provide the minimum 1 dB noise reduction needed to reduce this impact to a less than significant level.

- **Open Graded Asphalt.** Recent studies by Caltrans and others indicate that open-graded asphalt can reduce traffic noise by 4 to 6 dB (Illingworth & Rodkin 2001). This would provide the minimum 1 dB noise reduction needed to reduce this impact to a less-than-significant level.

Impact N4 (CEQA): Consistency with Local Policies

Outside and Inside Widening Alternatives

The Bidwell Park Master Management Plan (Bidwell Park & Playground Commission 1990) contains policies for managing Bidwell Park, as well as recommendations for general management of the park. The following noise-related management recommendation is relevant to the proposed project:

Management Zone 7 – Vallombrosa West

Issue 4: State Route 99 and Vallombrosa Avenue creates noise and visual blight at the eastern end of this area. Widening in the future may increase this impact.

Recommendation a: Require improvements to State Route 99 to mitigate ground level noise. (The recommended noise level should not be higher than 60 decibels using the CNEL measurement method which is a 24-hour nighttime weighted average noise level.)

Existing noise levels near the Bidwell Park Viaduct are approximately 69 dB CNEL (as indicated by residential receivers 13A and 32A located adjacent to the park in Table 7-6; 2 dB have been added to L_{eq} to derive CNEL measurements). The proposed project would increase noise levels to 70 dB; a 1 dB increase would not be perceptible. Construction of a 4.1-meter (14-foot) noise barrier, as shown in Figure 7-3a, would decrease future noise levels to about 65 dB CNEL in the park. Even if a noise barrier were to be constructed along the entire length of the Bidwell Park Viaduct, 60 dB CNEL could not be achieved at ground level within Bidwell Park. Therefore, this management recommendation is not technologically feasible.

Mitigation Measure

None proposed.

7.4.3 No-Project Alternative

No construction noise would occur under this alternative. Therefore, no construction impacts would occur.

Table 7-9 summarizes predicted traffic noise levels under the No-Project Alternative. This alternative would have no project-related effect on future noise levels. No significant impacts are expected under this alternative.

Chapter 8 Hydrology and Water Quality

The information below is summarized from the project Hydrology and Water Quality Report (Jones & Stokes 2003g). This report is available for review at BCAG offices. This chapter addresses drainage, flooding, and water quality impacts. Floodplain findings required under federal Executive Order 11988 are contained in Appendix F.

8.1 Setting

8.1.1 Climate

The project area is situated along the eastern side of the Sacramento Valley, which is within a Mediterranean subtropical climate zone. The area is characterized by hot, dry summers with occasional temperatures above 37.8°C (100°F), and by wet, cool winters with some temperatures below 0°C (32°F). Rainfall in the area averages about 64 centimeters (25 inches) annually with the majority falling between November and May. Potential evapotranspiration (i.e., sum of evaporation and vegetation transpiration) for the area is about 132 centimeters (52 inches) per year.

8.1.2 Topography and Hydrology

The project area is located in the Big Chico Creek watershed within Butte County near downtown Chico. The Big Chico Creek watershed is about 4.2 square kilometers (72 square miles) beginning in the Sierra Nevada foothills and flows in a generally westward direction to the Sacramento River. Within the project area, streamflow is typically very low in the summer. During the winter, the majority of the flow is diverted upstream at the Sycamore Creek/Mud Creek diversion structure. The diversion structure was constructed in 1966 and designed to divert high winter flows into Sycamore Creek and Mud Creek to alleviate potential flooding problems in downtown Chico. Within the project area, the channel has a mapped Federal Emergency Management Agency- (FEMA) designated 100-year floodplain that is entirely contained within the defined channel banks (WRECO 2002). The peak 1-in-100 year recurrence interval flood flow is estimated to be 39.6 cubic meters per second (cms) (1,400 cubic feet per second [cfs]) (WRECO 2002).

A preliminary drainage report was prepared for the project that identifies and describes the performance of existing stormwater drainage facilities and projected changes in drainage and associated improvements to convey the drainage safely offsite (Quincy Engineering 2002). The drainage report indicates that surface stormwater drainage for SR99 and adjacent road surfaces is currently conveyed by surface ditches and small culverts. Most of the drainage flows to the Big Chico Creek channel corridor. The report indicates that drainage facilities in the project area are adequate, and no evidence of erosion occurs within existing surface conveyance drainage channels or vegetated offsite areas. The report states that Caltrans has noted minor amounts of standing water occurring on road surfaces at the base of the SR 32 on- and off-ramps. Standing water has also occurred on the bridge deck of the Bidwell Park Viaduct as a result of clogged

drain outlets. The report indicates that Caltrans staff has identified use of mulch on steep disturbed slopes as a potential problem for maintaining drainage facility performance.

8.1.3 Groundwater Hydrology

Groundwater resources underlying the Chico area supply the majority of municipal and agricultural demands. Groundwater is the source of all of the City's municipal supply, and the California Water Service Company also operates several water supply wells. Groundwater aquifers are recharged in the foothills east of Chico by streamflow infiltration and by precipitation over the entire eastern valley floor. Specific information on groundwater for the project area was not investigated because the proposed project is not expected to affect groundwater resources. No wells would be constructed, and construction activities are not expected to intercept or alter groundwater recharge, discharge, or flow conditions.

8.1.4 Water Quality

Surface water quality depends primarily on the mineral composition of the soils and associated parent materials within a watershed; hydrologic characteristics; and sources of contaminants in the watershed as influenced by predominant land uses. The upstream watershed of Big Chico Creek is largely undeveloped; however, primarily urban land uses occur in the drainage area immediately adjacent to the project area. U.S. Geological Survey (USGS) water quality data, from its historical streamflow monitoring site upstream of the Sycamore Creek/Mud Creek diversion facility for the period from 1967 to 1976, provides a general indication of background physical and inorganic chemical conditions in the stream (U.S. Geological Survey 2003). Data were screened for the primary dry, low flow months of the year (May through November) that typically have water conditions most critical to aquatic life and habitat quality. Table 8-1 shows summary values including average, minimum, and maximum recorded values for streamflow conditions that range from 0.5 to 7.6 cms (16 to 270 cfs). The data indicate that temperature, dissolved oxygen, and pH conditions are acceptable for aquatic organisms. The inorganic mineral content (as measured with electrical conductivity and total hardness) is moderate and nutrient concentrations (nitrogen and phosphorus) are very low. Water quality conditions for the lower reaches of Big Chico Creek are not known. However, it can be presumed that urban runoff from municipal land use areas in the valley contribute additional pollutants, particularly during winter rainfall periods.

**Table 8-1. Summary Water Quality Statistics for Big Chico Creek:
May through October 1967–1979**

Constituent	Average	Minimum	Maximum	Count
Temperature (°F)	66	54	79	40
Flow	46	16	270	44
Dissolved oxygen (mg/L)	11	8	16	76
pH (standard)	7.9	7.1	8.5	85
Electrical conductivity (μSiemens/cm)	165	58	252	83
Total hardness (mg/L as CaCO ₃)	60	22	83	53
Total nitrogen (NH ₄ +Organic, mg/L N)	0.13	No detect	0.20	3
Total phosphorus (mg/L P)	0.02	No detect	0.03	3
Nitrate (dissolved, mg/L N)	0.08	No detect	0.30	10

Source: U.S. Geological Survey 2003.

As part of the Sacramento River Watershed Program (Sacramento River Watershed Program 2002), periodic water quality monitoring has been conducted at several locations in Big Chico Creek since 1998 with a focus on trace metal and organic compounds, bacterial pathogen indicator organisms, aquatic toxicity, aquatic sediment toxicity, and benthic macroinvertebrate (BMI) bioassessment. The chemical constituent, toxicity, and BMI statistical data generally indicate that water quality conditions are excellent in Big Chico Creek. Table 8-2 shows summary statistical data collected for the monitoring program.

Table 8-2. Summary Water Quality Statistics for Big Chico Creek: 1998–2001

Constituent (units)	Average ^a	Count ^b
Conventional Physical and Chemical Constituents		
Total dissolved solids ^c (mg/L)	109	4 ^d
Electrical conductivity (µSiemens/cm)	152	7 ^d
Alkalinity (mg/L as CaCO ₃)	61	7 ^d
pH (standard)	7.9	7 ^d
Turbidity (NTU)	0.8	15
Total suspended solids (mg/L)	12	15 ^e
Total hardness (mg/L as CaCO ₃)	61	7 ^d
Dissolved oxygen (mg/L)	10	18 ^e
Total organic carbon ^c (mg/L)	1.4	15
Ammonia (mg/L N)	0.1/0.2 ^f	17 ^e
Orthophosphate (mg/L P)	0.01/0.02 ^f	17 ^e
Total phosphorus (mg/L P)	0.02 ^g	17 ^e
Bacterial Pathogen Indicators		
Fecal coliform (MPN/100 mL)	169	12
Trace Metals		
Arsenic, total (µg/L)	0.26 ^g	16 ^e
Cadmium, total (µg/L)	0.004/0.035 ^f	15 ^e
Chromium, total (µg/L)	0.49 ^g	19 ^e
Copper, total (µg/L)	0.37 ^g	19 ^e
Lead, total (µg/L)	0.03 ^g	18 ^e
Nickel, total (µg/L)	0.13 ^g	16 ^e
Selenium, total (µg/L)	0.33/0.39 ^f	11 ^h
Silver, total (µg/L)	0.003/0.012 ^f	15 ^e
Mercury, total (µg/L)	0.0014	19
Organic Pesticides		
Malithion ⁱ (ng/L)	< 0.1	4
Prometon ⁱ (ng/L)	< 0.1	4
Prowl ⁱ (ng/L)	< 0.1	4
Diazinon ⁱ (ng/L)	< 0.1	4
Chlorpyrifos ⁱ (ng/L)	< 0.1	4

Source: Sacramento River Watershed Program 2002.

^a Samples collected at Rose Avenue and data reported as average unless otherwise noted.

^b Samples collected in June 1998 through May 2001.

^c Samples collected above Sycamore Creek/Mud Creek diversion.

^d Samples collected in 1999 and 2000 only.

^e Samples collected in 1998 through 2000 only.

^f Average not available. Data shown as minimum and maximum. Insufficient number of samples detected.

^g Average not available. Data shown as median value.

^h Samples collected in 1998 and 1999 only.

ⁱ Sampling point on Big Chico Creek at confluence with Sacramento River in 2001 only.

8.1.5 Regulatory Setting

Drainage and Floodplain Regulations

FEMA administers the National Flood Insurance Program (NFIP), which provides subsidized flood insurance to communities complying with FEMA regulations that limit development in floodplains. FEMA issues flood insurance rate maps to communities that participate in the NFIP. These maps delineate flood hazard zones in the community.

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. This executive order is discussed in Appendix F.

At the local level, the City is responsible for managing stormwater and flood protection improvement policies and programs pursuant to provisions of Chapter 16.34 of the Municipal Code. In general, discretionary development must ensure that the stormwater drainage and flooding is managed so that public health and environmental resources are protected.

Water Quality Regulations

Surface water and groundwater resources and their associated water quality are regulated in California through many different applicable laws, regulations, and ordinances administered by local, state, and federal agencies. These regulations ensure that the hydrologic characteristics of surface water and groundwater resources are considered to ensure that the existing uses they provide (e.g., water supply, flood control, recreation, fish and wildlife habitat) are not impaired. Similarly, water quality regulations and permitting processes are designed to limit the discharge of pollutants to the environment, maintain surface water and groundwater quality at existing levels or restore water quality to adequate levels, protect fish and wildlife and their habitats, and protect beneficial uses.

The Central Valley Regional Water Quality Control Board (RWQCB) designates beneficial uses and establishes water quality objectives (WQOs) to protect those beneficial uses in its basin plan under the State Porter-Cologne Water Quality Control Act, CWA Section 303, and general provisions of California Water Code Section 13000 (California Regional Water Quality Control Board 1998). The beneficial uses designated for Big Chico Creek are contact and noncontact recreation, agricultural irrigation and stock watering, warm and cold freshwater habitat, cold water fish migration habitat, warm and cold water fish spawning habitat, and wildlife habitat. WQOs can be narrative or numerical and differ depending on the specific beneficial uses being protected. Narrative objectives are established for parameters such as color, suspended and settleable material, oil and grease, biostimulatory substances, and toxicity; numeric objectives can include such parameters as dissolved oxygen, temperature, turbidity, pH, and specific chemical constituents such as trace metals and synthetic organic compounds. Big Chico Creek is not listed on the Environmental Protection Agency Clean Water Act Section 303(d) list of water quality limited segments.

The RWQCB implements its authority by issuing and enforcing waste discharge requirements (WDRs), or other permits or authorizations for waste discharges to land and waters within its jurisdiction. If proposed ground-disturbing activities would affect more than 2 hectares (5 acres), the project must obtain authorization for stormwater discharges pursuant to the National Pollution Discharge Elimination System (NPDES) permit program for general construction activity (Order 99-08-DWQ). An NPDES stormwater permit requires filing a

Notice of Intent (NOI) to discharge to the RWQCB and preparation of a stormwater pollution prevention plan (SWPPP) for activities that would disturb 0.4 hectare [1 acre] or more. SWPPPs describe the proposed construction activities, receiving waters, stormwater discharge locations, and Best Management Practices (BMPs) that will be used to reduce a project's construction effects on receiving-water quality. An appropriate selection of postconstruction permanent pollution control and treatment measures must also be considered, where necessary, to prevent long-term impairment of water quality.

Caltrans has a separate NPDES stormwater permit (Order 99-06-DWQ) issued by the State Water Resources Control Board and administered by the applicable RWQCB for construction projects within Caltrans' rights-of-way. Caltrans' Stormwater Management Plan (SWMP) (California Department of Transportation 2001b) describes the permit implementation procedures and includes specific stormwater and non-stormwater quality protection measures and protocols for any construction activity associated with Caltrans facilities or rights-of-way. The SWMP specifies that a SWPPP be prepared for projects that disturb greater than 0.4 hectare (1 acre); a less formal Water Pollution Control Plan (WPCP) is prepared for projects that disturb less than 0.4 hectare (1 acre). Specific water quality BMPs (for stormwater and non-storm water discharges) are identified in Caltrans' project planning and design guide (California Department of Transportation 2001b, 2002a).

The City of Chico recently completed a draft Storm Water Management Program (City of Chico 2003) for compliance with the NPDES municipal stormwater permitting program. The City's program describes ways to design and implement federal stormwater quality protection requirements through public education and outreach, public participation and involvement, construction site runoff control practices, post-construction runoff control practices, pollution prevention and good housekeeping activities, and program evaluation activities.

The RWQCB administers a general WDR process (Order No. 5-00-175, NPDES No. CAG995001) for low threat discharges from construction dewatering activities that discharge to surface waters (i.e., removal of accumulated water during excavation). The WDR requires the applicant to file an NOI to discharge water prior to the dewatering activity, and contains a set of standard terms and conditions for compliance with discharge prohibitions, specific effluent and receiving water limitations, solids disposal activities, water quality monitoring protocols, and applicable water quality criteria.

If a project would reuse soil contaminated with aerially deposited lead (ADL), Caltrans procedure is to notify the applicable RWQCB at least 30 days before advertising for bids so that the RWQCB can determine whether it is necessary to specify environmental protection measures, including WDRs, for the reuse or disposal of contaminated soil. Also, if the project would reuse ADL-contaminated soil, the California Department of Toxic Substances Control (DTSC) must be contacted to determine whether a variance for the reuse can be authorized; it is recommended that the RWQCB be notified promptly if the variance is to be invoked.

Federal and state agencies have jurisdiction over specific activities conducted in stream channels, wetlands, and other water bodies. The federal government supports a policy of minimizing "the destruction, loss, or degradation of wetlands" (Executive Order 11990, May 24, 1977). The U.S. Army Corps of Engineers (Corps) and EPA regulate the placement of dredged and fill material

into waters of the United States, including wetlands, under CWA Section 404. Unvegetated stream channels, mudflats, and open water such as ponds and lakes are not considered wetlands, but fall under Corps and EPA jurisdiction under CWA Section 404 as other waters of the United States. In the absence of adjacent wetlands, the jurisdictional limits of stream channels and lakes are delineated at the ordinary high-water mark. For all work subject to a CWA Section 404 permit, project proponents must obtain from the applicable RWQCB a certification or waiver under CWA Section 401 stating that the project would comply with applicable water quality regulations. For public agency projects that involve construction or other disturbance to public waters, the California Department of Fish and Game (DFG) issues Streambed Alteration Agreements (SAAs) under California Fish and Game Code Section 1601. SAAs include strict measures to protect water quality and fish and wildlife habitat, and to mitigate unavoidable habitat losses, including loss of riparian vegetation.

8.2 Environmental Impacts and Mitigation Measures

8.2.1 Methodology

Evaluation of potential effects on hydrology and water quality was based on professional standards and the conclusions of technical reports prepared for the proposed project. The key effects were identified and evaluated based on the physical characteristics of the project area and the anticipated nature, scope, intensity, and duration of proposed activities. Analysis focused on surface water resources, because the proposed project is not expected to result in any substantial effect on groundwater resources; no wells would be constructed, and construction activities are not expected to intercept or alter groundwater recharge, discharge, or flow conditions.

8.2.2 Significance Thresholds

The significance thresholds identified below are based on Appendix G of the State CEQA Guidelines and professional practice. Alterations to the hydraulic characteristics of water courses are considered significant if any of the following would occur:

- Substantial alteration of the existing drainage pattern of the site or area, including the alteration of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems;
- Substantial reduction of floodflow conveyance capacities; or
- Increased extent or severity of flooding.

Impacts on water quality are considered significant if the project would result in any of the following:

- Violate any water quality standards or waste discharge requirements;
- Create or contribute runoff water which would provide substantial additional sources of polluted runoff;
- Any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity, that substantially diminishes the value of habitat for fish and wildlife; or
- Otherwise substantially degrade water quality

Impact W1: Permanent Changes in Local Storm Water Drainage

Outside Widening Alternative

The proposed widening of SR99 and other roadway improvements would increase the amount of impervious surface in the project area. The introduction of new impervious surfaces would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels; accelerate soil erosion and stream channel scour; and increase the transport of pollutants to waterways.

The preliminary drainage report prepared for the proposed project (Quincy Engineering 2002) indicates that the quantity of stormwater runoff produced in the project area following construction during a 25-year storm event would be about 0.9 cms (31 cfs) associated with roadway surfaces. An additional 0.3 cms (11 cfs) would be generated from natural ground surfaces within the project area and be conveyed to project drainage facilities. The volume of additional storm water runoff would be small relative to existing flows and would not affect offsite properties. All of the runoff would flow to Big Chico Creek.

Caltrans requires facilities to be constructed to accommodate the 25-year storm event. All new and existing drainage facilities would be sized to convey the anticipated flow from the roadway improvements. The drainage report indicates that only minor modifications to the existing facilities would be required to accommodate the runoff consisting of new culverts and site grading to direct drainage to the appropriate culvert locations. The hydrologic impacts resulting from stormwater runoff are considered less than significant because the course and direction of offsite drainage is not being changed and drainage would not exceed the capacity of proposed modified facilities. Proposed drainage and flow control features will be implemented according to the drainage plan to be approved by BCAG and Caltrans. Therefore, no mitigation is required.

Mitigation Measure

None proposed.

Inside Widening Alternative

Drainage volumes would be slightly higher under the Inside Widening Alternative with 1.0 cms (37 cfs) expected from roadway runoff and 0.3 cms (11 cfs) from natural ground surfaces within the project area. Drainage impacts would essentially be the same under this alternative.

Impact W2: Flooding and Hydraulic Changes

Outside Widening Alternative

The viaduct structure would be widened to accommodate the additional roadway and would require construction of additional piers within the Big Chico Creek floodplain. A total of 26 additional bridge piers would be installed. Increasing the degree of encroachment in the floodplain can alter flood conveyance, channel scour, and/or inundation and backwater patterns of floodwater. Based on the project's preliminary drainage report (Quincy Engineering 2002), the combined rate of drainage from the project area conveyance facilities would be about 1.4 cms (48 cfs) during a 25-year event. This additional drainage would not appreciably add to background streamflow during larger storms. Therefore, this impact is considered to be less than significant since the change in water surface elevation would be negligible, and there would be no additional flood risk to life or property from the negligible increase in water surface elevations. No mitigation is required.

Mitigation Measure

None proposed.

Inside Widening Alternative

Under this alternative, 39 additional bridge piers would be installed in the Big Chico Creek floodplain. Flooding-related impacts would be the same as under the Outside Widening Alternative.

Impact W3: Temporary Construction Water Quality Impacts

Outside Widening Alternative

This project would involve construction grading, earthmoving, and facility construction activities that would occur over several years. The construction activities would directly disturb soils and surface drainage swales adjacent to the interchange area. In addition, construction would occur within the Big Chico Creek channel for installation of additional bridge piers. The exact quantities of material excavation and disturbance have not been determined at this time. Some construction site dewatering activities would be needed to install the footings of four new bridge piers and to retrofit four existing pier footings within the creek channel.

Construction activities can impair water quality temporarily because disturbed and eroded soil, petroleum products, and miscellaneous wastes may be discharged into receiving waters. Soil and associated contaminants that enter stream channels can increase turbidity, stimulate algae growth, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms. Construction materials such as fuels, oils, paints, and concrete are potentially harmful to fish and other aquatic life if released into the environment. The extent of potential environmental effects depends on the erodibility of soil types encountered, type of construction practices, extent of disturbed area, duration of construction activities, timing of precipitation, proximity to receiving water bodies, and sensitivity of those water bodies to contaminants of concern. Accidental spills of construction-related substances such as oils, fuels, and concrete can contaminate both surface water and groundwater.

This impact is considered to be significant since temporary and intermittent discharges of contaminated stormwater could occur during construction.

Mitigation Measure W3a: Implement Construction-Related Best Management Practices

The project would be designed to avoid or minimize potential construction-related water quality impacts by implementing water quality protection BMPs that are specified in a SWPPP, prepared pursuant to Section A of the Caltrans' NPDES General Permit. The SWPPP applies to all areas that are directly related to construction activity whether or not they are in the Caltrans right-of-way. The Caltrans' contractor is required to prepare the SWPPP for review and approval by Caltrans' Resident Engineer. The RWQCB may request to review the SWPPP to ensure that conceptual BMP implementation plans are satisfactory.

Caltrans' contractor is responsible for selecting the grading and erosion control BMP specifications for the SWPPP that are necessary to prevent water quality impairment. Several classes of construction BMPs are identified in Caltrans' Water Quality Practice Guidelines (April 2002) (California Department of Transportation 2002b) and Planning and Design Guide (September 2002) (California Department of Transportation 2002a) and SWMP (August 2001) (California Department of Transportation 2001b) and are consistent with the BMPs and control practices required under the State of California NPDES General Permit (Order No. 99-08-DWQ). These include soil stabilization, sediment control, wind erosion control, tracking control, non-storm water control, and waste management and materials pollution control practices. There are numerous approved BMPs within each of these classes, although, not every BMP is used for each project. Typically, the general contractor develops the SWPPP that includes an appropriate suite of BMPs for the specific activities that will occur. Caltrans' Project Engineer may also specify that certain construction BMPs are included in the SWPPP.

Given the site-specific conditions of the project area, the SWPPP for this project would generally include limiting soil disturbances in Bidwell Park during the designated winter rainfall season of October 15 through April 15. Standard sediment erosion control measures, such as silt fencing, straw bale barriers, sediment traps, or other measures would also be required to directly reduce the offsite transport of sediment from disturbed slopes. Existing vegetation that can be preserved would be identified and flagged or fenced to avoid disturbance. Erosion in disturbed areas would be controlled through the use of grading operations that eliminate direct routes for conveying runoff to drainage channels and use of soil stabilization BMPs such as mulching, erosion control fabrics, and/or reseeding with grass or other plants where necessary. Standard staging area practices for sediment tracking reduction would also be identified where necessary including vehicle washing and street sweeping. Temporary concentrated flow conveyance systems would also be considered such as berms, ditches, and outlet flow velocity dissipation devices to reduce erosion from newly disturbed slopes.

Under the direction of Caltrans engineering staff, the general contractor and subcontractor conducting the work would be responsible for constructing or implementing, regularly inspecting, and maintaining the BMPs in good working order. The construction contractor and subcontractor would also be required to implement appropriate hazardous materials management practices to reduce the possibility of chemical spills or releases of contaminants, including any nonstormwater discharge to drainage channels. Standard hazardous materials management and spill control and response measures would minimize the potential for surface and groundwater

contamination. If soils containing ADL are proposed for reuse within the project area, Caltrans would coordinate with the RWQCB and DTSC as needed to identify necessary protective measures.

Implementation of Mitigation Measure W3a would reduce construction-related water quality impacts to less than significant since the project would comply with water quality standards and discharge requirements.

Inside Widening Alternative

Short-term water quality impacts would be the same under this alternative. The exact quantities of material excavation and disturbance have not been determined at this time, however, it is expected to be slightly less than for the Outside Widening Alternative. The construction of six new piers and the retrofit of four existing piers would directly affect the creek channel. Implementation of Mitigation Measure W3a would also be required under the Inside Widening Alternative.

Impact W4: Water Quality Impacts from Changes in Stormwater Drainage

Outside Widening

The proposed project would increase the amount of impervious paved roadway surfaces associated with widened roadways and interchange ramp improvements, and thereby increase the amount of contaminants in stormwater runoff from the project area. The improvements would require minor modifications to existing drainage improvements, primarily involving contouring during grading activities to control the direction and rate of drainage to project facilities. Culverts would need to be extended where roadways would be widened and/or upgraded where currently undersized. There would be no appreciable change in the direction or routing of storm drainage from existing conditions.

In addition to increased runoff, as development in the surrounding urban areas and use of the roadway improvements increase, greater quantities of contaminants such as petroleum products and other substances (e.g., trace metals, hazardous materials, litter) could be deposited on the road surfaces. Contaminants in roadway runoff, if discharged untreated to receiving water bodies, can be toxic to fish and other aquatic organisms. In particular, the initial storm events occurring each fall season can transport elevated levels of contaminants that have resulted from deposition during the dry season. Increases in the total runoff volume can also accelerate soil erosion and stream channel scour and increase the transport of contaminants to waterways. This impact is considered to be significant since temporary and intermittent stormwater discharges from project-related drainage facilities could have reduced water quality.

Mitigation Measure W4a: Implement Permanent Post-Construction Best Management Practices

Caltrans' contractor will avoid or minimize long-term water quality impacts through development and implementation of permanent stormwater treatment BMPs for the project area, pursuant to the NPDES stormwater permit. Caltrans' District NPDES Coordinator is responsible during the project design phase to ensure that appropriate permanent BMPs are considered and included as necessary. The RWQCB may also provide input on the selected BMPs to ensure that

the project is implemented in compliance with the terms of Caltrans NPDES permit. The BMPs would be identified and incorporated into the design of the project as appropriate.

The preliminary drainage report (Quincy Engineering 2002) indicates that the project area currently has drainage facilities that provide water quality treatment BMPs consistent with the Caltrans SWMP. These facilities generally consist of swales adjacent to the roadway and outlet control devices. Project-related facilities will consist of retaining, expanding, and upgrading these existing facilities as needed. Facility improvements will also be consistent with City requirements for water quality treatment measures for stormwater runoff.

Permanent post-construction BMPs could include erosion control measures such as preservation of existing vegetation, concentrated flow conveyance systems (ditches, berms, drains, flared culvert end sections, outlet protection and flow velocity dissipation), and slope protection measures. Permanent post-construction erosion control BMPs for slopes, such as mulching, seeding and planting, and slope roughening or terracing would be implemented for new cut-and-fill slopes and swales as deemed necessary by the project engineer. Slope protection measures would be implemented to control erosion such as reducing the length of disturbed slopes, reducing the gradient of slopes, and preventing concentrated flow over slope soils. Caltrans requires different slope protection measures based on whether the vertical to horizontal slope gradient is less than 1:4, between 1:4 and 1:2, or is steeper than 1:2. The Caltrans District Landscape Architect must design or approve all slope stabilization designs for slopes with greater than 1:4 gradients. By controlling erosion, directing runoff through vegetation, or otherwise reducing the offsite discharge of particulate matter and sediment, the permanent erosion control measures would control offsite discharges of roadway pollutants that are associated with particulate matter. Caltrans would be responsible for long-term inspection and maintenance of the permanent BMPs within their jurisdictional right-of-way to ensure that they are maintained in good working order. Likewise, the City would be responsible for maintenance of all other project-related permanent BMPs adjacent to the Caltrans right-of-way.

Post-construction BMPs also can consist of runoff treatment measures such as infiltration basins and detention basins. The preliminary drainage report for the project does not identify the need for retention or detention facilities for the project (Quincy Engineering 2002). However, because drainage runoff volumes will increase, the existing drainage system will need to be modified to accommodate the increased volumes without causing erosion of conveyance channels. The project will include selection of specific BMPs in accordance with Caltrans SWMP.

Implementation of this Mitigation Measure W4a would reduce permanent water quality impacts to less than significant since the project would comply with water quality standards and discharge requirements.

Inside Widening Alternative

Long-term water quality impacts would be the same under this alternative. Implementation of Mitigation Measure W4a would also be needed under this alternative.

8.2.3 No-Project Alternative

Under the no project alternative, there would be no change to the roadway facilities. Therefore, no impacts to drainage, flooding, or water quality would occur.

Chapter 9 Biological Resources

The information below is summarized from the project Natural Environment Study (NES) report (Jones & Stokes 2003h) and project biological assessments for Valley elderberry longhorn beetle (VELB) (Jones & Stokes 2003c) and Central Valley Steelhead and Central Valley Spring-Run and Fall-Run Chinook Salmon (Jones & Stokes 2003b); these reports are available for review at BCAG offices. This chapter address biological communities and special-status species found in the project area.

9.1 Setting

9.1.1 Methodology

A records search of the California Natural Diversity Database (CNDDB) (2002) and California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants in California (California Native Plant Society 2001) was conducted for the 7.5-minute Chico quadrangle and the eight adjacent quadrangles (Hamlin Canyon, Paradise West, Richardson Springs, Nord, Ord Ferry, Llano Seco, Nelson, and Shippee) to determine whether any special-status species were known to occur in the vicinity of the project area. USFWS and NOAA Fisheries (also known as National Marine Fisheries Service) were contacted to request lists of federally listed species occurring in the project vicinity (see Appendix B of the project NES for these lists). A summary list of special-status species with potential to occur in the project area was compiled from these sources. This list was used to focus the field surveys on the potentially occurring species and/or habitat for these species.

Based on the summary lists and the results of reconnaissance surveys of the project area, the following studies were determined to be needed:

- botanical field survey to identify plant species observed in the project area and potential habitat for special-status plant species;
- general habitat evaluation to determine whether suitable habitat exists for special-status wildlife species;
- assessment of the Bidwell Park Viaduct to determine whether suitable roosting habitat exists for swallows and bats;
- biological assessment (BA) for potential project effects on VELB, Central Valley spring-run and fall-run chinook salmon, and Central Valley steelhead; and
- essential fish habitat assessment for potential project effects on Central Valley spring-run and fall-run chinook salmon.

Big Chico Creek is a natural stream that flows though portions of the project area. No other streams or wetlands are present in the project area.

Botanical Resources

The entire project area was traversed by foot, and all plants encountered were identified to the extent possible. Habitats were mapped onto aerial photographs of the project area (scale approximately 1:500). Trees 15 centimeters (6 inches) or greater diameter at breast height (dbh) were surveyed and tagged with identification numbers. Each surveyed tree was identified to species and dbh was estimated.

Wildlife Resources

A wildlife biologist conducted a field survey to determine habitat suitability for sensitive wildlife species. The biologist walked in the project area evaluating the habitat and mapping sensitive biological resources and wildlife habitats on copies of aerial photographs. In addition, protocol-level surveys for VELB were conducted within the entire project area and within 30.5 meters (100 feet) of the project area in Bidwell Park. Elderberry stems were counted and measured and shrubs were examined for the presence of VELB exit holes. Elderberry shrubs were mapped on the aerial photograph. During the field survey, the Bidwell Park Viaduct was examined for the presence of bats and swallows.

Fisheries Resources

A fisheries biologist conducted two reconnaissance level surveys to determine habitat suitability for sensitive fish species. The biologist evaluated the condition of the riparian habitat, the potential for input of organic material and structure, the substrate condition, and the potential for use of the project area for spawning and rearing.

9.1.2 Study Area

The study area is located in an urban setting within the City of Chico and is shown as the project area in Figures 9-1a and 9-1b (also shown in 9-2a and 9-2b). The project area consists of the area within the SR 99 right-of-way, the portions of 8th Street and East 1st Avenue where interchange improvements are proposed, and the portion of Bidwell Park between 8th Street and Vallombrosa Avenue. The project area is defined as the area proposed for any ground-disturbing activities, such as construction activities, construction staging areas, and construction access.

9.1.3 Physical Conditions

Chico is situated on the eastern margin of the northern Sacramento Valley. The area has a Mediterranean climate with hot, dry summers and cool, wet winters. The project area is at an elevation of 65 meters (215 feet) above sea level. Although the terrain is generally level, the freeway is elevated approximately 6.1 meters (20 feet) above the surrounding land, with steep side slopes. Big Chico Creek is a natural stream that flows through Bidwell Park. No other streams or wetlands are present in the project area.

9.1.4 Biological Conditions

Much of the project area is paved roadway. Vegetation present in the central median and side slopes of SR 99 consists primarily of ruderals and landscaping trees and shrubs. Floristically, Chico is in the Sacramento Valley subdivision of the Great Central Valley region of the California Floristic Province (Hickman 1993). Historically, the project area vicinity is likely to have supported valley oak woodland, grasslands, and riparian forest. Although little natural

vegetation remains in the vicinity of the project area, the present project area has a well-developed tree canopy and shrubby understory. The plant community is best characterized as urban habitat, although Bidwell Park preserves a semi-natural riparian forest. Figures 9-1a and 9-1b present the biological communities in the project area (also shown on Figures 9-2a and 9-2b). Table 9-1 summarizes the trees occurring in the project area (Appendix D of the project NES also contains a more detailed table describing the tree survey conducted for this project). Lists of plant and wildlife species observed in the project area are included in Appendices C and E of the project NES, respectively.

Table 9-1. Trees in the Project Area with 15 Centimeters (6 Inches) or Greater Diameter at Breast Height^a

Common Name of Species	Number of Trees with 15 Centimeters (6 inches) or Greater dbh	Number of Trees with 30 Centimeters (12 inches) or Greater dbh
Glossy privet ^b	145	31
Valley oak	63	43
Coast redwood	91	86
Western sycamore	71	63
Chinese pistachio ^b	38	17
Hollyleaf cherry	31	2
Aleppo pine ^b	25	24
Box elder	24	3
White alder	21	13
Western redbud	20	1
Pecan ^b	19	10
Camphor tree ^b	17	4
Northern California black walnut	14	7
Yellow-poplar ^b	11	5
All other trees	166	65
Total	756	364

^a Tree saplings under 15 centimeters (6 inches) dbh were not surveyed.

^b Nonnative tree.

Urban Habitat

Urban habitat occurs in areas where the native vegetation has been replaced with grass lawn and ornamental plantings, including tree groves, street trees, shade trees, and shrubbery (McBride and Reid 1988). Approximately 6.4 hectares (15.8 acres) of urban habitat is present in the project area. Urban habitat is present along the SR 99 median strip, the unpaved shoulders, and side slopes, and in the private parcels adjacent to the right-of-way.

The median strip is planted with a hedgerow of oleander (*Nereum oleander*). The unpaved shoulders are bare or vegetated by low-growing ruderal species. The side slopes are vegetated with a dense woody overstory of trees and shrubs with little herbaceous understory. The trees include both native and ornamental trees planted for landscaping and that have become established from seeds dispersed into the project area by birds. Six hundred forty-one trees of 15 centimeters (6 inches) or greater dbh are present on the side slopes and median strip; of these, 279 have 30 centimeters (12 inches) or greater dbh. The most common trees in the right-of-way include glossy privet (*Ligustrum lucidum*), valley oak (*Quercus lobata*), western sycamore (*Platanus racemosa*), coast redwood (*Sequoia sempervirens*), Chinese pistachio (*Pistacia*

chinensis), and an unidentified species. The understory is dominated by saplings and many shrub and vine species, including pomegranate (*Punicum granatum*), English ivy (*Hedera helix*), and pokeweed (*Phytolacca americana*). Little herbaceous understory is present except in light gaps.

Vegetation in the private parcels adjacent to the right-of-way consists of shade and street trees, hedges and shrubs, lawns and gardens. The composition of the woody vegetation is similar to that in the right-of-way, although the canopy cover is much more open. The growth of vegetation in these parcels is typically managed by trimming or mowing.

Urban areas have marginal value for wildlife because of human disturbance and a lack of vegetation. Wildlife species that use these areas are typically adapted to human disturbance. Wildlife species associated with urban residential and suburban areas include western scrub jay (*Aphelocoma californica*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), rock dove (*Columba livia*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), western fence lizard (*Sceloporus occidentalis*), and gopher snake (*Pituophis melanoleucus*) (Mayer and Laudenslayer 1988). Because the side slopes along SR 99 contain an abundance of trees, this area provides better quality habitat for wildlife than other portions of the project area. Species observed during the field survey in this community type include western scrub jay, bushtit (*Psaltiriparus minimus*), botta pocket gopher (*Thomomys bottae*) (observed soil deposition mounds), and broad-footed mole (*Scapanus latimanus*) (observed mole trails).

Great Valley Valley Oak Riparian Forest

Great Valley Valley Oak Riparian Forest is a closed-canopy riparian forest dominated by valley oak (Holland 1986). Approximately 1.5 hectares (3.8 acres) of this plant community are present in the project area, the majority of which occurs in Caltrans right-of-way adjacent to Bidwell Park. A narrow strip of Great Valley Valley Oak Riparian Forest is also present to the west of the SR 32 off-ramps; this strip is located within the boundaries of Bidwell Park. (This strip is included within the project area because the existing paved access road within this strip would be used for construction access. No vegetation removal would occur within this strip with project implementation.)

The dominant tree is valley oak, but other native trees include western sycamore and Northern California black walnut (*Juglans hindsii*). Nonnative trees are also present, including a large eucalyptus tree (*Eucalyptus* sp.) and several large Aleppo pines (*Pinus halepense*). The understory is composed primarily of nonnative perennials, including glossy privet saplings, English ivy, greater periwinkle (*Vinca major*), and Himalaya blackberry (*Rubus discolor*). The herbaceous ground layer is dominated by ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), wild oat (*Avena fatua*), and hedge-parsely (*Torilis arvensis*). Under the viaduct, shading has inhibited plant growth, and the ground is mostly bare. (Therefore, the area under the viaduct is not included in the area estimate provided above).

Where the vegetation is diverse and well-developed, riparian forest provides high-value habitat for wildlife, including several special-status species. Riparian forest habitat provides food, water, and migration and dispersal corridors, as well as escape, nesting, and thermal cover for many wildlife species (Mayer and Laudenslayer 1988). Invertebrates, amphibians, and aquatic reptiles

live in aquatic and adjacent upland habitats. Raptors, herons, egrets, and other birds nest in the upper canopy. A variety of songbirds use the shrub canopy, and cavity-nesting birds, such as Nuttall's woodpecker (*Picoides nuttallii*) and oak titmouse (*Baeolophus inornatus*), occupy dying trees and snags (Zeiner et al. 1990a). Several mammals including raccoons, Virginia opossum, and striped skunks are common in riparian habitats (Zeiner et al. 1990b). Wildlife species observed in this community type include oak titmouse, European starling (*Sturnus vulgaris*), western gray squirrel (*Sciurus griseus*), and black-tailed deer (*Odocoileus hemionus*).

Great Valley Mixed Riparian Forest

Great Valley Mixed Riparian Forest is a moderately closed-canopy riparian forest dominated by a mixture of broadleaved, deciduous trees (Holland 1986). In the project area, this habitat is restricted to a narrow strip immediately adjacent to Big Chico Creek. Approximately 0.1 hectare (0.3 acre) of this plant community is present in the project area. The species composition is similar to that of the adjacent Great Valley Valley Oak Riparian Forest but characterized by species not present away from the banks of Big Chico Creek, such as white alder (*Alnus rhombifolia*) and Oregon ash (*Fraxinus latifolia*). Riparian vegetation is absent directly under the viaduct because the supporting piers are present on the stream banks and because of the viaduct's shading effects. (Therefore, the area under the viaduct is not included in the area estimate provided above.)

Great Valley Mixed Riparian Forest has similar habitat value for wildlife as Great Valley Valley Oak Riparian Forest. Wildlife species that could occur in this habitat were discussed above in the Great Valley Valley Oak Riparian Forest habitat description.

Creek Channel

Creek channel habitat is present in the project area only in Big Chico Creek. Within the project area, approximately 0.1 hectare (0.2 acre) occurs within the OHWM of Big Chico Creek. This habitat includes the vegetated and unvegetated part of a permanent or intermittent stream corridor including the bed, channel, and banks. Big Chico Creek is a perennial stream with flowing water during most years. The stream flow is regulated by a water diversion structure upstream of the project area near the One Mile Recreation Area of Bidwell Park, so that flows are at a similar level year-round. Within the project area, vegetation is present only on the upper channel bank and is described in the two sections above. Rock riprap is present along the banks under the viaduct to protect the bridge piers. Streambeds are recognized as sensitive natural communities by DFG, the Corps, and USFWS.

Wildlife use of this habitat type is dependent on the duration of water, extent of emergent and submergent vegetation, and adjacent streamside (riparian) vegetation. Creek channels with well-vegetated areas provide food, water, and migration and dispersal corridors, as well as escape, nesting, and thermal cover for many wildlife species (Mayer and Laudenslayer 1988). Wildlife species associated with stream and riparian habitats include western toad (*Bufo boreas*), California newt (*Taricha torosa*), black phoebe (*Sayornis nigricans*), Anna's hummingbird (*Calypte anna*), great egret (*Ardea alba*), belted kingfisher (*Ceryle alcyon*), raccoon, and striped skunk (*Columba livia*). (Zeiner et al. 1990a, 1990b). In less-vegetated areas, aquatic species (e.g., fish, invertebrates, and amphibians), are found in the creek channel, and the banks of the channel are often used by species that require less cover, such as California ground squirrels (*Spermophilus beecheyi*), western fence lizards, gopher snakes, and their predators [e.g., coyotes

(*Canis latrans*), raptors]. Bullfrog tadpoles (*Rana catesbeiana*) were observed in the creek channel during the field survey. Several fish species including pike minnow (*Ptychocheilus grandis*), small mouth bass (*Micropterus dolomieu*), and sunfish (*Lepomis spp.*) were also observed in Big Chico Creek.

9.1.5 Special-Status Species

Special-status species are plants and animals that are legally protected under state and federal Endangered Species Acts (ESAs) or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants and animals fall into the following categories:

- species listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and in various notices in the Federal Register [proposed species]);
- species that are candidates for possible future listing as threatened or endangered under the federal ESA (64 FR 57534, October 25, 1999);
- species listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 CCR 670.5);
- species that meet the definitions of “rare” or “endangered” under CEQA (State CEQA Guidelines, Section 15380);
- plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- plants considered by CNPS to be “rare, threatened, or endangered in California” (Lists 1B and 2, July 6, 2000, available at www.cnps.org/rareplants/inventory/6thEdition.htm);
- plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4, July 6, 2000, available at www.cnps.org/rareplants/inventory/6thEdition.htm), which may be included as special-status species on the basis of local significance or recent biological information;
- animal species of special concern to the California Department of Fish and Game (Remsen 1978 [birds], Williams 1986 [mammals], and Jennings and Hayes 1994 [amphibians and reptiles]); and
- animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [amphibians and reptiles]).

Tables 9-2, 9-3, and 9-4 list sensitive plant, animal, and fish species, respectively, that potentially occur in the project area vicinity. Species with potential to occur in the project area are noted accordingly. The list was compiled from the CNDDDB and the CNPS Inventory search (see Appendix A of the project NES), from the lists of sensitive species provided by the USFWS and NOAA Fisheries (see Appendix B of the project NES), and from a review of existing information from Jones & Stokes file data and published reports.

Plants

Twenty-four special-status plant species that are reported from the general vicinity of the project area were identified from the CNDDDB, CNPS, and USFWS lists (Table 9-2). Many of the species occur in wetlands, including vernal pools, but no wetlands are present in the project area.

Table 9-2. Special-Status Plant Species with Potential to Occur in the Project Area

Name	Status ^a	Distribution	Habitat	Occurrence in Project Area
	Federal/State/CNPS			
Ferris' milk-vetch <i>Astragalus tener</i> var. <i>ferrisiae</i>	–/–/1B	Central Valley from Butte to Alameda County	Subalkaline flats and floodlands, usually on adobe soil	Habitat not present
Butte County calycadenia <i>Calycadenia oppositifolia</i>	–/–/1B	Endemic to Butte County	Chaparral, oak woodland, lower montane coniferous forest, meadows, valley & foothill grasslands, usually on volcanic or serpentinite substrates; blooms April-July	Habitat not present
Butte County morning-glory <i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i>	–/–/1B	Northern Sierra Nevada foothills: Shasta, Tehama, & Butte Counties	Lower montane coniferous forest, between 600-1200 m (1970-3940 ft); blooms May-July	Habitat not present
Fox sedge <i>Carex vulpinoidea</i>	–/–/2	Scattered locations in Northern California, from Siskiyou County to Butte County	Freshwater marshes and swamps, riparian woodland; blooms May-June	Habitat not present
Pink creamsacs <i>Castilleja rubicundula</i> ssp. <i>rubicundula</i>	–/–/1B	Southern inner North Coast Ranges, west side of the Sacramento Valley, San Francisco Bay Area	Grassland and open grassy areas in chaparral and foothill woodlands, often on serpentinite, between 20-900 m (66-2950 ft); blooms April-June	Habitat not present
Hoover's spurge <i>Chamaesyce hooveri</i>	T/–/1B	Central Valley from Butte County to Tulare County	Vernal pools	Habitat not present
White-stemmed clarkia <i>Clarkia gracilis</i> ssp. <i>albicaulis</i>	–/–/1B	Southern Cascade Range Foothills: Tehama and Butte Counties	Chaparral and foothill woodlands, between 240-1085 m (800-3560 ft); blooms May-July	Habitat not present
Recurved larkspur <i>Delphinium recurvatum</i>	–/–/1B	San Joaquin Valley and interior valleys of the South Coast Ranges, from Contra Costa County to Kern County	Subalkaline soils in annual grassland, saltbush scrub; blooms March-May	Habitat not present
Four-angled spikerush <i>Eleocharis quadrangulata</i>	–/–/2	Scattered California occurrences: Butte, Merced, Tehama Counties; to eastern North America	Freshwater marsh; blooms July-September	Habitat not present

Table 9-2. Continued

Name	Status ^a	Distribution	Habitat	Occurrence in Project Area
	Federal/State/CNPS			
Round-leaved filaree <i>Erodium macrophyllum</i>	B/B/2	Widely scattered from the Sacramento Valley south through the San Joaquin Valley and South Coast Ranges to the Peninsular Ranges; to Northern Mexico, SW US	Grasslands, on friable clay soils; blooms March-May	Habitat not present
Butte County fritillary <i>Fritillaria eastwoodiae</i>	—/—/3	Northern Sierra Nevada foothills, from Shasta County to Placer County	Chaparral, foothill woodland, lower montane coniferous forest, between 50-1490 m (160-4900 ft); blooms March-May	Habitat not present
Adobe lily <i>Fritillaria pluriflora</i>	—/—/1B	Northern Sierran and inner Coast Range foothills, from Butte to Solano County	Adobe soil, foothill and valley grasslands; blooms February-April	Habitat not present
California hibiscus <i>Hibiscus lasiocarpus</i>	—/—/2	Scattered small locations in central California, from Butte to San Joaquin County	Freshwater marsh along rivers and sloughs; blooms August-September	Habitat not present
Red Bluff dwarf rush <i>Juncus leiospermus</i> var. <i>leiospermus</i>	—/—/1B	Shasta, Tehama, and Butte counties	Vernally mesic sites in chaparral, valley and foothill grassland, cismontane woodlands; 33-1010 m (110-3315 ft) elevation.	Habitat not present
Butte County meadowfoam <i>Limnanthes floccosa</i> ssp. <i>californica</i>	E/E/1B	Butte County	Vernal pools and swales; blooms March-May	Habitat not present
Veiny monardella <i>Monardella douglasii</i> var. <i>venosa</i>	—/—/1B	Butte County	Annual grasslands; blooms June-July	Habitat not present
Hairy Orcutt grass <i>Orcuttia pilosa</i>	E/E/1B	Scattered locations along east edge of the Central Valley and adjacent foothills, from Tehama County to Merced County	Vernal pools; blooms May-August	Habitat not present
Ahart's paronychia <i>Paronychia ahartii</i>	—/—/1B	Northern Central Valley	Vernal swales and margins of vernal pools, in clay soils; blooms April-June	Habitat not present

Table 9-2. Continued

Name	Status ^a	Distribution	Habitat	Occurrence in Project Area
	Federal/State/CNPS			
California beaked-rush <i>Rhynchospora californica</i>	–/–/1B	Scattered occurrences in Northern California: Butte, Mariposa, Marin, and Sonoma Counties	Freshwater marshes and seeps; blooms May-July	Habitat not present
Brownish beaked-rush <i>Rhynchospora capitellata</i>	–/–/2	Northwest California and northern Sierra Nevada foothills	Moist areas and wetlands in montane coniferous forest, between 455-2000 m (1490-6560 ft); blooms July-August	Habitat not present
Butte County checkerbloom <i>Sidalcea robusta</i>	–/–/1B	Endemic to the Sierra Nevada foothills of Butte County	Chaparral and foothill woodland, between 90-1600 m (300-5250 ft); blooms April-June	Habitat not present
Butte County golden clover <i>Trifolium jokerstii</i>	–/–/1B	Endemic to Butte County	Vernal swales; blooms April-May	Habitat not present
Greene's tuctoria <i>Tuctoria greenei</i>	E/R/1B	Eastern Central Valley and foothills	Large, deep vernal pools with prolonged inundation; blooms May-June	Habitat not present
Columbian watermeal <i>Wolffia brasiliensis</i>	–/–/2	Widely distributed; in California, known from Butte County	Freshwater marshes and swamps	Habitat not present

^a Status explanations:**Federal**

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

SC = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.

– = no listing.

State

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

R = listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

– = no listing.

California Native Plant Society

1A = List 1A species: presumed extinct in California.

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.

3 = List 3 species: plants about which more information is needed to determine their status.

4 = List 4 species: plants of limited distribution.

Table 9-3. Special-Status Wildlife Species with Potential to Occur in the Project Area

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	E/–	Disjunct occurrences in Solano, Merced, Tehama, Butte, and Glenn Counties	Large, deep vernal pools in annual grasslands	Habitat absent
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T/–	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County	Common in vernal pools; also found in sandstone rock outcrop pools	Habitat absent
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E/–	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds	Habitat absent
California linderiella <i>Linderiella occidentalis</i>	SC/–	Central Valley, central and south Coast Ranges from Mendocino County to Santa Barbara County	Vernal pools	Habitat absent
Sacramento anthicid (beetle) <i>Anthicus sacramento</i>	SC/–	Restricted to a dune area at mouth of Sacramento River; western tip of Grand Island, Sacramento County; dunes near Rio Vista, Solano County; Ord Ferry Bridge, Butte County; upper Putah Creek	Found in sand slip-faces among willows	Habitat absent
Antioch Dunes anthicid (beetle) <i>Anthicus antiochensis</i>	SC/–	Known only from Grand Island and in and around Sandy Beach County Park, Sacramento County	Loose sand on sand bars and sand dunes	Habitat absent
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T/–	Stream side habitats below 3,000 feet throughout the Central Valley	Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant	Many elderberry shrubs in the project area
Western spadefoot <i>Spea hammondi</i>	SC/SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California	Shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands	Creek habitat not suitable
California red-legged frog <i>Rana aurora draytoni</i>	T/SSC	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County	Permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May estivate in rodent burrows or cracks during dry periods	Project area is outside of species range/extirpated from the Central Valley
Foothill yellow-legged frog <i>Rana boylei</i>	SC/SSC	Occurs in the Klamath, Cascade, north Coast, south Coast, Transverse, and Sierra Nevada Ranges up to approximately 6,000 feet	Creeks or rivers in woodlands or forests with rock and gravel substrate and low overhanging vegetation along the edge. Usually found near riffles with rocks and sunny banks nearby	Project area is outside of the species known range

Table 9-3. Continued

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Northwestern pond turtle <i>Clemmys marmorata marmorata</i>	SC/SSC	Occurs from the Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests	Creek has suitable habitat
Giant garter snake <i>Thamnophis gigas</i>	T/T	Central Valley from Fresno north to the Gridley/Sutter Buttes area; has been extirpated from areas south of Fresno	Sloughs, canals, and other small water-ways where there is a prey base of small fish and amphibians; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	Project area is outside of the species known range; habitat in Big Chico Creek is unsuitable
White-faced ibis <i>Plegadis chihi</i> (rookery site)	SC/SSC	Both resident and winter populations on the Salton Sea and in isolated areas in Imperial, San Diego, Ventura, and Fresno Counties; breeds at Honey Lake, Lassen County, at Mendota Wildlife Management Area, Fresno County, and near Woodland, Yolo County; winters in San Joaquin Valley and Imperial Valley, but recorded widely as a transient	Prefers freshwater marshes with tules, cattails, and rushes, but may nest in trees and forage in flooded agricultural fields, especially flooded rice fields	Habitat absent
Aleutian Canada goose <i>Branta canadensis leucopareia</i>	D*/–	The entire population winters in Butte Sink, then moves to Los Banos, Modesto, the Delta, and East Bay reservoirs; stages near Crescent City during spring before migrating to breeding grounds	Roosts in large marshes, flooded fields, stock ponds, and reservoirs; forages in pastures, meadows, and harvested grainfields; corn is especially preferred	Habitat absent
Osprey <i>Pandion haliaetus</i>	–/SSC	Nests along the north coast from Marin County to Del Norte County, east through the Klamath and Cascade Ranges, and in the upper Sacramento Valley. Important inland breeding populations at Shasta Lake, Eagle Lake, and Lake Almanor and small numbers elsewhere south through the Sierra Nevada. Winters along the coast from San Mateo County to San Diego County	Nests in snags, trees, or utility poles near the ocean, large lakes, or rivers with abundant fish populations	Habitat absent

Table 9-3. Continued

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Bald eagle <i>Haliaeetus leucocephalus</i>	T/E	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, stream, or the ocean	Habitat absent
Sharp-shinned hawk <i>Accipiter striatus</i>	–/SSC	Permanent resident in the Sierra Nevada, Cascade, Klamath, and north Coast Ranges at mid elevations and along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties. Winters over the rest of the state except at very high elevations	Dense canopy ponderosa pine or mixed-conifer forest and riparian habitats	Suitable habitat present – species is a winter visitor only
Cooper's hawk <i>Accipiter cooperii</i>	–/SSC	Throughout California except high altitudes in the Sierra Nevada. Winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range	Nests in a wide variety of habitat types, from riparian woodlands and digger pine-oak woodlands through mixed conifer forests	Suitable nesting habitat in project area; no foraging habitat present
Swainson's hawk <i>Buteo swainsoni</i>	–/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields	Suitable nesting habitat in project area; no foraging habitat present
Ferruginous hawk <i>Buteo regalis</i>	SC/SSC	Does not nest in California; winter visitor along the coast from Sonoma County to San Diego County, east-ward to the Sierra Nevada foothills and south-eastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County	Open terrain in plains and foothills where ground squirrels and other prey are available	Habitat absent
White-tailed kite <i>Elanus leucurus</i>	–/FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands	Habitat absent

Table 9-3. Continued

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
American peregrine falcon <i>Falco peregrinus anatum</i>	–/E	Permanent resident along the north and south Coast Ranges. May summer in the Cascade and Klamath Ranges and through the Sierra Nevada to Madera County. Winters in the Central Valley south through the Transverse and Peninsular Ranges and the plains east of the Cascade Range	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large prey populations	Habitat absent
Greater sandhill crane <i>Grus canadensis tabida</i> (nesting and wintering)	–/T, FP	Breeds in Siskiyou, Modoc, Lassen, Plumas, and Sierra Counties. Winters in the Central Valley, southern Imperial County, Lake Havasu National Wildlife Refuge, and the Colorado River Indian Reserve	Summers in open terrain near shallow lakes or freshwater marshes. Winters in plains and valleys near bodies of fresh water	Habitat absent
Long-billed curlew <i>Numenius americanus</i> (nesting)	–/SSC	Nests in northeastern California in Modoc, Siskiyou, and Lassen Counties. Winters along the coast and in interior valleys west of Sierra Nevada	Nests in high-elevation grasslands adjacent to lakes or marshes. During migration and in winter; frequents coastal beaches and mudflats and interior grasslands and agricultural fields	Habitat absent
Black tern <i>Chlidonias niger</i> (nesting colony)	SC/SSC	Spring and summer resident of the Central Valley, Salton Sea, and northeastern California where suitable emergent wetlands occur	Freshwater wetlands, lakes, ponds, moist grasslands, and agricultural fields; feeds mainly on fish and invertebrates while hovering over water	Habitat absent
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i> (nesting)	–/E	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers	Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant	Habitat unsuitable
Western burrowing owl <i>Athene cunicularia hypugea</i>	SC/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows	Habitat absent
Short-eared owl <i>Asio flammeus</i>	–/SSC	Permanent resident along the coast from Del Norte County to Monterey County although very rare in summer north of San Francisco Bay, in the Sierra Nevada north of Nevada County, in the plains east of the Cascades, and in Mono County; small, isolated populations	Freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts	Habitat absent

Table 9-3. Continued

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Black swift <i>Cypseloides niger</i> (nesting)	–/SSC	Breeds very locally in the Sierra Nevada and Cascade Range, the San Gabriel, San Bernardino, and San Jacinto mountains, and in coastal bluffs from San Mateo county south to near San Luis Obispo county	Nests in moist crevice or cave on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons	Does not nest in project vicinity
Vaux's swift <i>Chaetura vauxi</i>	–/SSC	Coastal belt from Del Norte County south to Santa Cruz County and in mid elevation forests of the Sierra Nevada and Cascade Range	Nests in hollow, burned-out tree trunks in large conifers	May occasionally disperse through project area
Little willow flycatcher <i>Empidonax traillii brewsteri</i>	SC/E	Summers along the western Sierra Nevada from El Dorado to Madera County, in the Cascade and northern Sierra Nevada in Trinity, Shasta, Tehama, Butte, and Plumas Counties, and along the eastern Sierra Nevada from Lassen to Inyo County	Riparian areas and large wet meadows with abundant willows. Usually found in riparian habitats during migration	Habitat absent
Bank swallow <i>Riparia riparia</i>	–/T	Occurs along the Sacramento River from Tehama County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County	Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam	Habitat absent
California thrasher <i>Toxostoma redivivum</i>	SC/–	Occurs from the Mexican border north to Shasta, Trinity, and southern Humboldt Counties, the Shasta Valley in Siskiyou County, and along the coastal fog belt north of San Francisco	Foothills and lowlands in moderate to dense chaparral habitats; less common in thickets in young or open valley foothill riparian; avoids dense tree canopy	Habitat absent
Loggerhead shrike <i>Lanius ludovicianus</i>	SC/SSC	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	Habitat absent
Tricolored blackbird <i>Agelaius tricolor</i>	SC/SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony	Habitat absent

Table 9-3. Continued

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Grasshopper sparrow <i>Ammodramus savannarum</i>	SC/–	Sierra foothills, Coast Ranges, and coastal areas from Mendocino County south to San Diego County	Dry grasslands with scattered shrubs for song perches	Habitat absent
Oak titmouse <i>Baeolophus inornatus</i>	SLC/–	Occurs from the Mexican border north to Humboldt County; their range mostly encircles the San Joaquin Valley – extends east from the coast through Kern County along the west slope of the Sierra Nevada north to Shasta County	Occupies a variety of habitats but is primarily associated with oaks; occurs in valley foothill and montane hardwood or hardwood-conifer riparian habitats in cismontane California	Species observed
Rufous hummingbird <i>Selasphorus rufus</i>	SC/–	A common migrant and uncommon summer resident of California; rare but regular winter resident of southern California; many postbreeders migrate south through the Cascade Range and Sierra Nevada in summer, although spring migration mostly is through the lowlands and foothills	Occupies a wide variety of habitats that provide nectar-producing flowers; uses valley foothill hardwood, valley foothill hardwood-conifer, riparian, and various chaparral habitats in both northward and southward migration; montane riparian, aspen, and high mountain meadows used in southward migration	Suitable habitat present
Lewis' woodpecker <i>Melanerpes lewis</i>	SC/–	An uncommon, local winter resident found along eastern slopes of the Coast Ranges south to San Luis Obispo County. Also winters in the Central Valley, Modoc Plateau, and the Transverse and other Ranges in southern California. Breeds locally along eastern slopes of the Coast Ranges, and in the Sierra Nevada, Warner Mountains, Klamath Mountains and Cascade Range.	Suitable habitat includes open, deciduous and conifer habitats with brushy understory, and scattered snags and live trees for nesting and perching. Requires open habitats with scattered trees and snags with cavities. Uses logged and burned areas. Prefers oaks and acorns in the winter.	May occasionally disperse through project area
Nuttall's woodpecker <i>Picoides nuttallii</i>	SLC/–	Central Valley, Transverse and Peninsular Ranges, Coast Ranges north to Sonoma County, and in lower portions of the Cascade Range and Sierra Nevada.	Low elevation riparian deciduous and oak habitats; requires snags and dead limbs for nest excavation	Suitable habitat present
Lawrence's goldfinch <i>Carduelis lawrencei</i>	SC/–	Common along the western edge of southern deserts and in Santa Clara and Monterey Counties; uncommon in foothills surrounding the Central Valley; small numbers winter in northern California	Breeds in open oak or other dry woodlands and chaparral near water; valley foothill hardwood, , valley foothill hardwood-conifer are typical habitats; in southern California occurs in desert riparian, palm oasis, pinyon-juniper, and lower montane habitats	May occasionally disperse through the project area

Table 9-3. Continued

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Spotted bat <i>Euderma maculatum</i>	SC/SSC	Occurs throughout eastern and southern California, the central Sierra Nevada, and the Sierra Nevada foothills bordering the San Joaquin Valley. One recent record from northern California in the Trinity Alps. Probably occurs in other portions of the state where habitat is suitable	Found in a wide variety of habitats from low desert to high elevation coniferous forest, primarily in areas associated with cliff and canyon habitat. Females may favor ponderosa pine forests during reproduction	Habitat not suitable
Pacific Townsend's (=western) big-eared bat <i>Corynorhinus townsendii townsendii</i>	SC/SSC	Coastal regions from Del Norte County south to Santa Barbara County	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings. Very sensitive to disturbances and may abandon a roost after one onsite visit	Habitat not suitable
Fringed myotis <i>Myotis thysanodes</i>	SC/–	Occurs throughout California except the southeastern deserts and the Central Valley	Found in a wide variety of habitats from low desert scrub to high elevation coniferous forests. Day and night roosts in caves, mines, trees, buildings, and rock crevices	Project area outside of species range
Long-eared myotis <i>Myotis evotis</i>	SC/–	Occurs throughout California except the southeastern deserts and the Central Valley	Occurs primarily in high elevation coniferous forests, but also found in mixed hardwood/conifer, high desert, and humid coastal conifer habitats; roosts in niches of buildings and probably in trees	Project area outside of species range
Small-footed myotis <i>Myotis ciliolabrum</i>	SC/–	Occurs in the Sierra Nevada, south Coast, Transverse, and Peninsular Ranges, and in the Great Basin	Open stands in forests and woodlands, as well as shrub lands and desert scrub. Uses caves, crevices, trees, and abandoned buildings	Project area outside of species range
Long-legged myotis <i>Myotis volans</i>	SC/–	Mountains throughout California, including ranges in the Mojave desert	Most common in woodlands and forests above 4,000 feet, but occurs from sea level to 11,000 feet	Project area outside of species range
Yuma myotis <i>Myotis yumanensis</i>	SC/SSC	Common and widespread throughout most of California except the Colorado and Mojave deserts	Found in a wide variety of habitats from sea level to 11,000 ft., but uncommon above 8,000 ft. Optimal habitat is open forests and woodlands near water bodies	Suitable habitat present
Pale Townsend's (=western) big-eared bat <i>Corynorhinus townsendii pallescens</i>	SC/SSC	Klamath Mountains, Cascades, Sierra Nevada, Central Valley, Transverse and Peninsular Ranges, Great Basin, and the Mojave and Sonora Deserts	Dry habitats; gleans insects from brush or trees and feeds along habitat edges	Habitat not suitable

Table 9-3. Continued

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Pallid bat <i>Antrozous pallidus</i>	–/SSC	Occurs throughout California except the high Sierra from Shasta to Kern County and the northwest coast, primarily at lower and mid elevations	Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts	Suitable habitat present
Greater western mastiff bat <i>Eumops perotis californicus</i>	SC/SSC	Occurs along the western Sierra primarily at low to mid elevations and widely distributed throughout the southern coast ranges. Recent surveys have detected the species north to the Oregon border	Found in a wide variety of habitats from desert scrub to montane conifer. Roosts and breeds in deep, narrow rock crevices, but may also use crevices in trees, buildings, and tunnels	Project area outside of species range
Marysville California kangaroo rat (=Marysville Heerman's kangaroo rat) <i>Dipodomys californicus</i> (= <i>heermanni</i>) <i>eximius</i>	SC/SSC	Sutter Buttes, Sutter County; could be extinct	Grassland and sparse chaparral habitats above the valley floor on slopes with well-drained soils	Habitat absent
San Joaquin pocket mouse <i>Perognathus inornatus</i>	SC/–	Occurs along the eastern side of the San Joaquin Valley	Favors grasslands and oak savannas with friable soils	Habitat absent

^a Status explanations:**Federal**

- E = listed as endangered under the federal Endangered Species Act.
- T = listed as threatened under the federal Endangered Species Act.
- SC = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.
- SLC = species of local concern.
- D* = The Aleutian Canada goose was recently delisted from federally threatened status in February 2001. Because USFWS is required to continue to review the status of a delisted species and ensure that impacts are not driving the species back to its former status, it is included in this table and is treated as a special-status species.
- = no listing.

State

- E = listed as endangered under the California Endangered Species Act.
- T = listed as threatened under the California Endangered Species Act.
- R = listed as rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.
- SSC = species of special concern in California.
- FP = fully protected under the California Fish and Game Code.
- = no listing.

Table 9-4. Special-Status Fish Species with Potential to Occur in the Project Area

Common and Scientific Name	Status ^a	California Distribution	Habitats	Occurrence in Project Area
	Federal/State			
Sacramento River winter-run chinook salmon <i>Oncorhynchus tshawytscha</i>	E/E	Sacramento River, Sacramento-San Joaquin Delta, San Francisco estuary, Pacific Ocean	Cool, clear water with spawning gravel; migrate to ocean to feed and grow until sexually mature	Outside species range
Central Valley spring-run chinook salmon <i>Oncorhynchus tshawytscha</i>	T/T	Sacramento, Feather and Yuba Rivers; Mill, Deer, Butte, and Big Chico Creeks; Sacramento-San Joaquin Delta; San Francisco estuary; Pacific Ocean	Cool, clear water with spawning gravel; migrate to ocean to feed and grow until sexually mature	Transitory pathway for adults and juveniles
Central Valley fall and late fall-run chinook salmon <i>Oncorhynchus tshawytscha</i>	C/–	Sacramento and San Joaquin Rivers and their tributaries, Sacramento-San Joaquin Delta, San Francisco estuary, Pacific Ocean	Cool, clear water with spawning gravel; migrate to ocean to feed and grow until sexually mature	Spawning and rearing habitat
Central Valley steelhead <i>Oncorhynchus mykiss</i>	T/SSC	Sacramento and San Joaquin Rivers and their tributaries, Sacramento-San Joaquin Delta, San Francisco estuary, Pacific Ocean	Cool, clear water with spawning gravel; migrate to ocean to feed and grow until sexually mature	Transitory pathway for adults and juveniles
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	T/SSC	Lower reaches of the Sacramento and San Joaquin Rivers and the Delta	Primarily low salinity shallow water; shallow flooded vegetated habitat for spawning and foraging	Outside species range
Delta smelt <i>Hypomesus transpacificus</i>	T/T	Estuarine and brackish waters of the lower Sacramento and San Joaquin Rivers and Delta	Primarily found in shallow brackish water upstream of the saltwater-freshwater interface where salinity is around 2 ppt	Habitat absent
Longfin smelt <i>Spirinchus thaleichthys</i>	SC/SSC	Sacramento-San Joaquin Delta, San Francisco Bay, Humboldt Bay, Eel and Klamath River Estuaries	Brackish water for adult and juvenile rearing; spawn in freshwater on sandy gravel at temperatures between 7 and 14.5 C	Habitat absent
Green sturgeon <i>Acipenser medirostris</i>	SC/SSC	Sacramento and Klamath Rivers	Cool water with cobble, clean sand, or bedrock for spawning; rear in nearly any freshwater or estuarine system	Cannot pass barrier downstream

^a Status explanations:

Federal
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
SC = species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.
C = candidate species.

State
E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
SSC = species of special concern in California.
– = no listing.

Seven species occur in chaparral and montane forest habitats in the foothills east of Chico, but these habitats are absent from the project area. Five species occur in grasslands in specific microsites, such as dense clay soils or alkali soils, such as were present historically on the margins of Butte Sink, southwest of Chico. Soils in the project area are currently composed of fill or are deep loamy soils of alluvial origin. Because no habitat is present for these species, no special-status species are known to have occurred historically in the project area. No special-status species were located during the site surveys; therefore, they are presumed to be absent from the project area.

Wildlife

USFWS provided a list of 49 special-status wildlife species that may occur in or be affected by projects in the Chico quadrangle. The following 39 species on the USFWS list would not occur in the project area because of a lack of suitable habitat or because the proposed project is outside their known range: vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), California linderiella fairy shrimp (*Linderiella occidentalis*), Conservancy fairy shrimp (*Branchinecta conservatio*), Antioch Dunes anthicid beetle (*Anthicus antiochensis*), Sacramento anthicid beetle (*Anthicus sacramento*), western spadefoot toad (*Spea hammondi*), California red-legged frog (*Rana aurora draytoni*), foothill yellow-legged frog (*Rana boylei*), giant garter snake (*Thamnophis gigas*), bald eagle (*Haliaeetus leucocephalus*), ferruginous hawk (*Buteo regalis*), white-tailed kite (*Elanus leucurus*), American peregrine falcon (*Falco peregrinus anatum*), short-eared owl (*Asio flammeus*), western burrowing owl (*Athene cunicularia hypugea*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), bank swallow (*Riparia riparia*), greater sandhill crane (*Grus canadensis tabida*), little willow flycatcher (*Empidonax traillii brewsteri*), black tern (*Chlidonias niger*), black swift (*Cypseloides niger*), Aleutian Canada goose (*Branta canadensis leucopareia*), long-billed curlew (*Numenius americanus*), white-faced ibis (*Plegadis chihi*), loggerhead shrike (*Lanius ludovicianus*), California thrasher (*Toxostoma redivivum*), grasshopper sparrow (*Ammodramus savannarum*), tricolored blackbird (*Agelaius tricolor*), pale Townsend's big-eared bat (*Corynorhinus townsendii pallascens*), Pacific Townsend's (= western) big-eared bat (*Corynorhinus townsendii townsendii*), spotted bat (*Euderma maculatum*), greater western mastiff bat (*Eumops perotis californicus*), small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), fringed myotis bat (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), San Joaquin pocket mouse (*Perognathus inornatus*), and Marysville Heermann's kangaroo rat (*Dipodomys californicus* [= *heermanni*] *eximius*). These species are not discussed further.

Four species on the USFWS list, rufous hummingbird (*Selasphorus rufus*), Lewis' woodpecker (*Melanerpes lewis*), Vaux's swift (*Chaetura vauxi*) and Lawrence's goldfinch (*Carduelis lawrencei*), may occasionally forage or migrate through the project area but would not be affected by construction activities. These four species are not discussed further.

The following species included on the USFWS list were observed during field surveys or have suitable habitat within the project area: northwestern pond turtle (*Clemmys marmorata marmorata*), oak titmouse (*Baeolophus inornatus*), Nuttall's woodpecker (*Picoides nuttallii*), Yuma myotis (*Myotis yumanensis*), VELB (*Desmocerus californicus dimorphus*), and Swainson's hawk (*Buteo swainsoni*).

All of the species identified during the CNDDDB search were included on the USFWS species list except for osprey. As shown in Table 9-3, the CNDDDB search indicated that 11 special-status species have been recorded within 16 kilometers (10 miles) of the project area: vernal pool fairy shrimp, vernal pool tadpole shrimp, California linderiella fairy shrimp, VELB, western spadefoot, burrowing owl, Swainson's hawk, osprey (*Pandion haliaetus*), bank swallow, western yellow-billed cuckoo, and tricolored blackbird. There were also records for a great blue heron rookery and a great egret rookery within 16 kilometers (10 miles) of the project area. Except for VELB and Swainson's hawk, these species were eliminated from further consideration because suitable habitat is not present in the project area for these species.

Cooper's hawk (*Accipiter cooperii*) and sharp-shinned hawk (*Accipiter striatus*) are state species of special concern that are not included in the CNDDDB or USFWS species lists, but could occur in the project area. Suitable nesting habitat is present in the project area for Cooper's hawks. Sharp-shinned hawk is a winter visitor to the project region and may be present infrequently in the project area during winter. However, sharp-shinned hawks do not nest in the project area and would not be affected by project activities. These species were added to Table 9-3.

Pallid bat (*Antrozous pallidus*) is a state species of special concern that is not included in the CNDDDB or USFWS species lists. Pallid bats have the potential to occur in the project area because suitable habitat is present and the project area is within the species range. Pallid bat was also added to Table 9-3.

The eight special-status species that were documented during field surveys or were identified as having the potential to occur in the project area are discussed below.

Valley Elderberry Longhorn Beetle

VELB is federally listed as threatened. Its range extends throughout the Central Valley and associated foothills from the northern border of Shasta County to the southern portion of Kern County. From west to east, its range extends from the watershed of the Central Valley on the west to approximately 914 meters (3,000 feet) above sea level in the Sierra Nevada foothills (U.S. Fish and Wildlife Service 1999).

Elderberry shrubs (*Sambucus* spp.) are the host plant for VELB. Elderberry shrubs are found in riparian forests and adjacent uplands in the Central Valley and foothills (U.S. Fish and Wildlife Service 1999). Elderberries are commonly associated with cottonwood (*Populus* sp.), willow (*Salix* sp.), ash (*Fraxinus* sp.), oak (*Quercus* spp.), walnut (*Juglans* sp.), and other trees (Barr 1991). VELB has been found in many different plant communities where elderberries grow, but it is most common in riparian woodlands and savannas, possibly because of the greater concentration of elderberries in these areas (Barr 1991).

Adults feed on elderberry foliage and are present from March through early June. During this period, the adults mate. Females lay their eggs, either singularly or in small clusters, in bark crevices or at the junction of stem/trunk or leaf petiole/stem. After hatching, the larva burrows into the stem, where it creates a gallery that it fills with grass and shredded wood. After the larva transforms into an adult, it chews an exit hole and emerges. The life cycle of VELB ranges from 1 to 2 years (Barr 1991). Use of the elderberry by the beetle is rarely apparent (U.S. Fish and Wildlife Service 1999). The range of VELB has been reduced and its distribution greatly

fragmented because of the loss of riparian and nonriparian habitats (U.S. Fish and Wildlife Service 1999).

Survey Results

The closest CNDDDB records for VELB are 3.2 and 4.8 kilometers (2 and 3 miles) northeast of the project area along Big Chico Creek in Upper Bidwell Park. There are four additional records for VELB within 16 kilometers (10 miles) of the project area (California Natural Diversity Database 2002).

A total of 20 elderberry shrubs and one elderberry clump are located within the project area along SR 99 (Table 9-5 and Figures 9-1a, 9-1b, 9-2a, and 9-2b). A clump is defined as a large group of shoots/stems/trunks where individual shrubs cannot be identified. Within the project area, the majority of the elderberry shrubs are located within Caltrans right-of-way, near the Bidwell Park boundaries and adjacent to Big Chico Creek. The elderberry clump is located in the corner of the proposed staging area on the east side of SR 99 between Sierra Vista Way and Palmetto Avenue. Seventeen shrubs are located within the Caltrans right-of-way adjacent to Bidwell Park and are found within riparian habitat. Four shrubs/clumps are located adjacent to SR 99 and are considered to be within nonriparian habitat. A total of 69 stems measuring greater than 2.5 centimeters (1.0 inch) in diameter at ground level were counted among the 20 shrubs and one clump. Potential VELB exit holes were observed on three shrubs within the project area (#2, 10, and 18).

Six additional elderberry shrubs and two elderberry clumps are located within approximately 30 meters (100 feet) of the Caltrans right-of-way within Bidwell Park. A total of 36 stems measuring greater than 2.5 centimeters (1.0 inch) in diameter at ground level were counted among the eight elderberry shrubs/clump (Table 9-6). All of these shrubs are located within riparian habitat. Potential VELB exit holes were observed on two shrubs in the buffer area (#25 and 27).

Northwestern Pond Turtle

Northwestern pond turtle is designated as a federal species of concern and a state species of special concern. The northwestern pond turtle is one of two subspecies of the western pond turtle. The northwestern pond turtle occurs from the vicinity of the American River in California north to the lower Columbia River in Oregon and Washington (Jennings et al. 1992).

Western pond turtle is thoroughly aquatic, preferring the quiet waters of ponds, reservoirs, and sluggish streams (Stebbins 1985). The species occurs in a wide range of both permanent and intermittent aquatic environments (Jennings et al. 1992). Western pond turtles spend a considerable amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris. Western pond turtles move to upland areas adjacent to watercourses to deposit eggs and overwinter (Jennings and Hayes 1994). Turtles have been observed overwintering several hundred meters from the watercourse. In the Central Valley and northward, western pond turtles typically become active in March and return to overwintering sites by October or November (Jennings et al. 1992). Reasons for declining numbers of western pond turtles include drought, habitat alteration, abusive grazing practices, impacts on nesting habitat, and alteration of habitat during the incubation period (Jennings and Hayes 1994).

Table 9-5. Results of the Valley Elderberry Longhorn Beetle Survey within the Caltrans Right-of-Way

Elderberry Shrub/ Cluster Number	Number of Stems ≥1" and ≤3"	Number of Stems >3" and <5"	Number of Stems ≥5"	Total Number of Stems	Estimated Height (feet)
Riparian					
1	7	1	1	9	10
2*	4	0	1	5	15
3	2	1	1	4	17
4	0	0	1	1	15
5	2	0	0	2	16
6	1	0	2	3	18
7	1	0	0	1	6
8	3	0	2	5	15
9	0	0	1	1	14
10*	0	1	0	1	10
11	0	1	0	1	12
12	1	0	0	1	10
13	0	0	2	2	25
14	3	0	0	3	20
14a	0	0	1	1	15
16	7	1	1	9	20
21	2	0	0	2	8
Subtotal	33	5	13	51	
Nonriparian					
17	2	0	0	2	10
18*	4	1	1	6	15
19	5	0	0	5	10
20	4	1	0	5	10
Subtotal	15	2	1	18	
Total	48	7	14	69	N/A

* These shrubs contained potential VELB exit holes.

Table 9-6. Results of the Valley Elderberry Longhorn Beetle Survey within 30 Meters (100 Feet) of the Caltrans Right-of-Way

Elderberry Shrub/ Cluster Number	Number of Stems ≥1" and ≤3"	Number of Stems >3" and <5"	Number of Stems ≥5"	Total Number of Stems	Estimated Height (feet)
Riparian					
15	11	3	0	14	13
22	5	0	0	5	10
23	2	1	0	3	12
24	0	1	0	1	10
25*	0	0	2	2	15
26	8	1	0	8	10
27*	0	0	1	1	8
28	0	0	1	1	10
Total	26	6	4	36	N/A

* These shrubs contained potential VELB exit holes.

Survey Results

There are no CNDDDB records for northwestern pond turtle within a 16-kilometer (10-mile) radius of the project area. No northwestern pond turtles were observed in Big Chico Creek during the field survey; however, suitable habitat occurs within the creek. A portion of the upland habitat under the existing bridges and adjacent to the creek is unsuitable because it consists of paved walking paths and areas devoid of vegetation. The presence of humans using Bidwell Park in these areas also makes these areas unsuitable.

Swainson's Hawk

Historically, Swainson's hawks nested throughout lowland California. The species' current nesting distribution is limited to far-northeastern California, the Central Valley, and a few sites in the Owens Valley (California Department of Fish and Game 1994). Swainson's hawk occurs in California only during the breeding season (March through September); it winters in Mexico and in Central and South America.

Swainson's hawks forage in large, open plains and grasslands. Hay, grain, and most row crops provide suitable Swainson's hawk foraging habitat during at least part of the breeding season. Vineyards and orchards are unsuitable because prey is scarce or unavailable because of the density of the vegetation (California Department of Fish and Game 1994). Swainson's hawks eat primarily insects and small rodents (Estep 1989).

Swainson's hawks usually nest in large, mature trees. Native trees are almost always preferred, and most nest sites (87%) in the Central Valley are found in riparian habitats (Estep 1984, Schlorff and Bloom 1984), primarily because trees are more available. Swainson's hawks also nest in mature roadside trees, isolated individual trees in agricultural fields, small groves of oaks, and trees around farm houses (California Department of Fish and Game 1994).

Conversion of native grassland and woodland communities to agricultural and urban land uses is the main cause for the decline of the Swainson's hawk. Pesticide contamination, mortality from shooting, and disturbance at nesting sites may have also contributed to the species' decline (California Department of Fish and Game 1994).

Survey Results

No Swainson's hawks were observed during the reconnaissance field survey of the project area. There are nine CNDDDB records within a 16-kilometer (10-mile) radius of the project area. The closest observation of a nesting Swainson's hawk is approximately 6.4 kilometers (4 miles) south of the project area (California Natural Diversity Database 2002). This observation was made in 1998. Suitable nesting habitat occurs in riparian forest habitat along Big Chico Creek and in the urban forest along SR 99. No foraging habitat for Swainson's hawk is present in the project area or in the immediate vicinity.

Cooper's Hawk

Cooper's hawk is designated as a state species of special concern. Cooper's hawk is a year-round resident throughout much of California, except in the high Sierra Nevada. Migrants from the north winter in California, and residents move downslope and south from areas of heavy snow in fall and return in spring (Zeiner et al. 1990a). Cooper's hawk nests in riparian, deciduous, conifer, and mixed woodlands (Garrett and Dunn 1981), but will also nest in urban areas and

seems to tolerate human disturbance near the nest (Palmer 1988). The species' breeding season is between March 1 and August 1. Cooper's hawk forages along forest edges and in broken habitats for small birds and small mammals (Zeiner et al. 1990a).

Survey Results

No Cooper's hawks were observed during the reconnaissance field survey of the project area. There are no CNDDDB records within a 16-kilometer (10-mile) radius of the project area. However, suitable nesting habitat occurs in riparian forest habitat along Big Chico Creek and in the urban forest along SR 99. No foraging habitat for Cooper's hawk is present in the project area or in the immediate vicinity.

Oak Titmouse

Oak titmouse is designated as a species of local concern by USFWS. In California, oak titmice breed throughout the Coast, Transverse, and Peninsular Ranges and the western foothills of the Sierra Nevada. They do not occur in the humid northwestern coastal region or the San Joaquin Valley. Oak titmice are found primarily in dry oak and oak-pine woodlands, but are also found in a variety of other habitats (Cicero 2000). Oak titmice build their nests in woodpecker holes, natural cavities, and nest boxes (Zeiner et al. 1990a). The species eats seeds, terrestrial invertebrates, and plant material (Cicero 2000).

Survey Results

Oak titmice were observed within Bidwell Park in the riparian forest in and adjacent to the project area during the reconnaissance field survey. The riparian forest habitat along Big Chico Creek and the urban forest along SR 99 provide suitable habitat for oak titmice.

Nuttall's Woodpecker

Nuttall's woodpecker is designated as a species of local concern by USFWS. In California, Nuttall's woodpecker is a permanent resident in the Central Valley, the Transverse and Peninsular Ranges, the Coast Ranges north to Sonoma County, and in lower portions of the Cascade Range and Sierra Nevada. Nuttall's woodpecker occurs in low-elevation riparian deciduous and oak habitats. The species excavates a nest cavity in the trunk or limb of a dead willow, sycamore, cottonwood, and alder. Nuttall's woodpeckers breed from late March to early July. They eat beetles, berries, nuts, other fruits, and sap (Zeiner et al. 1990a).

Survey Results

A woodpecker was heard and observed in Bidwell Park adjacent to the project area during the reconnaissance field survey, but it could not be identified as to species before it flew away. The riparian habitat along Big Chico Creek and the urban forest along SR 99 provide suitable nesting and foraging habitat for Nuttall's woodpecker.

Yuma Myotis and Pallid Bat

Two special-status bat species, Yuma myotis and pallid bat, were determined to have the potential to roost under the Bidwell Park Viaduct within the project area. Yuma myotis is a federal species of concern and a state species of special concern. Pallid bat is a state species of special concern.

Yuma myotis is found at lower elevations throughout most of California. The species is one of the most tolerant of human presence (The Wildlife Society 1996). Yuma myotis prefers forests and woodlands with sources of water to feed above. Yuma myotis eat a variety of small flying insects that they find using echolocation (Zeiner et al. 1990b). Daytime roosting sites for Yuma myotis include buildings, bridges, mines, caves, trees, and crevices. Nighttime roosting sites include buildings, bridges, or other manmade structures. This species hibernates during winter. Like other California bats, Yuma myotis mates in fall. One offspring is born per year in June or July (The Wildlife Society 1996).

Pallid bat is found throughout most of California at low to middle elevations [1,830 meters (6,000 feet)]. Pallid bats are found in a variety of habitats, including desert, brushy terrain, coniferous forest, and nonconiferous woodlands. In central and northern California, the species is associated with oak, ponderosa pine, redwood, and giant sequoia habitats. Pallid bats forage among vegetation and above the ground surface, eating large ground-dwelling arthropods and large moths. Daytime roost sites include rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are commonly under bridges and also in cave and mines (The Wildlife Society 1996). Hibernation may occur from late November through March. Studies suggest that pallid bats periodically arouse to drink during hibernation (Orr 1954). Pallid bats breed in late October and November in central California (Orr 1954), and one or two young are born in May or June (The Wildlife Society 1996).

Survey Results

The Bidwell Park Viaduct was surveyed visually during the reconnaissance field survey. Bats were observed roosting in the expansion joints of the bridge. Ample evidence of use by bats, including urine stains, guano, and a musty smell, was present at the site. Bats were visually identified as Mexican freetail bats and big brown bats. Neither species is special-status; however, other special-status bats (e.g., Yuma myotis and pallid bat) may use the bridge as a roosting site. The botanist did not observe any hollow trees or trees with cavities during the tree survey. Bats could also forage over Big Chico Creek in the project area.

Fish

Species lists generated by USFWS and NOAA Fisheries for the study area indicate eight special-status fish species as having the potential to occur in the project region (Table 9-4). Two special-status fish species (Central Valley spring-run chinook salmon [*Oncorhynchus tshawytscha*] and Central Valley steelhead [*Oncorhynchus mykiss*]) and two commercially valuable fish species (Central Valley spring-run and fall-run chinook salmon [*Oncorhynchus tshawytscha*]) have the potential to occur in the project area.

Of the eight special-status fish species identified as potentially occurring in the project region by USFWS, five of those species (Sacramento River winter-run chinook salmon [*Oncorhynchus tshawytscha*], Sacramento splittail [*Pogonichthys macrolepidotus*], delta smelt [*Hypomesus transpacificus*], longfin smelt [*Spirinchus thaleichthys*], and green sturgeon [*Acipenser medirostris*]) would not occur at the project site because the site lacks suitable habitat for the species or the project area is outside of the known range of the species. Also, approximately 0.8 kilometer (0.5 mile) downstream of the project area is a small barrier with a fish ladder that would preclude the presence of splittail into the project area. These species are not discussed further.

Central Valley Spring-Run Chinook Salmon

On February 5, 1999, the California Fish and Game Commission listed spring-run chinook salmon as threatened under the CESA. On September 16, 1999 (64 FR 50393), the National Marine Fisheries Service listed spring-run chinook salmon as threatened. The National Marine Fisheries Service designated critical habitat for spring-run chinook salmon on February 16, 2000 (65 FR 7764). However, on April 30, 2002, the U.S. District Court for the District of Columbia approved a National Marine Fisheries Service consent decree that withdrew the February 2000 critical habitat designation for this species and 18 other evolutionarily significant units (ESUs).

Historical records indicate that adult spring-run chinook salmon enter the mainstem Sacramento River from February through July. Adults migrate to their natal stream, where they hold in deep, cold pools until they spawn. Spring-run chinook salmon are sexually immature during their spawning migration. The species migrates into Big Chico Creek between February and June (California Department of Water Resources 1997). Spawning occurs in gravel beds from late August through October. Emergence of juveniles takes place from late November through January (California Department of Fish and Game 1998). Spring-run chinook salmon appear to emigrate at three different life stages: fry, fingerlings, or yearlings.

Survey Results

A habitat assessment of Big Chico Creek was conducted by a fisheries biologist. The biologist evaluated the habitat along the creek from 30.5 meters (100 feet) above the project area downstream to the fish ladder. The evaluation determined that adults and juveniles migrate through the project area, but no spawning or summer rearing of spring-run chinook salmon occurs along the project area unless water temperatures are cooler.

Central Valley Steelhead

The Central Valley steelhead ESU is listed as threatened (63 FR 13347, March 19, 1998), but the designation for critical habitat was rescinded in April 2002.

After maturing for 1 to 3 years in the ocean, adult steelhead typically begin their spawning migration in fall and winter. Spawning occurs a few weeks to a few months from the time they enter fresh water. Historical records indicate that adult steelhead enter the mainstem Sacramento River in July, peak in abundance in the fall, and continue migrating through February or March (McEwan and Jackson 1996). Unlike Pacific salmon, most steelhead do not die after spawning; a small portion survive to spawn again.

Juvenile steelhead will remain in fresh water and continue rearing for 1 to 3 years before migrating to the ocean in November through May to mature. Smolt typically migrate to the ocean as stream flow declines and water temperatures increase during March through June. Although steelhead have been collected in most months at the state and federal pumping plants in the Delta, the peak numbers salvaged at these facilities have been primarily in March and April.

Survey Results

The survey identified similar conditions for Central Valley steelhead as for spring-run chinook salmon.

Central Valley Fall-Run Chinook Salmon

On March 9, 1998 (63 FR 11481), the National Marine Fisheries Service issued a proposed rule to list fall-run chinook salmon as threatened; however, on September 16, 1999 (64 FR 50393), the National Marine Fisheries Service determined that the species did not warrant being listed as threatened and downgraded it to candidate status. The National Marine Fisheries Service indicated that the Central Valley fall-run and late fall-run chinook salmon are a single ESU.

After 2 to 4 years of maturation in the ocean, adult fall-run chinook salmon return to their natal freshwater streams to spawn. Adult fall-run chinook salmon enter the Sacramento River system from July through December and spawn from October through December. All chinook salmon require cold, freshwater streams with suitable gravel to reproduce and spawn in the cooler reaches of Big Chico Creek. Newly emerged fry remain in shallow, lower-velocity edgewater, particularly where debris accumulates, making the fish less visible to predators (California Department of Fish and Game 1998).

Juvenile fall-run chinook salmon may rear in Big Chico Creek from January to June. Cover, space, and food are necessary components of rearing habitat. Suitable habitat includes areas with in-stream and overhead cover in the form of undercut banks, downed trees, and overhanging tree branches. The organic materials that form fish cover also provide sources of food, such as aquatic and terrestrial insects. Fall-run chinook salmon emigrate as fry and subyearlings (63 FR 11481, March 9, 1998).

Survey Results

The survey identified similar conditions for fall-run chinook salmon as for spring-run chinook salmon. However, spawning and rearing habitat for fall-run chinook salmon occurs in the project vicinity since this fish species is more tolerant of warmer temperatures.

9.1.6 Non-Special-Status Species **Nesting Migratory Birds and Raptors**

Several nonspecial-status migratory birds, including raptors, could nest in the riparian habitat and urban forest throughout the project area. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA (50 CFR 10 and 21) and California Fish and Game Code Sections 3503 and 3503.5. DFG is responsible for overseeing compliance with the codes and makes recommendations on nesting bird and raptor protection.

Raptors and other migratory birds probably nest in the riparian forest along Big Chico Creek. The breeding season for most birds is generally from February 1 to August 15.

Survey Results

A known raptor nest is located within the project area on the east side of SR 99. This nest was observed during the reconnaissance field survey. No raptors were observed at the nest or in the project area; however, the survey was conducted after the end of the nesting season. A resident adjacent to the project area stated that a hawk has nested there in previous years. Suitable nesting habitat for raptors and migratory birds was identified in riparian forest along Big Chico Creek and the urban forest within the project area.

Swallows

Cliff swallows and barn swallows are not considered special-status wildlife species; however, their occupied nests and eggs are protected by federal and state laws, including the federal MBTA (50 CFR 10 and 21). The USFWS is responsible for overseeing compliance with the MBTA, and the U.S. Department of Agriculture animal damage control officer makes recommendations on animal protection issues.

Cliff swallows and barn swallows are species that frequently build mud nests on the undersides of artificial structures such as bridges. These species winter in South America and return to California to breed in February. Swallows nest from April to August and migrate south in September and October (Zeiner et al. 1990a).

Survey Results

The Bidwell Park Viaduct was surveyed visually for swallow nests during the reconnaissance field survey. No swallow nests were observed under the Bidwell Park Viaduct within the project area. However, the viaduct provides suitable nesting habitat for swallows.

9.1.7 Other Protected Biological Resources/Biological Issues

Trees

Trees within Bidwell Park are protected under the City of Chico Municipal Code (see the “City of Chico Tree Law” section that follows for a description of this code). No trees within Bidwell Park would be affected because no construction activities would occur within park boundaries. No formal protection is currently afforded trees in the Caltrans right-of-way or on private property in Chico. However, there is much public concern over the loss of trees within the city. Therefore, this report addresses impacts on trees within the Caltrans right-of-way.

Survey Results

There are 641 trees present on or adjacent to the side slopes and median of SR 99 in the project area north of Vallombrosa Avenue and south of the Bidwell Park Viaduct. These include 362 native and nonnative trees between 15 and 30 centimeters (6 and 12 inches) dbh and 279 native and nonnative trees measuring 30 centimeters (12 inches) dbh or greater. See Impact BR1 for a description of trees within Caltrans right-of-way adjacent to the Bidwell Park boundaries.

Noxious Weeds

Roads, highways, and related construction projects are some of the principal dispersal vectors for exotic pest plants. The introduction and spread of exotic pest plants adversely affect natural plant communities by displacing native plant species that provide shelter and forage for wildlife species. Exotic pest plants include species designated as federal noxious weeds by the U.S. Department of Agriculture and species listed by the California Department of Food and Agriculture (CDFA) (2000).

Survey Results

Noxious weeds were identified by comparing the list of plants observed in the project area (contained in Appendix C of the project NES) to the CDFA list. Two of the species in the project area are present on the CDFA list. Yellow nutsedge (*Cyperus esculentus*), observed in a small drainage within the landscaped portion of the gore area at the East 1st Avenue interchange, is on

List B. List B identifies widespread species for eradication, containment, control, or other holding action at the discretion of the county agricultural commissioner. Bermuda grass (*Cynodon dactylon*), present in Bidwell Park, is on List C. List C identifies widespread species for which no eradication or containment efforts are endorsed except when present in nurseries or seed lots.

9.1.8 Regulatory Overview

This section presents a summary of relevant local, state, and federal regulations and describes in-depth studies conducted to comply with federal laws.

City of Chico Tree Law

The City's tree ordinance is found in the Chico Municipal Code, Chapter 14.40, "Street Trees." No trees may be removed from any planting area in the City without written permission from the City Council or the Bidwell Park and Playground commission. Planting areas include all City-owned rights-of-way, the area between the private property line and the adjacent street curbing, and other public areas and ways set aside for planting. Trees in Bidwell Park are also included under this ordinance. All trees affected by this project are within the Caltrans right-of-way, and direct or indirect impacts to trees within Bidwell Park will be avoided.

Proposed City of Chico Tree Ordinance

TreeAction, a citizen's action group, has proposed a tree ordinance for the City of Chico. The ordinance would supplement the City's Tree Law and would apply to "landmark trees" and all other trees 30 centimeters (12 inches) or more in diameter. The proposed ordinance was presented before the City Council Internal Affairs Committee on September 10, 2002. This ordinance, if adopted by the City, would not apply to the Caltrans right-of-way, and, therefore, would not apply to this project since all project impacts are limited to the Caltrans right-of-way.

California Fish and Game Code Section 1601

Under this section of the California Fish and Game Code, agencies are required to notify DFG before any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, DFG is required to propose reasonable project changes to protect the resources. These modifications are formalized in a streambed alteration agreement that becomes part of the plans, specifications, and bid documents for the project. BCAG will apply for a Section 1601 Streambed Alteration Agreement for this project.

Jack Miller of DFG, Region 1, attended the field visit on October 7, 2002. Mr. Miller provided recommendations for avoidance of and mitigation for effects on suitable Swainson's hawk nesting habitat and special-status bats. He also indicated that replacement and enhancement of riparian habitat for the loss or disturbance to such habitat should occur at 2:1 ratio (2 acres planted for every 1 acre removed). In February 2003, BCAG electronically mailed relevant portions of the Administrative Draft Natural Environment Study Report (January 2003) to Mr. Miller for his review. Mr. Miller provided input on the proposed mitigation for special-status species bats. On March 13, 2003, Jones & Stokes biologists spoke with Jenny Marr at DFG, and

Ms. Marr provided input on the proposed riparian restoration, enhancement, and monitoring plan.

Section 7 of the Federal Endangered Species Act

Jones & Stokes contacted USFWS on September 9, 2002 to request a list of special-status plant and wildlife species that could occur in the vicinity of the proposed area. USFWS provided a list (dated September 10, 2002) of species that are listed as endangered or threatened, are proposed for such listings, or listed as candidates under the federal ESA (contained in Appendix B of the project NES).

In October 2002 and February 2003, BCAG met with USFWS to discuss the potential for impacts on the VELB and mitigation for those impacts (Ly pers. comm.). On November 18, 2002, Jones & Stokes sent a letter for USFWS' review that summarized the direct and indirect effects of the project on VELB and proposed conservation measures (Ly pers. comm.). On May 13, 2003, FHWA forwarded the biological assessment to the USFWS and requested initiation of formal consultation under Section 7. On August 25, 2003, in an electronic mail, the USFWS indicated that it would issue a technical assistance letter to BCAG indicating concurrence with the conclusions of the biological assessment and the proposed mitigation measures. USFWS has indicated that it will issue a biological opinion upon notification that BCAG's Board of Directors has adopted a preferred project alternative.

Jones & Stokes contacted NOAA Fisheries on September 11, 2002 to request a list of special-status anadromous fish species that could occur in the project area vicinity. NOAA Fisheries provided a list on September 27, 2002 (contained in Appendix B of the project NES). In October 2002, BCAG met with NOAA Fisheries to discuss potential impacts and avoidance measures for anadromous fish species (Finn pers. comm.). On June 20, 2003, FHWA forwarded a Biological Assessment and Essential Fish Habitat Assessment for Central Valley Steelhead and Central Valley Spring-Run and Fall-Run Chinook Salmon (Jones & Stokes 2003b) for this project to NOAA Fisheries. The biological assessment concludes that with implementation of proposed minimization measures, the project may affect, but would not likely adversely affect Central Valley spring-run chinook salmon and steelhead, federally listed species, or the essential fish habitat (EFH) for chinook salmon. Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, EFH is the aquatic habitat necessary to fish for spawning, breeding, feeding, or growth to maturity that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem. On September 3, 2003 NOAA Fisheries issued a letter to FHWA indicating concurrence with the biological assessment, concluding Section 7 and EFH consultation for this project.

Section 404 of the Federal Clean Water Act

The Corps and the U.S. Environmental Protection Agency regulate the placement of fill into "waters of the United States" under Section 404 of the Clean Water Act. Project proponents must obtain a permit from the Corps for all discharges of fill material into waters of the United States before proceeding with a proposed action. The Corps may either issue individual permits on a case-by-case basis or general permits on a program level. General permits exist to cover similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits (NWP) are a type of general permit that cover particular fill activities. All NWPs have a general set of conditions that must be met for the permits to apply to a particular

project, as well as specific conditions that apply to each NWP. Big Chico Creek is a natural stream that flows through portions of the study area. No wetlands are present in the project area.

BCAG met the Corps in October 2002 on this project. The Corps indicated that this project could be permitted with a nationwide permit 23 (Categorical Exclusions) (Kelley pers. comm.). Nationwide permit 33 (Temporary Construction Access and Dewatering) would also likely be required for this project.

Executive Order 11312: Invasive Species Assessment

EO 13112 (signed February 3, 1999) directs all federal agencies to prevent and control introductions of invasive species in a cost-effective and environmentally sound manner. It established a National Invasive Species Council (NISC) composed of federal agencies and departments and a supporting Invasive Species Advisory Committee (ISAC) composed of state, local, and private entities. NISC and ISAC prepared a national invasive species management plan (2001) that recommends objectives and measures to implement the EO and to prevent the introduction and spread of invasive species. The EO and directives from FHWA require consideration of invasive species in NEPA analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them. Impact BR15 address project impacts related to invasive species.

9.2 Environmental Impacts and Mitigation Measures

9.2.1 Methodology

See the “Methodology” section above in the “Setting” section.

9.2.2 Significance Thresholds

The State CEQA Guidelines and professional standards were used to determine whether the proposed project would have a significant impact on biological resources.

Based on section 15065 of the State CEQA Guidelines, as well as Appendix G to those Guidelines, the County concludes that a project would have a significant impact on biological resources if it would:

- have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by DFG or USFWS;
- have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, and coastal wetlands) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

- conflict with the provisions of an adopted habitat conservation plan (HCP), natural communities conservation plan (NCCP), or other approved local, regional, or state habitat conservation plan; or
- have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal.

Standard professional practice was also used to determine whether an impact on biological resources would be significant. The proposed project likely would cause a significant impact if it would result in:

- long-term degradation of a sensitive plant community because of substantial alteration of land form or site conditions (e.g., alteration of wetland hydrology);
- substantial loss of a plant community and associated wildlife habitat;
- fragmentation or isolation of wildlife habitats, especially riparian and wetland communities;
- substantial disturbance of wildlife resulting from human activities;
- avoidance by fish of biologically important habitat for substantial periods, which may increase mortality or reduce reproductive success;
- disruption of natural wildlife movement corridors;
- reduction in local population size attributable to direct mortality or habitat loss, lowered reproductive success, or habitat fragmentation of:
 - species qualifying as rare and endangered under CEQA,
 - species that are state-listed or federally listed as threatened or endangered, or
 - portions of local populations that are candidates for state or federal listing and federal and state species of concern; or
- substantial reduction or elimination of species diversity.

Impact BR1: Disturbance to Approximately 1.3 Hectares (3.2 Acres) of Riparian Forest

Project effects on the Great Valley Valley Oak Riparian Forest and Great Valley Mixed Riparian Forest plant communities are discussed together because of the similar structure and composition of the vegetation and because these communities interdigitate within the project area.

Approximately 1.3 hectares (3.2 acres) of riparian forest would be affected by project activities. Native trees to be affected include white alders and western sycamores along the creek banks, and valley oaks, Northern California black walnuts, Aleppo pines, and other species further from the creek. No trees within Bidwell Park would be affected because no construction activities would occur within park boundaries. Trees would be removed for placement of the new piers, footings, and deck of the widened viaduct bridges. Trees would be trimmed to remove branches that impede the movement of construction equipment and vehicles. Trenching within the dripline of trees would destroy roots and could cause direct tree mortality or could weaken the trees, making them more susceptible to disease. The movement and storage of construction equipment could damage roots and compact soil around the roots of trees located within the construction zone. These disturbances could affect the health of the trees and possibly lead to mortality.

In addition to impacts on the trees, the shrub and herbaceous understory in the construction zone would be removed or disturbed. Understory vegetation would be permanently removed for construction of the piers and temporarily disturbed in the remainder of the construction zone.

In addition to construction effects, the increased area of shading beneath the viaduct would increase the unvegetated area. Riparian vegetation is generally not shade-tolerant, and shading beneath the widened viaduct would inhibit the regrowth of riparian vegetation removed during construction.

Riparian habitats are considered sensitive locally, regionally, and statewide because they provide numerous habitat values and are in decline across the state. Substantial statewide decline of riparian communities in recent years has increased concerns about dependent plant and wildlife species, leading state and federal agencies to adopt policies to arrest further loss. Riparian vegetation provides a variety of functions, such as bank stabilization, erosion control, and wildlife habitat. The DFG has adopted a no-net-loss policy for riparian habitat value. In addition, USFWS mitigation policy identifies California's riparian habitats in Resource Category 2, for which no net loss of existing habitat value is recommended (46FR 7644, January 23, 1981).

Additionally, DFG regulates activities that alter the beds, channels, and banks of stream. The proposed viaduct improvements at Big Chico Creek would include such activities and therefore would require a streambed alteration agreement with DFG under Section 1601 of the California Fish and Game Code.

Outside Widening Alternative

Approximately 101 trees (78 native and 23 nonnative) would be removed or trimmed. Of these 101 trees, approximately 71 (55 native and 16 nonnative) measure 30 centimeters (12 inches) dbh or greater and 30 trees (23 native and 7 nonnative) measure between 15 and 30 centimeters (6 and 12 inches) dbh. Direct impacts on aboveground portions of 19 trees would be avoided, including 11 trees occurring between the bridge structures (Figure 9-1a). However, these trees would be subject to direct or indirect effects within the root zone.

Although the Outside Widening Alternative would not involve widening the viaduct to the inside, the area between the bridge structures would likely be impacted by construction vehicle movement and construction equipment activities, thereby affecting the root zones of fenced trees and shrubs (see Impact BR3 for a discussion of impacts on elderberry shrubs). Therefore, impacts on the riparian forest associated with the Outside Widening Alternative are estimated to be the same as the Inside Widening Alternative; it is estimated that approximately 1.3 hectares (3.2 acres) of riparian forest would be affected.

Impacts to the riparian forest habitat are considered to be significant since the project could result in the long-term degradation and loss of a sensitive plant community and associated wildlife habitat. This impact would be mitigated to a less-than-significant level with implementation of the mitigation measures identified below. Mitigation Measures BR1a–BR1c are general measures to protect sensitive biological resources. Mitigation Measure BR1d calls for implementation of a riparian restoration and monitoring plan.

The removal of mature native trees measuring 30 centimeters (12 inches) or greater is considered a significant impact because the project would result in the degradation and loss of a sensitive plant community and associated wildlife habitat. (Native trees of this size that would be removed from the Caltrans right-of-way on the SR 99 side slopes are discussed under Impact BR14.) Mitigation Measure BR1d would be implemented to reduce long-term impacts in the riparian area in the Caltrans right-of-way adjacent to Bidwell Park to less than significant. Short-term impacts on native trees measuring 30 centimeters (12 inches) dbh or greater would remain significant and unavoidable even with implementation of Mitigation Measure BR1d since, even though they provide replanting of native trees, they do not mitigate for the loss of fully-grown native trees which take many years to mature.

Mitigation Measure BR1a: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions

A qualified biologist, under contract to BCAG, will conduct environmental awareness training for construction crews before project implementation. The education program will include a brief review of the special-status species (e.g., VELB, northwestern pond turtle, Swainson's hawk, Cooper's hawk, oak titmouse, Nuttall's woodpecker, special-status bats, Central Valley steelhead, and Central Valley spring-run and fall-run chinook salmon) that could potentially occur in the project area. The review will include the life history, habitat requirements, and photographs of the species. The training will identify the portions of the project area in which these species may occur, as well as their legal status and protection under the ESA (16 USC 1536), if applicable. The program will also cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on these species during project implementation. The crew foreman will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Education programs will be conducted for appropriate new personnel as they are brought on the job during the construction period. Restrictions and guidelines that must be followed by construction personnel are listed below.

- Project-related vehicles will observe the posted speed limit on hard-surfaced roads and a 16.1-kilometer-per-hour (10-mile-per-hour) speed limit on unpaved roads during travel in the project area.
- Project-related vehicles and construction equipment will restrict off-road travel to the designated construction area.
- All food-related trash will be disposed of in closed containers and removed from the project area at least once a week during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the project area.
- No pets or firearms will be allowed in the project area.
- To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated staging areas.
- Any worker who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped will immediately report the incident to the biological monitor. The monitor will immediately notify Caltrans, which will provide verbal notification to the USFWS Endangered Species Office or NOAA Fisheries Office in Sacramento, California, and to the local DFG warden or biologist within 3 working days. Caltrans will follow up with written notification to USFWS or NOAA Fisheries, and DFG within 5 working days. The

biologist shall also notify USFWS of any unanticipated harm to VELB or elderberry shrubs associated with the proposed project. All observations of VELB (live, injured, or dead) or fresh beetle exit holes shall be recorded on CNDDDB field sheets and sent to DFG.

Mitigation Measure BR1b: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources that Will be Avoided

Caltrans, BCAG, or the contractor will install orange construction barrier fencing to identify environmentally sensitive areas. The construction specifications will require that a qualified biologist identify sensitive biological habitat onsite and identify areas to avoid during construction. The area that would generally be required for construction, including staging and access, is shown as the “project area” in Figures 9-1a, 9-1b, 9-2a and 9-2b; pockets within this area that are to be avoided during construction (e.g., the dripline of trees to be saved and buffer areas around elderberry shrubs to be protected) would be fenced off to avoid disturbance in these areas. Sensitive biological habitat that occurs in and adjacent to the construction area (project area) includes Big Chico Creek, the riparian forest along the creek, elderberry shrubs located within the project area and within 30.5 kilometers (100 feet) of the area, and trees that provide habitat for special-status species. Before construction, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the barrier fencing and will place stakes around the sensitive resource sites to indicate these locations. The protected area will be designated as an environmentally sensitive area and clearly identified on the construction specifications. The fencing will be installed before construction activities are initiated and will be maintained throughout the construction period. The following paragraph will be included in the construction specifications:

The Contractor’s attention is directed to the areas designated as “environmentally sensitive areas.” These areas are protected, and no entry by the Contractor for any purpose will be allowed unless specifically authorized in writing by the City and Caltrans. The Contractor will take measures to ensure that Contractor’s forces do not enter or disturb these areas, including giving written notice to employees and subcontractors.

Temporary fences around the environmentally sensitive areas shall be installed as the first order of work. Temporary fences shall be furnished, constructed, maintained, and removed as shown on the plans, as specified in the special provisions, and as directed by the project engineer. The fencing shall be commercial-quality woven polypropylene, orange in color, and at least 1.2 meters (4 feet) high (Tensor Polygrid or equivalent). The fencing will be tightly strung on posts with a maximum 3-meter (10-foot) spacing.

Mitigation Measure BR1c: Retain a Biologist to Monitor Construction Activities in and near Big Chico Creek

A qualified biologist, under contract to BCAG, will monitor all construction activities occurring in water in Big Chico Creek for compliance with the mitigation measures for the project. For construction activities occurring outside the water, the biologist will inspect the project area weekly during ground-disturbing activities and monthly after ground-disturbing activities until project construction is complete.

The biological monitor will assist the construction personnel, as needed, to comply with all project implementation restrictions and guidelines. Furthermore, the biological monitor will be responsible for ensuring that the contractor maintains the staked and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources. BCAG will be responsible for providing biological inspection reports to Caltrans, DFG, USFWS, NOAA Fisheries, and the City of Chico.

Mitigation Measure BR1d: Enhance Riparian Habitat by Developing and Implementing a Riparian Restoration and Monitoring Plan

A qualified biologist, under contract to BCAG, shall prepare a riparian restoration and monitoring plan to compensate for the unavoidable loss of riparian vegetation along Big Chico Creek. The plan will focus on replanting or enhancing riparian habitat along Big Chico Creek in the construction area, and in other areas along Big Chico Creek that are publicly owned and can be protected in perpetuity. A representative from DFG has indicated that riparian vegetation removal within Caltrans right-of-way resulting from viaduct widening should be compensated for at a minimum 2:1 ratio (acres of habitat restored to acres of habitat affected) (Miller and Olah pers. comm.). Mitigation shall take place within the Big Chico Creek riparian corridor, to the extent feasible; additional measures, such as purchase of mitigation bank credits or off-site mitigation, shall be implemented for any acreage that cannot be restored within the Big Chico Creek riparian corridor. Restoration and enhancement will include removing nonnative vegetation and planting native trees and shrubs.

The riparian restoration and monitoring plan will be developed through coordination with representatives from BCAG, the City of Chico, Caltrans, DFG, and USFWS. It will include design specifications, an implementation plan, maintenance requirements, and a monitoring program. Monitoring for a minimum of 5 years will be conducted to document the success criteria (identified below) and to identify remedial actions that may be needed (such as, but not limited to replacement plantings, weed removal, rodent control, and irrigation system replacement). Monitoring may extend beyond 5 years if additional remedial measures are required and if the restoration area is not progressing towards achieving the success criteria:

- The riparian habitat is composed of a mix of native species similar to that removed during construction of the viaduct improvements.
- The following is established at the mitigation site: at least 75% total canopy cover of native riparian vegetation; less than 5% of total cover composed of noxious weeds or invasive, nonnative perennial species; and maximum 20% bare ground.
- The riparian species that dominate the mitigation site rate good or excellent vigor and growth. This assessment should be based on a qualitative comparison of leaf turgor, stem caliber, leaf color, and foliage density in the planted sites with individuals of the same species in the adjacent riparian areas.
- Plantings at each site are self-sustaining at the end of the monitoring period without human support (e.g., weed control, rodent control, or irrigation).

BCAG will be responsible for submitting annual monitoring reports to the appropriate resource agencies. The report will summarize the data collected during monitoring periods, describe the progress of the riparian habitat in terms of the success criteria, and discuss any remedial actions

performed. A brief letter report summarizing the results of monitoring and recommending additional needed actions will be submitted to Caltrans, DFG, USFWS, NOAA Fisheries, and the City of Chico.

Inside Widening Alternative

Approximately 106 trees (79 native and 27 nonnative) would be removed or trimmed. Of these, 106 trees, approximately 77 (57 native and 20 nonnative) measure 30 centimeters (12 inches) dbh or greater and 29 (22 native and 7 nonnative) measure between 15 and 30 centimeters (6 and 12 inches) dbh. Direct impacts on aboveground portions of 12 trees would be avoided (Figure 9-2a), but these trees would be subject to direct or indirect effects within the root zone.

As stated above, impacts on the riparian forest habitat associated with the Inside Widening Alternative are estimated to be the same as those for the Outside Widening Alternative; it is estimated that approximately 1.3 hectares (3.2 acres) of riparian forest would be affected. This impact is considered to be significant since the project could result in the long-term degradation and loss of a sensitive plant community and associated wildlife habitat. This impact would be mitigated to a less-than-significant level with implementation of the mitigation measures identified above for the Outside Widening Alternative.

As noted above for the Outside Widening Alternative, long-term impacts to trees would be mitigated to less than significant with implementation of Mitigation Measure BR1d, but short-term impacts on native trees measuring 30 centimeters (12 inches) dbh or greater would remain significant and unavoidable since, even though the proposed mitigation measures provide replanting of native trees, they do not mitigate for the loss of fully-grown native trees which take many years to mature.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative.

Impact BR2: Permanent Loss of Aquatic Habitat in Big Chico Creek

Construction activities associated with the construction of new piers and widening of the viaduct at Big Chico Creek could contribute to the deterioration of existing fish and wildlife habitat along the creek through the following types of impacts:

- Removal of riparian vegetation that provides shade, cover, and bank stabilization along the creek.
- Short-term increase in suspended sediment concentrations and turbidity resulting from channel disturbance that could affect fish, as described under the “Special-Status Fish Species” section below.
- Short-term degradation of food-producing habitat downstream of the viaduct.
- Potential for short-term degradation of water quality if hazardous material spills of substances, such as gasoline and diesel fuels, engine oil, and hydraulic fluids, occur, thereby potentially contaminating the creek and affecting aquatic species.

- Temporary increase in ambient noise levels associated with construction equipment (excavating, grading, and hauling) in and around Big Chico Creek.
- Short-term disturbance of habitat and potential for mortality of northwestern pond turtle.

Outside Widening Alternative

Implementation of the Outside Widening Alternative would result in the permanent loss of approximately 0.02 hectare (0.06 acre) of aquatic habitat with the construction of four additional bridge footings and four bridge footing retrofits within the Big Chico Creek OHWM. This impact is considered to be significant since the project could result in the long-term degradation and loss of a sensitive plant community and associated wildlife habitat. This impact would be mitigated to a less-than-significant level with implementation of Mitigation Measures BR1a–BR1c.

Mitigation Measure BR1a: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions

See Impact BR1 for a description of this measure.

Mitigation Measure BR1b: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources that Will be Avoided

See Impact BR1 for a description of this measure.

Mitigation Measure BR1c: Retain a Biologist to Monitor Construction Activities in and near Big Chico Creek

See Impact BR1 for a description of this measure.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would result in the permanent loss of approximately 0.03 hectare (0.09 acre) of aquatic habitat with the construction of six additional bridge footings and four bridge footing retrofits within the Big Chico Creek OHWM. This impact is considered to be significant since the project could result in the long-term degradation and loss of a sensitive plant community and associated wildlife habitat. This impact would be mitigated to a less-than-significant level with implementation of the mitigation measures identified above for the Outside Widening Alternative.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative.

Impact BR3: No Impact to Special-Status Plant Species

Outside Widening Alternative

No habitat occurs in the project area for any of the 24 special-status plant species reported from the general vicinity of the project area. Many of the species occur in wetlands, including vernal pools. No wetlands are present in the project area. Seven species occur in chaparral and montane forest habitats in the foothills east of Chico. These habitats are absent from the project area. Five species occur in grasslands in specific microsites, such as dense clay soils or alkali soils, such as

were present historically on the margins of Butte Sink, southwest of Chico. Soils in the project area are composed of fill or are deep loamy soils of alluvial origin. Because no habitat is present for these species, no special-status species are known to have occurred historically in the project area. No special-status species were located during the site surveys; therefore, they are presumed to be absent from the project area. This impact is considered to be less than significant.

Mitigation Measure

None proposed.

Inside Widening Alternative

This impact would be the same as under the Outside Widening Alternative.

Mitigation Measure

None proposed.

Impact BR4: Removal of Blue Elderberry Bushes, Host Plant to the Valley Elderberry Longhorn Beetle

Outside Widening Alternative

Implementation of the Outside Widening Alternative would result in the removal of 20 elderberry shrubs (#1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 14a, 16, 17, 18, 20, and 21) that have a combined total of 64 stems measuring 2.5 centimeters (1.0 inch) in diameter or greater (Table 9-7). All of these shrubs are located within the Caltrans right-of-way and will be directly affected by the proposed project.

Table 9-7. Type of Impact on Blue Elderberry Shrubs under the Outside and Inside Widening Alternatives

Elderberry Shrub/Cluster Number	Type of Impact	
	Outside Widening Alternative	Inside Widening Alternative
Riparian Habitat within Caltrans Right-of-Way		
1	Direct	Direct
2	Direct	Direct
3	Direct	Direct
4	Direct	Direct
5	Direct	Direct
6	Direct	Direct
7	Direct	Direct
8	Direct	Direct
9	Direct	Direct
10	Direct	Direct
11	Direct	Direct
12	Direct	Direct
13	Direct	Direct
14	Direct	Direct
14a	Direct	Direct
16	Direct	Direct
21	Direct	Direct
Nonriparian Habitat within Caltrans Right-of-Way		
17	Direct	Direct
18	Direct	Direct
19	Indirect	Indirect
20	Direct	Indirect
30-Meter (100-Foot) Buffer Outside the Caltrans Right-of-Way within Bidwell Park		
15	Indirect	Indirect
22	Indirect	Indirect
23	Indirect	Indirect
24	Indirect	Indirect
25	Indirect	Indirect
26	Indirect	Indirect
27	Indirect	Indirect
28	Indirect	Indirect

One elderberry shrub in the project area (#19) and eight elderberry shrubs/clumps within approximately 30 meters (100 feet) of the Caltrans right-of-way could be indirectly affected by increased exposure to dust from construction activities. Exposure to increased levels of dust could, in time, affect the health of the elderberries, thereby decreasing habitat suitability for VELB. However, the shrubs in Bidwell Park are currently exposed to low levels of dust from dirt paths and other unvegetated areas in the park. In addition, several of the elderberry shrubs would be shielded from construction dust to some extent because they are located among and behind extensive vegetation in Bidwell Park. This impact is considered significant since the project could reduce the local population size of a federally listed species, either through direct mortality or habitat loss. This impact would be mitigated to a less-than-significant level with implementation of the mitigation measures identified below.

Mitigation Measure BR4a: Fence Elderberry Shrubs to be Protected

A qualified biologist, under contract to BCAG, will mark the elderberry shrubs and clumps that will be protected during construction. Under the Outside Widening Alternative, one elderberry clump (#19) within the project area would be protected with a buffer area and barrier fencing (Figures 9-1a and 9-1b). Under the Inside Widening Alternative, two elderberry shrubs/clumps (#19 and 20) in the project area would be protected with a buffer area and barrier fencing (Figures 9-2a and 9-2b). Under either alternative, two elderberry clumps/shrubs within 30 meters (100 feet) of the Caltrans right-of-way (#15 and 22) would be protected with a buffer area and barrier fencing (see Figures 9-1a, 9-1b, 9-2a, and 9-2b). The remaining six elderberry clumps/shrubs (#23–28) in the buffer area would not be fenced because they are located well outside the construction area and no construction activities would be allowed outside of the Caltrans right-of-way. Authorization to not fence these shrubs was obtained from USFWS at the February 11, 2003 meeting (Fuller pers. comm.). Elderberry clumps/shrubs #19 and 20 would be protected with a minimum 6.1-meter (20-foot) buffer from the dripline of the clump. Because elderberry clump #15 and shrub #22 are located next to paved pathways, fences will be placed at the pathway edge to protect them from construction access along these paved paths. Orange construction barrier fencing will be placed at the edge of the respective buffer areas. No construction activities will be permitted within the buffer zone other than those activities necessary to erect the fencing. Signs will be posted every 15.2 meters (50 feet) along the perimeter of the buffer area fencing. The signs will contain the following information:

This area is habitat of the Valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.

Temporary fences around the elderberry shrubs will be installed as the first order of work. Temporary fences will be furnished, constructed, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the project engineer. Temporary fencing will be 1.2 meters (4 feet) high, commercial-quality woven polypropylene, orange in color.

Mitigation Measure BR4b: Inspect Buffer Area Fences during Construction

A qualified biologist, under contract to BCAG, will inspect the buffer area fences around elderberry shrubs weekly during ground-disturbing activities and monthly after ground-disturbing activities until project construction is complete or until the fences are removed, as approved by the biological monitor and the resident engineer. The biological monitor will be responsible for ensuring that the contractor maintains the buffer area fences around elderberry shrubs in the project area and the 30-meter (100-foot) buffer area. BCAG will be responsible for providing biological inspection reports to the City of Chico, Caltrans, and USFWS.

Mitigation Measure BR4c: Water Down Construction Areas to Control Dust in the Vicinity of Elderberry Shrubs

Caltrans, BCAG, or the contractor will ensure that the project area will be watered down as necessary to prevent dirt from becoming air borne and accumulating on elderberry shrubs in and adjacent to the project area. Dust control is a standard item required of contractors during highway construction.

Mitigation Measure BR4d: Compensate for Direct and Indirect Effects on Valley Elderberry Longhorn Beetle Habitat

Before construction begins, BCAG will compensate for direct effects to elderberry shrubs by transplanting the shrubs to an USFWS-approved conservation area. Elderberry seedlings or cuttings and associated native species will also be planted in the conservation area. BCAG is working with the City of Chico to locate possible conservation areas in Bidwell Park in which the shrubs could be transplanted; if the conservation area is located within Bidwell Park, it may be located within the same area as the riparian replacement/enhancement area where mitigation for impacts to riparian vegetation will occur. The Wildlands Mitigation Bank in Sheridan is also being considered as a possible conservation area.

The relocation of the elderberry shrubs will be conducted according to USFWS-approved procedures outlined in the Guidelines (U. S. Fish and Wildlife Service 1999). USFWS will be provided with a map and written details identifying the conservation area before the mitigation program is initiated. BCAG and Caltrans must receive approval from USFWS that the conservation area is acceptable. Elderberry shrubs within the project area that cannot be avoided will be transplanted during the plant's dormant phase (November through the first two weeks of February). A qualified biological monitor will remain onsite while the shrubs are being transplanted.

Evidence of VELB occurrence in the conservation area, the condition of the elderberry shrubs in the conservation area, and the general condition of the conservation area itself will be monitored over a period of 10 consecutive years or for 7 years over a 15-year period from the date of transplanting. BCAG will be responsible for funding and providing monitoring reports to Caltrans, the City of Chico, and USFWS in each of the years in which a monitoring report is required. As specified in the Guidelines, the report will include information on timing and rate of irrigation, growth rates, and survival rates and mortality.

To meet the success criteria specified in the Guidelines, a minimum survival rate of 60% of the original number of elderberry replacement plantings and associated native plants must be maintained throughout the monitoring period.

If the Outside Widening Alternative is implemented, 20 elderberry shrubs will be transplanted to the conservation area according to USFWS-approved procedures outlined in the Guidelines. In addition to transplanting the shrubs, the Guidelines require that each elderberry stem measuring 2.5 centimeters (1.0 inch) or greater in diameter at ground level that is directly or indirectly affected be replaced in a conservation area with elderberry seedlings or cuttings at ratios between 1:1 and 8:1. The ratio used is based on whether or not the shrub is located in riparian or nonriparian habitat, the diameters of elderberry stems, and whether or not VELB exit holes are present. Based on the Outside Widening Alternative directly affecting 20 elderberry shrubs having a combined total of 64 stems measuring 2.5 centimeters (1.0 inch) or more in diameter, 174 elderberry seedlings or cuttings would be planted at the conservation area (Table 9-8). Elderberry cuttings or seedlings and native plants will be obtained from local sources or from an approved plant donor site.

A mix of native plants associated with the elderberry shrubs at the project site will be planted in the conservation area at a ratio of 1:1 or 2:1 native tree/elderberry seedling or cutting. The ratio

used depends on whether or not the transplanted shrub contains VELB exit holes. A mixture of native grasses and forbs from local stock should also be planted along with the native trees. The conservation area will be at least 0.67 hectare (1.65 acre) in size to accommodate the 20 elderberry shrubs, 174 elderberry cuttings or seedlings, and 222 native plants. The conservation area in which the transplanted elderberry shrubs and seedlings are planted shall be protected in perpetuity as habitat for the VELB.

Table 9-8. Required Compensation for VELB for the Outside Widening Alternative

Habitat	Stem Diameter	Number of Stems	Exit Holes (Y/N)	Seedling Ratio	Native Plant Ratio	Total Seedling	Total Native Plants
Riparian	Stems $\geq 1"$ to $\leq 3"$	29	N	2:1	1:1	58	58
	Stems $\geq 1"$ to $\leq 3"$	4	Y	4:1	2:1	16	32
	Stems $> 3"$ to $\leq 5"$	4	N	3:1	1:1	12	12
	Stems $> 3"$ to $\leq 5"$	1	Y	6:1	2:1	6	12
	Stems $\geq 5"$	12	N	4:1	1:1	48	48
	Stems $\geq 5"$	1	Y	8:1	2:1	8	16
Nonriparian	Stems $> 1"$ to $\leq 3"$	6	N	1:1	1:1	6	6
	Stems $> 1"$ to $\leq 3"$	4	Y	2:1	2:1	8	16
	Stems $> 3"$ to $\leq 5"$	1	N	2:1	1:1	2	2
	Stems $> 3"$ to $\leq 5"$	1	Y	4:1	2:1	4	8
	Stems $\geq 5"$	0	N	3:1	1:1	0	0
	Stems $\geq 5"$	1	Y	6:1	2:1	6	12
Total		64	N			174	222

Inside Widening Alternative

Implementation of the Inside Widening Project would result in the removal of 19 elderberry shrubs (#1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 14a, 16, 17, 18, and 21) that have a combined total of 51 stems measuring 2.5 centimeters (1.0 inch) in diameter or greater (Table 9-7). All of these shrubs are located within the Caltrans right-of-way and would be directly affected by the proposed project.

Two elderberry shrubs/clumps in the project area (#19 and 20) and eight elderberry shrubs/clumps within approximately 30 meters (100 feet) of the Caltrans right-of-way could be indirectly affected by increased exposure to dust from construction activities, as described above. This impact is considered significant since the project could reduce the local population size of a federally-listed species, either through direct mortality or habitat loss. This impact would be mitigated to a less-than-significant level with implementation of the mitigation measures identified below.

Mitigation Measure BR4a: Fence Elderberry Shrubs to be Protected

This measure is described above under the Outside Widening Alternative.

Mitigation Measure BR4b: Inspect Buffer Area Fences during Construction

This measure is described above under the Outside Widening Alternative.

Mitigation Measure BR4c: Water Down Construction Areas to Control Dust in the Vicinity of Elderberry Shrubs

This measure is described above under the Outside Widening Alternative.

Mitigation Measure BR4d: Compensate for Direct and Indirect Effects on Valley Elderberry Longhorn Beetle Habitat

This measure is described above under the Outside Widening Alternative. If the Inside Widening Alternative is implemented, 19 elderberry shrubs will be transplanted to the conservation area according to USFWS-approved procedures outlined in the Guidelines. Based on the Inside Widening Alternative affecting 19 elderberry shrubs having a combined total of 59 stems measuring over 2.5 centimeters (1.0 inch), an additional 161 elderberry seedlings or cuttings would be planted at the conservation area (Table 9-9). Elderberry cuttings or seedlings and native plants will be obtained from local sources or from an approved plant donor site. A mix of native plants associated with the elderberry shrubs at the project site will be planted in the conservation area at a ratio of 1:1 or 2:1 native tree/elderberry seedling or cutting. A mixture of native grasses and forbs from local stock should also be planted along with the native trees. The conservation area will be at least 0.62 hectare (1.53 acres) in size to accommodate the 19 elderberry shrubs, 161 elderberry cuttings or seedlings, and 200 native plants. The conservation area in which the transplanted elderberry shrubs and seedlings are planted will be protected in perpetuity as habitat for the VELB.

Table 9-9. Required Compensation for VELB for the Inside Widening Alternative

Habitat	Stem Diameter	Number of Stems	Exit Holes (Y/N)	Seedling Ratio	Native Plant Ratio	Total Seedling	Total Native Plants
Riparian	Stems $\geq 1"$ to $\leq 3"$	29	N	2:1	1:1	58	58
	Stems $\geq 1"$ to $\leq 3"$	4	Y	4:1	2:1	16	32
	Stems $> 3"$ to $\leq 5"$	4	N	3:1	1:1	12	12
	Stems $> 3"$ to $\leq 5"$	1	Y	6:1	2:1	6	12
	Stems $\geq 5"$	12	N	4:1	1:1	48	48
	Stems $\geq 5"$	1	Y	8:1	2:1	8	16
Nonriparian	Stems $> 1"$ to $\leq 3"$	4	N	1:1	1:1	4	4
	Stems $> 1"$ to $\leq 3"$	2	Y	2:1	2:1	4	8
	Stems $> 3"$ to $\leq 5"$	1	N	2:1	1:1	2	4
	Stems $> 3"$ to $\leq 5"$	0	Y	4:1	2:1	0	0
	Stems $> 5"$	1	N	3:1	1:1	3	6
	Stems $> 5"$	0	Y	6:1	2:1	0	0
Total		59	N			161	200

Impact BR5: Potential Loss of and Disturbance to Northwestern Pond Turtle Habitat

Outside Widening Alternative

Implementation of the Outside Widening Alternative would result in the following impacts:

- Permanent loss of approximately 0.02 hectare (0.06 acre) of aquatic habitat for northwestern pond turtles. This habitat would be lost as a result of the four additional bridge footings and four bridge footing retrofits within the Big Chico Creek OHWM.
- Permanent loss of approximately 0.10 hectare (0.24 acre) of suitable upland habitat adjacent to the existing bridge when the new piers (16 piers in suitable habitat) are constructed on the north side of Big Chico Creek.

- Temporary disturbance to approximately 0.77 hectare (1.90 acres) of upland habitat within the construction zone by construction activities. This area would be available to turtles in the long term because these areas would be revegetated after the project is completed.

Although the amount of habitat that would be permanently removed is small, this impact is considered significant since the project could reduce the local population size of a special-status species either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure BR1a: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions

See Impact BR1 for a description of this measure.

Mitigation Measure BR1b: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources that Will be Avoided

See Impact BR1 for a description of this measure.

Mitigation Measure BR1c: Retain a Biologist to Monitor Construction Activities in and near Big Chico Creek

See Impact BR1 for a description of this measure.

Mitigation Measure BR5a: Conduct Preconstruction Surveys for Northwestern Pond Turtle and Construct Exclusion Fencing, if Needed

In April or May, before construction, a qualified biologist, under contract to BCAG, will conduct a survey for northwestern pond turtles in Big Chico Creek. The survey should encompass Big Chico Creek within the project area and 0.25 mile upstream and downstream of this area. The purpose of this survey is to determine whether turtles are using the creek during a period when they are most likely to be observed. If turtles are observed, “a” and “b” below will be implemented. If turtles are not observed, only “b” will be implemented.

- a. If northwestern pond turtles are observed during the spring survey, fences should be constructed upstream and downstream of the project area to prevent turtles from entering the construction area. The fences should be constructed 45.7 meters (150 feet) beyond the limit of construction or be attached to right-of-way fencing. The fences will be perpendicular to the creek and will extend 61.0 meters (200 feet) from the center of the creek on each side. Turtles should be moved downstream of the project area, outside the barrier fences, by a qualified biologist before construction begins. Turtles should be excluded from this area between July and October to prevent them from seeking hibernation sites within the construction area. If construction takes place over two seasons, the fencing should be removed at the end of the first season and replaced the following season. If construction takes place over one season, the fencing should be left in place the entire time.
- b. Before Big Chico Creek is dewatered and before there is any activity within the flowing creek, a qualified biologist will conduct a survey for northwestern pond turtles within the project area. This survey should be conducted 24 hours before construction activities begin. If a turtle is found in the construction area, the biologist will try to passively move the turtle downstream of the construction area or to outside the barrier fence if constructed (see “a”

above). If barrier fences have not been installed, the biologist should return to the construction site the following day to ensure that the turtle has not moved back into the construction area.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would result in the following impacts:

- Permanent loss of approximately 0.03 hectare (0.09 acre) of aquatic habitat for northwestern pond turtles. This habitat would be lost as a result of the six additional footings and four footing retrofits within the Big Chico Creek OHWM.
- Permanent loss of approximately 0.14 hectare (0.35 acre) of suitable upland habitat adjacent to the existing bridge when the new piers (24 piers in suitable habitat) are constructed on the north side of Big Chico Creek.
- Temporary disturbance to approximately 0.73 hectare (1.80 acres) of upland habitat within the construction zone by construction activities. This area would be available to turtles in the long term because these areas would be revegetated after the project is completed.

Although the amount of habitat that would be permanently removed is small, this impact is considered significant since the project could reduce the local population size of a special-status species, either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative

Impact BR6: Disturbance of Swainson's Hawk Nesting Habitat

Outside Widening Alternative

Implementation of the Outside Widening Alternative would result in the loss of approximately 332 trees measuring 30 centimeters (12 inches) dbh or greater that may provide suitable nesting habitat for Swainson's hawks in the riparian forest within the Caltrans right-of-way, adjacent to the Bidwell Park boundaries and on the SR 99 side slopes. In addition, construction activities could result in the disturbance of nesting Swainson's hawks if construction occurs during the breeding season (generally between March 1 and September 15). This disturbance could cause nest abandonment and death of young or loss of reproductive potential at active nests located near the project area. This impact is considered significant since the project could reduce the local population size of a state-listed endangered species, either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure BR1a: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions

See Impact BR1 for a description of this measure.

Mitigation Measure BR1b: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources that Will be Avoided

See Impact BR1 for a description of this measure.

Mitigation Measure BR1c: Retain a Biologist to Monitor Construction Activities in and near Big Chico Creek

See Impact BR1 for a description of this measure.

Mitigation Measure BR6a: Conduct a Preconstruction Survey for Nesting Swainson's Hawks and Begin Construction Activities and Remove Trees during the Swainson's Hawk Nonbreeding Season (September 15 to March 1)

A qualified biologist, under contract to BCAG, will conduct a survey for Swainson's hawks nests during April to July the year before construction begins to determine whether Swainson's hawks nest in the project area. Any trees identified for removal that contain Swainson's hawk nests should be identified during this survey. Because the project area is located within an urban setting, surveys will be conducted within the project area and a 0.4-kilometer (0.25-mile) buffer around this area where suitable nest trees are present. If no Swainson's hawk nests are observed, no further mitigation is necessary.

If Swainson's hawks are found nesting in the survey area, construction activities and tree removal shall begin before the Swainson's hawk nesting period to avoid impacts on Swainson's hawks. It may not be feasible to completely avoid construction activities during the Swainson's hawk breeding season. Therefore, construction activities will begin before the Swainson's hawk breeding season to establish a level of activity and noise disturbance that will dissuade Swainson's hawks from attempting to nest within or near the project area. If construction activities cease and begin again during a 12-month period, they should be reinitiated before the next breeding season.

Tree removal is required for this project and should be conducted only during the Swainson's hawks nonbreeding season (September 15 to March 1). Removing woody vegetation during the nonbreeding season will ensure that active nests will not be destroyed by removal of trees supporting or adjacent to active nests. Trees containing Swainson's hawk nests shall not be removed at any time unless there is no feasible way of avoiding them. If a nest tree must be removed, BCAG will consult with DFG for a 2081 Incidental Take Permit. The permit will specify when the tree can be removed and mitigation to offset the loss of the nest tree.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would result in the loss of approximately 218 trees measuring 30 centimeters (12 inches) dbh or greater that may provide suitable nesting habitat for Swainson's hawks. In addition, construction activities could result in the disturbance of nesting Swainson's hawks if construction occurs during the breeding season (generally between March 1 and September 15). This disturbance could cause nest abandonment and death of young or loss of reproductive potential at active nests located near the project area. This impact is considered significant since the project could reduce the local population size of a state-listed endangered species, either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative

Impact BR7: Disturbance of Cooper's Hawk Nesting Habitat

Outside Widening Alternative

Implementation of the Outside Widening Alternative would have the same impacts on Cooper's hawks as those described for Swainson's hawks. This impact is considered significant since the project could reduce the local population size of a special-status species either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure BR1a: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions

See Impact BR1 for a description of this measure.

Mitigation Measure BR1b: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources that Will be Avoided

See Impact BR1 for a description of this measure.

Mitigation Measure BR1c: Retain a Biologist to Monitor Construction Activities in and near Big Chico Creek

See Impact BR1 for a description of this measure.

Mitigation Measure BR7a: Begin Construction Activities and Remove Trees and Shrubs during the Nonbreeding Season for Most Birds (Generally, August 15 to March 1)

The contractor will begin construction before the breeding season to establish a level of noise disturbance that will dissuade noise-sensitive raptors and other birds from attempting to nest within or near the project area. If construction activities cease and begin again during a 12-month period, they should be reinitiated before the next breeding season. Tree and shrub removal is required for this project and should be conducted only during the nonbreeding season for migratory birds and raptors (August 15 to March 1). Removing woody vegetation during the nonbreeding season will ensure that active nests will not be destroyed by removal of trees supporting or adjacent to active nests.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would have the same impacts on Cooper's hawks as those described for Swainson's hawks.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative

Impact BR8: Disturbance of Oak Titmouse Nesting Habitat

Outside Widening Alternative

Implementation of the Outside Widening Alternative would result in the loss of approximately 711 trees that may provide suitable nesting habitat for oak titmice (this total represents all surveyed trees within the project area that would be removed with project implementation). In addition, construction during the nesting period for oak titmice could result in nest abandonment and death of young or loss of reproductive potential at active nests located near the project area. This impact is considered significant since the project could reduce the local population size of a special-status species either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure

The mitigation measures required for Cooper's hawk would also be required for oak titmouse.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would result in the loss of approximately 414 trees that may provide suitable nesting habitat for oak titmice (this total represents all surveyed trees within the project area that would be removed with project implementation). In addition, construction during the nesting period for oak titmice could result in nest abandonment and death of young or loss of reproductive potential at active nests located near the project area. This impact is considered significant since the project could reduce the local population size of a species qualified as rare under CEQA, either through direct mortality or habitat loss.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative

Impact BR9: Disturbance of Nuttall's Woodpecker Nesting Habitat

Outside Widening Alternative

Implementation of the Outside Widening Alternative would have the same impacts on Nuttall's woodpecker as those described for oak titmice. This impact is considered significant since the project could reduce the local population size of a species qualified as rare under CEQA, either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure

The mitigation measures required for Cooper's hawk would also be required for Nuttall's woodpecker.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would have the same impacts on Nuttall's woodpecker as those described for oak titmouse.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative

Impact BR10: Potential Disturbance to Yuma Myotis and Pallid Bat

Outside Widening Alternative

Implementation of the Outside Widening Alternative could result in the disturbance of special-status bats. Vibrations and noise associated with bridge modifications and tree removal could disturb roosting bats. This impact is considered significant since the project could reduce the local population size of a special-status species either through direct mortality or habitat loss. The following measures would be implemented to reduce this impact to less than significant.

Mitigation Measure BR1a: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions

See Impact BR1 for a description of this measure.

Mitigation Measure BR1b: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources that Will be Avoided

See Impact BR1 for a description of this measure.

Mitigation Measure BR1c: Retain a Biologist to Monitor Construction Activities in and near Big Chico Creek

See Impact BR1 for a description of this measure.

Mitigation Measure BR10a: Conduct Preconstruction Surveys for Special-Status Species Bats and Avoid Construction Activities, if Maternity Colonies are Found within the Project Area, until after Migration

A qualified bat biologist, under contract to BCAG, will conduct acoustic and visual surveys for bats twice between April and August before construction begins. Surveys will include the viaduct structures and the trees that will be removed during construction. If any bats are discovered roosting on the viaduct structure or in the trees, the bat biologist will determine what species are present and if the roosts are maternity roosts. Species identification may require direct capture by mist-netting, or BCAG can assume the species present are special-status species. If special-status bat maternity roosts are located or are presumed present, work on the viaduct and tree removal will be avoided until after migration in late fall (October) when bats are less likely to be roosting; once construction activities have begun, bats will be less likely to use the area for roosting because of the increased activity in the area. If no maternity roosts are not found, but other day or night roosts of special-status bats are located, where possible, the bat biologist will exclude the bats from these roosts prior to construction, or alternately all construction can be postponed until the bats have migrated from the roosts. If the bats are resident species that could potentially hibernate in the viaduct structure or trees, the bat biologist will exclude the bats from the structure and trees, where possible, prior to the hibernation period and before construction begins. If construction during this time period is not possible, compensatory mitigation for the loss of roosting habitat will be determined in consultation with DFG and may include the construction and installation of bat boxes in suitable areas.

Inside Widening Alternative

The Inside Widening Alternative would have the same impacts on bats as the Outside Widening Alternative.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative

Impact BR11: Potential Disturbance to Central Valley Spring-Run and Fall-Run Chinook Salmon and Central Valley Steelhead Habitat

Outside Widening Alternative

Implementation of the Outside Widening Alternative could result in the disturbance of habitat for Central Valley spring-run and fall-run chinook salmon and Central Valley steelhead through the removal of streamside riparian habitat, in-water disturbance, erosion, and potential pollutant runoff. Potential construction impacts on fish will be temporary and localized; they may include the following:

- Avoidance by adults or juveniles of active construction areas and areas affected by increased turbidity during in-water construction activities.
- Localized disturbance and sedimentation of food-producing areas (e.g., streambeds).
- Direct mortality of juveniles if spills of toxic materials used or stored at the project area occur.
- Increased water temperatures resulting from the removal of riparian vegetation.
- Possibility of stranding if any depressions or holes are created in the active stream channel because of construction activities.

Construction activities over and adjacent to the creek would disturb soils and could cause sediment to be transported into and through the channel; this would result in temporary increases in turbidity and sedimentation downstream of the construction site. Periods of localized, high suspended sediment concentrations and turbidity owing to channel disturbance can result in avoidance of the area, as well as a reduction of feeding opportunities for sight-feeding fish, and clogging and abrasion of gill filaments. Suspended solids and turbidity generally do not directly affect aquatic organisms unless they reach extremely high levels (i.e., levels of suspended solids reaching 25 mg/L). Increased sediment loading also can degrade food-producing habitat downstream of the project area, interfering with photosynthesis of aquatic flora and resulting in the displacement of aquatic fauna.

Sedimentation of in-stream gravels could significantly change the composition of aquatic invertebrate populations and/or reduce invertebrate biomass, thereby impacting food availability for salmonids. Sedimentation of fine particles in cobbles and gravel substrates would also reduce the amount of interstitial spacing between bed materials that provide a source of cover for fry and juvenile salmonids. Potential sedimentation of river gravels may reduce the quality of rearing and spawning habitat.

The potential exists for fuel and concrete spills into the creek and dispersal to downstream areas during construction. Various contaminants, such as fuel oils, grease, and other petroleum products used in construction activities, could be introduced into the system either directly or through surface runoff. Contaminants may be toxic to fish or cause altered oxygen diffusion rates and acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival.

Riparian habitat will be removed or disturbed (as described previously) during construction of the proposed project. Removal of the creekside riparian vegetation could weaken the creek bank by loosening the soil, thereby increasing the bank's susceptibility to erosion. Alteration of fish habitat would occur if the channel bed and banks were disturbed or if sites that have been disturbed mechanically were further disturbed by high-flow events before they are stabilized. Riparian vegetation provides cover for juvenile rearing, shade to reduce water temperatures, and food input (i.e., terrestrial invertebrates).

This impact is considered to be significant since the project could reduce the local population size of federally listed fish species, either through direct mortality or habitat loss. Mitigation Measures BR1a–BR1d and BR11a would be implemented before, during, and after construction to reduce this impact to less than significant.

Mitigation Measure BR1a: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions

See Impact BR1 for a description of this measure.

Mitigation Measure BR1b: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources that Will be Avoided

See Impact BR1 for a description of this measure.

Mitigation Measure BR1c: Retain a Biologist to Monitor Construction Activities in and near Big Chico Creek

See Impact BR1 for a description of this measure.

Mitigation Measure BR1d: Enhance Riparian Habitat by Developing and Implementing a Riparian Restoration and Monitoring Plan

See Impact BR1 for a description of this measure.

Mitigation Measure BR11a: Implement Measures to Protect Fish Species and Water Quality of Big Chico Creek

Caltrans, BCAG, or the contractor will implement the following measures to protect fish species and water quality:

- Schedule the placement and removal of the cofferdam between July 1 and August 31, so that it will not interfere with the reproductive cycles of fish species.
- Apply erosion control measures to all disturbed slopes, including the banks of Big Chico Creek. No nonnative grasses or herbaceous plant material shall be used for erosion control. These measures shall be compatible with the project's riparian restoration plan.
- Adhere to Caltrans Standard Specifications for avoidance of water pollution (Section 7-1.01G). These measures include detailed recommendations for keeping heavy machinery out

of the water, limiting the amount of material (excavated or construction materials) that enter the stream, and maintaining flows at all times. Temporary measures may include, but are not limited to, the use of sediment basins, hay bales, and downstream silt catchments. The work shall not create a plume of silt that extends greater than 30 meters (100 feet) upstream or downstream of SR 99.

- Prepare a SWPPP prior to construction to reduce or eliminate any water quality reductions that could occur from this project.
- Prohibit the use of heavy equipment in the active channel of Big Chico Creek.
- Ensure that staging and refueling areas for equipment are a minimum of 30 meters (100 feet) away from the active creek channel. If equipment must be washed, washing will occur where the water cannot flow into the river channel.
- Store hazardous substances at approved staging facilities located at least 30 meters (100 feet) from the creek channel.
- Implement measures to prevent the spill of toxic materials. Prevent raw cement, concrete or concrete washings, asphalt paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to aquatic life from contaminating the soil or entering the creek channel.
- Establish a spill-prevention and countermeasure plan before project construction that includes strict on-site handling rules to keep construction and maintenance materials out of drainages and waterways. Immediately clean up spills according to this plan and immediately notify DFG of any spills and clean up procedures.
- Remove all erosion and sediment control measures from the working area after it is stabilized or as directed by the project engineer.

Inside Widening Alternative

The effects of the Inside Widening Alternative on spring-run and fall-run chinook salmon and steelhead are identical to those of the Outside Widening Alternative.

Mitigation Measure

The same mitigation measures would be required under this alternative as under the Outside Widening Alternative

Impact BR12: Potential Disturbance to Non-Special-Status Nesting Migratory Birds and Raptors

Outside Widening Alternative

Implementation of the Outside Widening Alternative could result in the loss of nesting birds, including raptors, if occupied nests in trees and shrubs are removed during the breeding season (generally between March 1 and August 15). This disturbance could cause death of young or loss of reproductive potential at active nests. A hawk reportedly nests within the project area, adjacent to SR 99; this nest was located during the field survey. Other nests are likely to occur within the riparian forest and urban forest portions of the project area.

Effects on nesting migratory birds, including raptors, would be considered significant if the subsequent population declines were large and affected the viability of the local populations. The

proposed project would affect mature valley oak and western sycamore in riparian forest in the project area. These trees could provide nesting habitat for several non-special-status migratory bird and raptor species, including American goldfinch, Bullock's oriole, black phoebe, black-headed grosbeak, red-tailed hawk, red-shouldered hawk, and great-horned owl. These generally common species are locally and regionally abundant. However, construction activities occurring in the project area during the breeding season that result in death of young or loss of reproductive potential would violate California Fish and Game Code Sections 3503 (active bird nests) and 3503.5 (active raptor nests) and the MBTA. To reduce or avoid project impacts on nesting migratory birds, Mitigation Measure BR7a would be implemented.

Mitigation Measure BR7a: Begin Construction Activities and Remove Trees and Shrubs during the Nonbreeding Season for Most Birds (Generally, August 15 to March 1)

See Impact BR7 for a description of this measure.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would have the same impacts on nesting migratory birds as the Outside Widening Alternative.

Mitigation Measure

The same mitigation measure would be required under this alternative as under the Outside Widening Alternative.

Impact BR13: Potential Disturbance to Nesting Swallows

Outside Widening Alternative

Implementation of the Outside Widening Alternative could result in the disturbance of nesting cliff swallows or barn swallows. Vibrations, noise, and activities associated with bridge modifications could disturb nesting swallows. Swallows could be affected by the proposed project if active nests are located on the underside of the bridge and construction activities occur between March 1 and September 1 (the nesting season).

Effects on nesting swallows would be considered significant if the project results in a substantial reduction in local populations attributable to direct mortality or habitat loss, lowered reproductive success, or habitat fragmentation. Based on the colonial nesting habitats of swallow and nest site fidelity, a large colony of swallows could be disturbed by project-related construction activities; therefore, this impact is considered significant. Implementation of Mitigation Measure BR13a would reduce this impact to a less-than-significant level.

Mitigation Measure BR 13a: Avoid Construction Activities that Could Disturb Nesting Swallows

To the extent possible, Caltrans, BCAG, or the contractor will limit construction activities that could potentially disturb nesting swallows to the period outside the breeding season for these species (the nonbreeding season is August 1 to March 1).

If construction activities are to occur during the swallows' breeding season, the following measures will be implemented:

- Hire a qualified biologist to inspect the viaduct during the swallows' nonbreeding season. If nests are found and are abandoned, they may be removed. To avoid damaging active nests, nests must be removed before the breeding season occurs (March 1). A permit from DFG and USFWS is required if active nests are to be removed.
- After nests are removed, cover the underside of the viaduct with 0.5- to 0.75-inch mesh net, poultry wire, or other DFG-approved swallow exclusion device. All devices shall be installed before March 1. The device must be anchored so swallows cannot attach their nests to the bridge through gaps in the device. An alternative to netting is to continually hose down inactive nests until construction occurs. If netting of the viaduct does not occur by March 1 and swallows colonize the bridge, modifications to these structures shall not begin before August 1 or until the young have fledged and all nest use has been completed.

If steps are taken to prevent swallows from constructing new nests, work can proceed at any time of the year, notwithstanding other restrictions specified in the mitigation measures identified above and in City ordinances.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would have the same impacts on swallows as the Outside Widening Alternative.

Mitigation Measure

The same mitigation measure would be required under this alternative as under the Outside Widening Alternative.

Impact BR14: Removal of Trees in the Caltrans Right-of-Way on the SR 99 Side Slopes

Outside Widening Alternative

Under this alternative, all trees on the SR 99 side slopes would be removed to accommodate the freeway widening, retaining walls, and soundwalls, including approximately 349 trees (63 native and 286 nonnative) between 15 and 30 centimeters (6 and 12 inches) dbh and 261 trees (60 native and 201 nonnative) measuring 30 centimeters (12 inches) dbh or greater. Tree removal would also occur in the Caltrans right-of-way, adjacent to Bidwell Park; this impact is discussed under Impact BR1.

The removal of mature native trees measuring 30 centimeters (12 inches) or greater is considered a significant impact because the project would result in the degradation and loss of a sensitive plant community and associated wildlife habitat. Mitigation Measure V3a from the project's Visual Resources Technical Report (Jones & Stokes 2003k) would be implemented to reduce long-term impacts on the SR 99 side slopes to less than significant. See also Impact BR1 for impacts in the riparian area. Short-term impacts on native trees measuring 30 centimeters (12 inches) dbh or greater would remain significant and unavoidable even with implementation of Mitigation Measure V3a since, even though it provides replanting of native trees, it does not mitigate for the loss of fully-grown native trees which take many years to mature.

Mitigation Measure V3a: Implement Project Landscaping Plan to Replace Trees that are Removed, Using the Specified Guidelines

BCAG, Caltrans, or the contractor would follow the following practices in implementing the project landscaping plan:

- The species composition would reflect species that are native and indigenous to the project area. The species list should include trees, shrubs, and an herbaceous understory of varying heights, as well as evergreen and deciduous types. Plant variety will increase the effectiveness of the screen by providing multiple layers, seasonality, more diverse habitat, and reduced susceptibility to disease.
- The planting design would be randomized to mimic natural patterns.
- Vegetation would be planted within the first year following project completion.
- An irrigation and maintenance program would be implemented during the plant establishment period.

Inside Widening Alternative

Under this alternative, trees on the side slopes would be removed where the retaining walls would be constructed north of Palmetto Avenue and south of the Bidwell Park Viaduct. In addition, vegetation removal would be required between Vallombrosa and Palmetto Avenues in an approximate 15-meter-wide (5-foot-wide) area, from the outer edge of the existing shoulder, to accommodate the construction of a soundwall recommended in the project's Noise Study Report. The trees removed would include approximately 167 trees (15 native and 152 nonnative) between 15 and 30 centimeters (6 and 12 inches) dbh and 141 trees (27 native and 114 nonnative) measuring 30 centimeters (12 inches) dbh or greater. Tree removal in the Caltrans right-of-way, adjacent to Bidwell Park, is discussed under Impact BR1.

As noted for the Outside Widening Alternative, the removal of mature native trees is considered a significant impact because the project would result in the degradation and loss of a sensitive plant community and associated wildlife habitat. Long-term impacts on large native trees would be reduced to less than significant, but short-term impacts would remain significant and unavoidable even with implementation of Mitigation Measure V3a since, even though it provides replanting of native trees, it does not mitigate for the loss of fully-grown native trees which take many years to mature.

Mitigation Measure

The same mitigation measure would be required under this alternative as under the Outside Widening Alternative.

Impact BR15: Potential Introduction of New Noxious Weeds or Spread of Existing Noxious Weeds

Outside Widening Alternative

Implementation of this alternative could result in the introduction or spread of noxious weed species that could displace native species, changing the diversity of species or number of any species of plants. Soil-disturbing activities during construction and maintenance of the project could promote the introduction of plant species not currently found in the project area, including

exotic pest plant species. Because the project area is primarily urban, the proposed project is not expected to substantially add to the level of disturbance already experienced in the area. This impact is considered to be significant since if the project resulted in the spread of invasive species, it could result in the reduction or elimination of native species diversity or abundance. Implementation of Mitigation Measure BR15a would be implemented to reduce this impact to a less-than-significant level.

Mitigation Measure BR15a: Avoid the Introduction of New Noxious Weeds or the Spread of Existing Noxious Weeds

Caltrans, BCAG, or the contractor will be responsible for avoiding the introduction of new noxious weeds and the spread of weeds previously documented in the project area. Accordingly, the following measures will be implemented during construction:

- a. Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weed infestations.
- b. Clean construction equipment at designated wash stations before entering the construction area.
- c. Seed all disturbed areas with certified weed-free native and nonnative mixes. Use only certified weed-free mulch or rice mulch in upland areas.
- d. Conduct a follow-up inventory of the construction area to verify that construction activities have not resulted in the introduction of new noxious weed infestations. If new noxious weed infestations are located during the follow-up inventory, the appropriate resource agency will be contacted to determine the appropriate species-specific treatment methods.

Inside Widening Alternative

Implementation of the Inside Widening Alternative would have the same impacts as the Outside Widening Alternative.

Mitigation Measure

The same mitigation measure would be required under this alternative as under the Outside Widening Alternative.

9.2.3 No-Project Alternative

Under the No-Project Alternative, no impacts to biological resources would occur.

Chapter 10 Cultural Resources

The information below is summarized from the project Historic Property Survey Report (HPSR) (Jones & Stokes 2003f); this report is available for review at BCAG offices. The HPSR was prepared to comply with Section 106 of the National Historic Preservation Act (NHPA) and CEQA. This chapter addresses impacts to historical resources.

10.1 Setting

A Jones & Stokes architectural historian and archaeologist surveyed the project area of potential effects (APE) and identified 65 properties containing buildings or other structures. Eight bridges were located in the APE and are listed as Category 5 (not eligible for the National Register of Historic Places [NRHP]) bridges in the California Historic Bridge Inventory prepared by Caltrans. No archaeological resources were found in or adjacent to the APE.

Jones & Stokes formally evaluated properties with buildings constructed before 1957, of which there are 43. None of the pre-1957 buildings in the APE appears to meet the criteria for listing in the NRHP, either individually or as a group. Similarly, none of these properties is a historical resource for the purposes of CEQA (per Section 15064.5(a)(2-3) of the State CEQA Guidelines using the criteria outlined in Section 5024.1 of the Public Resources Code). Twenty-two properties in the APE contain only buildings that are less than 45 years old. These buildings were treated under the Caltrans Interim Policy for the Treatment of Buildings Constructed in 1957 or Later (implemented June 1, 2001).

The Historic Property Survey Report completed for this project was forwarded to the State Historic Preservation Officer (SHPO) in March 2003. To date, a concurrence letter has not been received from the SHPO.

A portion of the APE travels through historic Bidwell Park. After John Bidwell's death in 1900, his widow Annie presented the parkland to the City of Chico. The section of the park located in the APE was drastically altered during the early 1960s when SR 99 was realigned through the park. Although the park is historic, the portion in the APE is a product of the 1960s and therefore does not require further study.

10.1.1 Context

The project area is located in Butte County. The County is situated on the east side of the Sacramento Valley and is bounded by the Sacramento River to the west and the Sierra Nevada to the east (Phillips and Miller 1915). Butte was one of the original 27 counties created when California became a state in 1850. The County initially included all the lands of Plumas County, as well as large portions of Lassen and Tehama Counties. The present County limits, established in 1923, abut Glenn and Colusa Counties to the west, Tehama County to the north and northwest, Plumas County to the east, Sutter County to the south, and Yuba County to the southeast (Coy 1973). The original County seat was located in Hamilton, a former mining town. In 1853, the

seat moved to Bidwell's Bar (another mining camp); in 1856, it moved again to the current location of Oroville (Gudde 1969; Coy 1973).

Butte County is basically a rural county, with Biggs, Chico, Gridley, Oroville, Durham, and Paradise representing (roughly) six of the largest communities. The lack of any real major mineral deposits, such as coal or iron, as well as the County's distance from major commercial centers, has contributed to the overall rural development of the County. Residents historically have relied on agriculture, lumber, and some mining to subsist.

Early Exploration

Spaniards explored parts of Butte County as early as 1808. Gabriel Moraga guided an expedition up north, along the Calaveras, Mokelumne, Cosumnes, American, and Sacramento Rivers, in search of potential inland mission sites. In 1820, a party led by Luis Arguello passed through the region as far north as the Columbia River (McGie 1982a).

During the early 1800s, hunters and trappers, such as Jedediah Strong Smith and a group of Hudson's Bay Company trappers, explored the present-day Butte County. The hunters found the banks of the rivers and streams rich with beavers, otters, and other animals whose pelts were highly valuable commodities in the worldwide trade of the time. The region remained outside the mainstream of both Mexican and American settlement until the California Gold Rush of 1848 (McGie 1982).

Rancho Arroyo Chico

By the 1840s, explorers including Peter Lassen, Samuel Neal, and David Dutton settled in the present-day Chico area. In March 1844, Governor Michelorena of Mexico granted Edward Farwell rancho land located on the south side of Big Chico Creek. The rancho became known as Rancho Farwell. In November of that year, nearby Rancho Arroyo Chico was granted to William Dickey. Rancho Arroyo Chico (located in the project area) covered 22,214 acres and was situated on the north side of the creek. In 1849, settler John Bidwell acquired Rancho Arroyo Chico from Dickey. The U.S. confirmed Bidwell's land patent on April 4, 1860 (McGie 1982a; Perez 1996).

John Bidwell

John Bidwell traveled to California in 1841 as part of the first overland company of Americans (the Bidwell-Bartleson Party) to come to the region with intentions to settle. Bidwell initially settled in Sacramento, where he worked for John Sutter on his Hock Farm, located on the west bank of the Feather River immediately north of present-day Marysville. In 1843, Bidwell arrived in Chico on his way to Red Bluff. Bidwell was so impressed with the area that he decided to establish his residence there (Hoover et al 1990).

Bidwell became actively involved in state politics as soon as he arrived in California. He served in the state legislature and militia and as a senator in Washington, D.C. Although nominated as a candidate for governor of California and president of the United States, he did not win either office. In 1868, while on the East Coast, Bidwell married Annie Ellicott Kennedy. He brought his wife back to his California rancho, where he maintained acres of experimental orchards. Bidwell quickly became known throughout the state as a pioneering agriculturist and horticulturist. Among the crops he grew were hay, barley, oats, peaches, apples, quince, pears,

figs, and grapes. Bidwell also became an early pioneer of olive oil manufacturing. Livestock raising was another dominant economic activity in the region, and Bidwell raised cattle, horses, sheep, and hogs on his land (McGie 1982a; Hoover et al. 1990).

After Bidwell's death in 1900, his widow, intending to establish a park, presented a large tract of land along Big Chico Creek, comprising more than 1,900 acres of trees and vegetation, to the City of Chico. In 1911, 121.8 additional hectares (301 additional acres) were added to what became known as Bidwell Park. At the time, Bidwell Park was the second-largest park in California, after Griffith Park in Los Angeles. Over the years, the city purchased additional acreage near the park to eventually increase its size to approximately 1,513.5 hectares (3,740 acres). Currently, Bidwell Park is the second largest municipal park in the United States (Hoover et al 1990; City of Chico 2002b).

Development

Nineteenth Century

In 1860, Bidwell founded the town of Chico on part of his rancho. At Bidwell's behest, County surveyor J. S. Henning laid out the original town plat, consisting of 50 blocks. Twelve years later, the town incorporated with a population of approximately 1,000 people in an area of 17.1 square kilometers (6.6 square miles).

Bidwell was actively involved in the development of the new community and donated land for churches and public schools, including Chico Normal School (now CSU, Chico). He also showed a keen interest in humanitarian, educational, and reform movements. Chico quickly became a thriving town supported by the rich farmlands and the university (Hoover et al. 1990).

Throughout the latter part of the nineteenth century, Chico, and Butte County in general, enjoyed a steady growth in population, largely because of the establishment of lumber, mining (primarily gold and diamond), and hydroelectric power industries. The continued growth and success of agriculture, and the introduction of fruit canning operations in particular, contributed to the economic development of the region. Crops produced in the County included hay, citrus fruits, vegetables, nuts (primarily almonds), grapes, berries, apples, plums, pomegranates, figs, melons, cherries, and olives (Phillips and Miller 1915).

A major employer in the area was the Diamond Match Company, which opened a plant in Chico in 1902 to make matches and other wood products. The company established a lumber mill east of Magalia, in the mountains, and constructed the Butte County Railroad in 1903 to transport lumber from the mill to Chico. Although established primarily to transport lumber, the passenger and freight service offered by the Butte County Railroad stimulated growth in the communities along the route (Mansfield 1918; Robertson 1998). The construction of the Northern Electric Railroad (later the Sacramento Northern Railroad) in 1905 and the Western Pacific Railroad (part of the transcontinental railroad system) in 1910 further stimulated the region's growth and development.

Twentieth Century

Manufacturing and service industries continued to flourish during the early twentieth century as Butte County struggled to meet the demands of World War I. The influx of people to the area

also created pressure to construct new housing. By 1920, the population of the Chico Township was 15,517 (McGie 1982b).

To accommodate the growth, the City (which assumed title to Rancho Arroyo Chico upon Annie Bidwell's death in 1918) subdivided portions of Bidwell's rancho into home sites to be developed as needed. Most of the project area is located in the Bidwell Tract No. 20 subdivision (formerly part of Rancho Arroyo Chico). Although the city created the subdivision during the 1920s, little actual construction took place on the site until the late 1930s, with most development occurring in the 1950s, when the city experienced another growth spurt (Polk and McCoy 1913; McCoy 1920; Batham & Batham Associated 1956).

Butte County's economy suffered through the Depression years with the rest of the nation, later to be rejuvenated by the onset of World War II. During those years, the County poured its energies into the war effort and, once the conflict ended, Butte County citizens redirected their attention to the home front. Beginning in the late 1940s and into the 1950s, Butte County embarked on a long-postponed construction project that involved building churches, schools, and housing, as well as improving the infrastructure for the growing population.

By the 1950s, the economy throughout the County was booming with the continued success of the Diamond Match Company; the construction of the Oroville Dam; and the thriving agriculture, canning, lumber, and wood processing enterprises. Other local industries included the manufacture of lead tube containers and prefabricated houses, structural steel fabrication, olive processing, sugar manufacturing, rice milling, walnut and almond processing, and dairy processing. Agriculture continued to be the primary industry of the County in terms of production and growth. Major crops produced were almonds, olives, walnuts, citrus fruits, and rice, as well as peaches, prunes, grain, and hay. Overall, during the post-war period, Butte County experienced a 30% growth in business. The County's population grew from 42,840 in 1940 to 82,030 by 1960 (McGie 1982b).

Chico Township saw its population increase from 16,970 in 1940 to more than 33,000 by 1960 as people gradually moved from rural to more urban communities. Construction efforts were underway throughout the region to accommodate the population growth. Much of the new building in Chico focused on the relatively undeveloped area north and east of downtown, in the vicinity of Bidwell Park and roughly bounded by Sherman Avenue, East 1st Avenue, and Bidwell Park. The new subdivisions (located in the project area and part of the Bidwell Tract No. 20 subdivision) primarily were built as single-family residences. Additional housing developments were established north of Lindo Channel. Enrollment at Chico College (formerly Chico Normal School) also increased as more facilities were built and new programs were offered. Other changes in the city included the improvement of highways and roads, such as the realignment of SR 99 and the planning of the new Highway 32 just east of Chico (U.S. Geological Survey 1948; McGie 1982).

Throughout the 1950s and 1960s, Chico served as the trading center for more than 50,000 people, with agriculture and industry contributing to the area's development. By 2001, Chico had grown to include a population of 64,581 people (City of Chico 2002b).

Transportation

U.S. Highway 99

Historic U.S. Highway 99 traveled from the Mexican border north toward Sacramento, where it split into U.S. Highway 99W and U.S. Highway 99E. The two parts rejoined in Red Bluff and generally followed the current Interstate 5 (I-5) route north toward the Oregon/California border. It was originally a dirt and gravel road, but highway officials paved the alignment by the late 1920s when it became one of the first highways commissioned in the nation. U.S. Highway 99 functioned as the main artery along the West Coast until it was largely bypassed in the 1960s by the newly constructed I-5. Between the late 1960s and early 1970s, U.S. Highway 99 was decommissioned and relegated to secondary highway status.

Although U.S. Highway 99 traveled through the Central Valley as early as 1926, for many years it skirted Chico by traveling up to, but not through, the city. By 1955, the state had relocated U.S. Highway 99E through Chico. This newer segment traveled southwest of the current route along the historic Esplanade. Despite public opposition, the state rerouted the highway again in the early 1960s, to alleviate traffic congestion. Chico residents hotly disputed the new highway because it bisected Bidwell Park and traveled through an established residential district. The new alignment (which travels through the project area) is supported by a 20-foot-high earth-filled dike and cuts through 8 acres of parkland (California Department of Transportation 1918, 1936, 1963; *San Francisco Examiner* 1962; Sheridan 1955).

Regional Architecture

Mostly because of cost and the region's mild climate, early twentieth-century residences in the Central Valley tended to be simple wood-frame buildings with modest facades, often exhibiting Craftsman-style elements. A wide overhanging roof and deep porch characterized the popular Craftsman Bungalow design. Also favored were houses reflecting various period revival styles, ranging from English Tudor to American Colonial Revival. Especially common were the small single- and two-family houses built with a detached garage. By the post-World War II years, improvements in building materials and fireproofing led to the increased use of stucco, concrete block, and prefabricated structural parts. The house design of the post-war era emphasized comfort, simplicity, and affordability. To keep costs down, houses were often built of inexpensive factory-made plywood or prefabricated wood siding and stucco. The one-story plan of varying design, including the simplistic Ranch and Minimal Traditional styles, proliferated, proving to be especially popular for the post-World War II subdivisions.

10.1.2 Regulatory Setting

State Regulations

CEQA requires public or private projects financed or approved by public agencies to assess the effects of the project on cultural resources that might qualify as being "historical," as that term is defined by statute. (See Public Resources Code, Section 21084.1.) Potentially "historical" resources could include buildings, sites, structures, or objects, each of which may have historical, architectural, cultural, or scientific importance.

CEQA requires that alternative plans or mitigation measures must be considered if a project results in an effect that may cause a substantial adverse change in the significance of an historical resource. Prior to the assessment of effects or the development of mitigation measures, it must

first be determined whether a particular resource is “historical”. The steps that are taken in a cultural resources investigation for CEQA compliance are as follows:

- Identify potential historical resources
- Evaluate whether potentially historical resources are in fact historical
- Evaluate the effects of a project on all historical resources

CEQA guidelines define three ways that a property can qualify as a significant historical resource for the purposes of CEQA review: 1) if the resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR), 2) if the resource is included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code unless the preponderance of evidence demonstrates that it is not historically or culturally significant, or 3) the lead agency determines the resource to be historically significant or significant in the architectural, educational, social, political, military, or cultural annals of California, as supported by substantial evidence in light of the whole record (California Code of Regulations, Title 14, Division 6, Chapter 3, section 15064.5).

The CRHR was created by the State Legislature in 1992 and is intended to serve as an authoritative listing of historical and archaeological resources in California. Additionally, the eligibility criteria for the CRHR are intended to serve as the definitive criteria for assessing the significance of potential “historical resources” for purposes of CEQA. In this way establishing a consistent set of criteria to the evaluation process for all public agencies statewide.

For a potential historical resource to be eligible for listing in the CRHR, it must be significant at the local, state, or national level under one or more of the following four criteria:

- it is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- it is associated with lives of persons important in our past;
- it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual or possesses high artistic values; or
- it has yielded, or may be likely to yield, information important in prehistory or history.

Historical resources automatically listed in the CRHR include those historic properties listed in, or formally determined eligible for listing in, the NRHP.

Unique Archaeological Resource

CEQA (Public Resources Code, Division 13, Section 21083.2) states that a *unique archaeological resource* is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;

- has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- is directly associated with a scientifically recognized important prehistoric or historic event or person.

Criteria for Determining Impact Significance under California Law

According to the State CEQA Guidelines, a project with an effect that may cause a substantial adverse change in the significance of an historical resource or a unique archaeological resource is a project that may have a significant impact on the environment (CEQA Guidelines rev. 1998, Section 15064.5[b]). The State CEQA Guidelines further state that a substantial adverse change in the significance of an historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. Actions that would materially impair the significance of an historic resource are those that would demolish or adversely alter those physical characteristics that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of sections 5020.1(k) and 5024.1(g) of the Public Resources Code.

10.2 Environmental Impacts and Mitigation Measures

10.2.1 Methodology

An APE was defined for the project. Advisory Council on Historic Preservation (ACHP) regulations define the APE as a “geographic area or areas within which an undertaking may cause changes in the character or use of historic properties (36 CFR 800.2[c]). The APE for this project is based on the proposed action footprint and the total right-of-way width (existing and required) throughout the study area. The archaeological APE includes all areas where project-related ground disturbance would occur, including full fee title right-of-way acquisition for roadway widening, fill, and excavation, and for construction easements, staging areas, and access. The architectural APE includes those parcels containing structures, in their entirety, where a partial or full acquisition is needed for roadway right-of-way. The APE was approved by FHWA on August 7, 2002. A copy of the approved map is contained in the project HPSR.

A record search was conducted at the Northeast Information Center (NIC) of the California Historical Resources Information System, located at CSU Chico, by NIC staff on April 8, 2002. The search of records housed at the NIC was specific to the project area and a 0.8 kilometer (0.5 mile) radius surrounding it. Sources consulted by the NIC staff researchers included maps of previous cultural resource studies and known cultural resource locations. In addition, NIC staff consulted the following sources: the NRHP, the CRHR, the California Inventory of Historic Resources (State of California 1976), *California Historical Landmarks* (California Department of Parks and Recreation 1996), California Points of Historical Interest (May 1992 and updates), *Gold Districts of California* (Clark 1970), historical maps, and secondary historical writings.

The record search identified no resources in the APE that had been evaluated for NRHP or CRHR eligibility. No properties located in the APE are listed in the NRHP or the CRHR.

Jones & Stokes conducted additional background research to arrive at a general understanding of the history of the Chico area of Butte County, with a focus on exploration, settlement, development, transportation, and architecture. Research was undertaken at the California Room of the California State Library; the Chico Public Library; Special Collections at the Merriam Library, CSU Chico; and the Jones & Stokes cultural staff library.

Jones & Stokes conducted property-specific research at the Butte County Assessor and Recorder's Office, as well as at the City of Chico Planning Department.

Jones & Stokes sent letters describing the project and requesting any information on potential cultural resources in the APE to the Paradise Fact and Folklore organization, the Stansbury Home Preservation Association, the Association for Northern California Records and Research, the Ehmann Home–Butte County Historical Society, the Chico Museum, and the Bidwell Mansion State Historic Park. To date, no comments have been received from these organizations. Jones & Stokes placed follow-up telephone calls with each organization and, to date, has not received any replies.

Jones & Stokes surveyed and recorded built-environment cultural resources in the APE according to guidelines established in Volume 2 of the Caltrans' 2001 *Environmental Handbook* (California Department of Transportation 2001c). The entire APE was surveyed on September 3 and 4, 2002. This survey included the formal recordation of properties with photographs and handwritten notes.

The APE was also surveyed for archaeological resources. The records search indicated that an historic wooden flume was located in the study area, though attempts to relocate this resource during the present study were unsuccessful. It appears that this resource was removed during construction of a bicycle path that parallels Big Chico Creek.

10.2.2 Significance Thresholds

An impact is considered significant under CEQA if the project would:

- cause a substantial adverse change in the significance of an historical resource (CEQA Guidelines rev. 1998, Section 15064.5[b]). The State CEQA Guidelines further state that a substantial adverse change in the significance of an historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. Actions that would materially impair the significance of an historic resource are those that would demolish or adversely alter those physical characteristics that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of sections 5020.1(k) and 5024.1(g) of the Public Resources Code;
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- disturb any human remains, including those interred outside of formal cemeteries; or
- eliminate important examples of the major periods of California history or prehistory.

Impact CR1: Potential Damage to Currently Unknown Cultural Resources

Outside and Inside Widening Alternatives

The proposed project may result in the destruction of unknown cultural features located within the project area. Field surveys can locate only those cultural resources with an above ground component. Cultural resources may be buried under alluvial sediments and may not be locatable by surface inspection alone. Additionally, surface visibility limitations may prevent the discovery of some cultural resources. It is possible that construction or operation activities will uncover previously unknown cultural resources.

The proposed project would result in a significant impact if it causes a substantial adverse change in the significance of a historical resource or a unique archaeological resource through the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource or unique archaeological resource would be materially impaired. (CEQA rev. 1998, Section 15064.5 [4] and [5]. The data potential for an archaeological resource would be irrecoverably lost if construction activity disturbed or destroyed an archaeological deposit. Implementation of Mitigation Measure CR1a would reduce this impact to less than significant as it would provide a means for data recovery.

Mitigation Measure CR1a: Implement Procedures for the Unanticipated Discovery of Cultural Resources

If historical or unique archaeological resources are accidentally discovered during construction, BCAG or Caltrans shall take steps to provide for an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, BCAG or Caltrans shall make available contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation. Work may continue on other parts of the building site while historical or unique archaeological resources mitigation takes place (CEQA Guidelines rev. 1998, Section 15064.5[f]).

If human bone is found as a result of any construction or operational activity, BCAG's or Caltrans' contractor will be required to stop all disturbance activities and notify the Butte County Coroner within 48 hours in compliance with California Public Resource Code 5079.94 and 5097.98. If the coroner determines that the remains are Native American, the California Native American Heritage Commission will be notified by BCAG or Caltrans.

The lead agency shall work with the appropriate Native Americans as identified by the Native American Heritage Commission as provided in Public Resources Code 5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the Native American Heritage Commission (CEQA Guidelines rev. 1998, Section 15064.5[d]).

10.2.3 No-Project Alternative

Because no project-related grading would occur, there would be no potential for damage to currently unknown cultural resources.

Chapter 11 Earth Resources

The information below is summarized from the project Earth Resources Technical Report (Jones & Stokes 2003e); this report is available for review at BCAG offices. This chapter addresses geologic, seismic, and hazardous materials issues.

11.1 Setting

11.1.1 Geology

Regional Geology

The project area is in the Central Valley geomorphic province, which extends approximately 644 kilometers (400 miles) from the Cascades in the north to the Tehachapis in the south; and approximately 104 kilometers (65 miles) from the Coast Ranges in the west to the Sierra Nevada in the east.

Project Area Geology

The project area lies over the Chico Monocline, which extends about 75 kilometers (47 miles) along the northeast side of the Sacramento Valley from Chico to Red Bluff. The Chico Monocline is a complexly faulted northwest trending, southwest dipping flexure (Parikh Consultants 2002). It coincides with the contact between the volcanic and interbedded sedimentary rocks of the Tuscan Formation and the quaternary alluvium of the valley. Based on the USGS mapping of the area, the Modesto formation is exposed at the natural ground surface along the length of the project (D.S. Harwood, E.J. Helley, and M.P. Doukas 1981). A description of the geologic unit found at the project site follows.

Modesto Formation – Upper Member (Qmu)

The Modesto Formation, comprising Pleistocene Gravel, sand, silt, and clay derived from the Tuscan Formation and from rocks of the Coast Ranges and the Klamath Mountains. Both the upper and lower members were probably deposited by the same stream systems that flow today because they tend to border existing channels. The Modesto formation is exposed at the natural ground surface along the length of the project.

Topography

The topography in the project area is a combination of natural landscapes that gently slope and artificial road fill. The original ground elevation in the project area ranges from 64–76 meters (210–220 feet) above mean sea level. The fill is built up 6–8 meters (20–25 feet) to provide a foundation for the current interchange system.

The proposed project is located in a dissected, southwestward sloping upland area. Natural slopes in the project area are very gentle and may be considered relatively flat. Natural waterways, including Big Chico Creek, Little Chico Creek, Lindo Channel, and Comanche Creek cut channels that cross and run parallel to the SR 99 in the project vicinity. The project crosses Big Chico Creek at the Bidwell Park Viaduct.

11.1.2 Seismicity

The project area lies between two seismically active zones: the Coast Ranges area to the west and the Basin and Range area to the northeast. As a result, earthquakes have occurred in the past and will occur in the future on faults in Butte County and in the regions surrounding the project area (Table 11-1).

Table 11-1. Faults That Have the Potential to Cause Ground Shaking in the Project Area, Their Distance and Direction from the Project Site, and the Maximum Credible Earthquake

Fault	Closest Distance to Fault From Project and Direction	Maximum Credible Earthquake (Richter Magnitude)
Big Bend	21 kilometers (13 miles) – east	6.25
Cleveland Hill/West	28 kilometers (17 miles) – southeast	6.5
Cleveland Hill East-Paynes Peak-Swain Ravine	40 kilometers (25 miles) – southeast	6.5
Prairie Creek-Spenceville-Dentman	48 kilometers (30 miles) – south southeast	6.5
Coat Ranges-Sierran Block Boundary Zone	55 kilometers (34 miles) – west	7.0

Source: Parikh Consultants 2002.

An earthquake on any of these faults may result in moderate to strong ground shaking at the project site. Injury to people and damage to structures during earthquakes can be caused by actual surface rupture along an active fault or by ground shaking from a nearby or distant fault. A description of these hazards and their potential effect on the project area follows.

Surface Rupture and Faulting

Parikh Consultants (2002) conducted a Geologic/Geotechnical Review of the project area. The report concludes that no faults are indicated to pass through the project site and that the nearest active fault is the Big Bend Fault, located approximately 21 kilometers (13.0 miles) east of the project site. Furthermore, the report identifies the potential for seismically-induced hazards (such as soils liquefaction, lateral spreading, and densification) to be low.

The California Division of Mines and Geology has not designated any Alquist-Priolo Special Studies Zones (California Division of Mines and Geology 1997) in the project area. The Alquist-Priolo Act of 1971 requires that special geologic studies be conducted prior to development to locate and assess any active fault traces in areas around known active faults. The law's intention is to minimize damage from fault rupture by prohibiting construction across an active fault. Specifically, the law requires that buildings be set back at least 15 meters (50 feet) from any active fault traces found during the investigation.

Ground Shaking

Although the hazard of surface rupture is generally limited to the narrow strip of land immediately adjacent to an active fault, earthquake-induced ground shaking poses a more serious threat to people and structures in the project area because even distant earthquakes can greatly affect the project area. Ground shaking at a particular location depends on several factors:

- earthquake magnitude (i.e., a measure of total energy released by the fault rupture),
- epicentral distance (i.e., the distance from the center of the fault rupture to the location of interest), and

- subsurface conditions of the geologic and soil units at the location of interest.

According to the Uniform Building Code's map United States seismic risk zones, the project area is located in Seismic Risk Zone 3, where the severity and probable damage from nearby earthquakes is moderate (International Conference of Building Officials 1995). Seismic Risk Zone 3 corresponds to intensity VII or higher of the Modified Mercalli Scale.

Based on the seismic hazard map by Mualchin (1996) and the attenuation relationship between distance from the epicenter and bedrock type (Sadigh et. al. 1997), the Big Bend Fault is most limiting to the project. The maximum credible earthquake on the Big Bend Fault (Richter Magnitude of 6.25) would likely result in a peak bedrock ground acceleration of less than 0.2 g (force of gravity) in the project area.

11.1.3 Other Geologic Conditions

Parikh Consultants (2002) concludes, based on their investigations to date, that no overriding geologic hazards have been identified within the project limits and foundation support is considered available for the proposed improvements. However, unanticipated subsurface conditions are commonly encountered and cannot be fully determined without detailed soil sampling and test borings that will occur during the design phase of the project.

No evidence of other geologic hazards such as settlement, very soft soils, and severe erosion were observed. Parikh Consultants conclude that the potential for erosion due to surface runoff is primarily limited to embankment slopes and areas disrupted by grading during construction of the proposed project. Construction-related erosion control is expected to be available by means of standard construction practices. Long-term erosion control, particularly for embankment slopes, is anticipated to be available by means of establishing vegetation and controlling surface water.

11.1.4 Hazardous Waste Evaluation

España Geotechnical Consultants prepared an Initial Site Assessment (ISA) (2003) for the project. The following tasks were performed for this assessment:

- a database search of existing environmental records to identify standard agency listings of sources of hazardous materials/waste that might impact the proposed project,
- a historical aerial photograph and map review of the study area to identify past land uses that may indicate potential sources of hazardous materials, and
- a site reconnaissance of the study area to identify present land use and visual evidence of possible sources of hazardous materials.

España Geotechnical Consultants' review of government agency listings indicates that the areas of the proposed improvements are not referenced as using, generating, storing, or disposing of hazardous materials; underground storage tanks are not likely to be located within or immediately adjacent to the proposed improvement; and, with the exception of the site formerly occupied by First Avenue Cleaners, located at on the north side of East 1st Avenue just north of Sarah Avenue, unauthorized releases of petroleum products or hazardous materials have not been

reported within the immediate study area. The cleaners has been on the State Superfund List since the early 1990s; the groundwater at this location was contaminated with perchloroethylene (PCE). Recent discussions with the California Environmental Protection Agency Department of Toxic Substances Control, however, indicate that current groundwater sampling and analysis indicate either no detectable levels of PCE or, where detected, only very low levels. However, construction of deep foundations for the widening of the existing bridge overcrossing may be needed. If construction workers are expected to come into contact with groundwater, groundwater sampling should be performed in those areas and analytical testing performed to determine the presence of contaminants above the regulatory thresholds (See also Mitigation Measure ER-5a). (España Geotechnical Consultants 2003.)

España Geotechnical Consultants' database search also identified the Central Chico Plume. Research and discussions with government officials regarding the plume indicate that this is groundwater contaminated by PCE from dry cleaning operations. This plume originates near the intersection of Mangrove Avenue and Vallombrosa Avenue, approximately 0.8 kilometers (0.5 mile) southwest of the proposed improvements and continues to trend away from this location to the southwest. Because of the distance of the plume from the project area and its migration to the southwest away from SR 99, it is not expected that this plume would substantially affect the project. (España Geotechnical Consultants 2003.)

España Geotechnical Consultants' site reconnaissance indicated that the project area and surrounding properties generally have a low risk of presenting substantial impacts from hazardous materials or wastes and/or petroleum hydrocarbons. The currently vacant property located on the northwest corner of the East 1st Avenue/Sheridan Avenue intersection, which on aerial photography review resembled a possible gas station, did not present any significant signs of hazardous materials/wastes. The database search and España Geotechnical Consultants' discussions with government officials did not disclose any indications that a gas station was ever located on this site. (España Geotechnical Consultants 2003.)

11.1.5 Regulatory Overview

The following local policies and ordinances are in place to protect people and property from geologic hazards.

Grading, Erosion, and Sediment Control Ordinance

The City Municipal Code (Section 16R.22) regulates grading within the City to safeguard life, limb, health, property, and public welfare; and to avoid pollution of water courses with nutrients, sediments or other earthen materials generated or caused by surface runoff on or across the permit area. However, grading done on City projects subject to environmental review is exempt from the permit requirements (Section 16.28.010 G).

Caltrans' statewide SWMP (California Department of Transportation 2001b) describes the minimum procedures and practices needed to reduce the discharge of pollutants into storm drainage systems owned and protected by Caltrans. The SWMP is a required element of Caltrans' statewide NPDES Stormwater Permit and is consistent with California's NPDES General Permit for Stormwater Discharges Associated with Construction Activity. The SWMP includes specific stormwater and non-stormwater quality protection measures and protocols for

any construction activity associated with Caltrans facilities or rights-of-way. If proposed ground-disturbing activities would affect more than 2.0 hectares (5 acres), the responsible project engineer must develop a SWPPP that is submitted to the RWQCB for review. (Effective March 2003, SWPPPs will be required for projects disturbing 1 acre or more.) The SWPPP generally describes proposed construction activities, receiving waters, stormwater discharge locations, and BMPs that will be used to reduce project construction effects on receiving water quality. The Caltrans SWMP specifies standard stormwater pollution prevention BMPs that may be included in the SWPPP to prevent soil erosion, contaminated runoff, channel scour, and discharges of construction-related pollutants (e.g., petroleum-based fuels and oils, solvents, paints, cement, and other materials). In practice, the construction contractors for each project are responsible for implementing the prescribed BMPs and ensuring that they are inspected and maintained throughout the life of the construction activities.

11.2 Environmental Impacts and Mitigation Measures

11.2.1 Methodology

Evaluation of the impacts in this section was based on professional standards and the results of technical reports prepared for the project. This impact analysis assumes that the project applicant will conform to City building standards, grading permit requirements, and erosion control requirements.

11.2.2 Significance Thresholds

Appendix G of the State CEQA Guidelines provides guidance for evaluation of project effects on geologic and hazardous materials. Based on these guidelines, the project is considered to have a significant impact on the geology and soils and hazardous materials if it would:

- expose people or structures to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
- expose people or structures to strong seismic ground shaking;
- expose people or structures to seismic-related ground failure, including liquefaction;
- expose people or structures to landslides;
- result in substantial soil erosion or the loss of topsoil;
- be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;
- be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;
- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

- emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; or
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.

Impact ER1: Change in Topography from Grading Activities during Construction

Outside and Inside Widening Alternatives

Implementation of the project (Outside or Inside Widening Alternative) would result in the construction of new ramps and embankments requiring the excavation of roadbed and/or ground surface material and the replacement of equivalent amounts of fill material. Prior to and during construction activities, grading permit requirements per City (found principally in the City Municipal Code Section 16R.22) and Caltrans' standard specifications for earthwork will be met. Prior to grading, grading design plans will incorporate the findings of detailed geologic and geotechnical investigations. Erosion-control plans, specifications, and estimates will also be included in the project construction documents, which require that all soil directly or indirectly disturbed during construction be treated and stabilized with erosion control measures. Grading that would occur during project construction would primarily disturb areas that already have been graded for prior road construction, and the increased disturbance would be minimal. Since measures will be implemented that will ensure that soil erosion is controlled, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

Impact ER2: Potential for Structural Damage and Injury from Development in Seismic Risk Zone 3

Outside and Inside Widening Alternatives

The project area under either the Outside or Inside Widening Alternative is not located in an Alquist-Priolo Special Studies Zone or a known active fault zone, but implementing the project (Outside or Inside Widening Alternative) would result in continued development in Uniform Building Codes Seismic Risk Zone 3, where earthquake severity and probable structural damage from nearby earthquakes would be moderate (United States Geological Survey 1984). Structures not built according to seismic safety standards are more susceptible to damage (and, subsequently, to increased risk of injury to persons) than structures built in accordance with those codes. This impact is considered less than significant because all structures will conform to the latest Caltrans and Uniform Building Code standards for the project area, which establish requirements for seismic safety of all structures and ensure that the project is constructed to resist stresses developed by earthquakes.

Mitigation Measure

None proposed.

Impact ER3: Potential for Structural Damage and Injury from Development on Materials Subject to Liquefaction

Outside and Inside Widening Alternatives

A large earthquake could cause moderate to strong ground shaking in the project area on nearby faults, resulting in subsequent liquefaction in submerged cohesionless sands and gravels. This impact is considered less than significant because the anticipated ground acceleration at the site (less than 0.2 g) is not anticipated to be great enough to cause liquefaction of the dense granular materials beneath the project area (Parikh Consultants 2002). In addition, it is assumed that all structures will conform to the latest Caltrans and Uniform Building Code standards for the project area, which establish requirements for seismic safety of all structures.

Mitigation Measure

None proposed.

Impact ER4: Potential for Increased Short-Term and Long-Term Erosion Rates from Grading Activities

Outside and Inside Widening Alternatives

Implementation of the Outside or Inside Widening Alternatives would result in construction activities involving ground breaking and removal of vegetative cover, which would lead to increased wind and water erosion rates. Additionally, construction activities may compact the soil, increasing runoff and decreasing the revegetation potential.

Construction and grading activities could thus accelerate the natural ongoing soil erosion process, and grading operations for the project could lead to a substantial change in short-term and long-term erosion because the project is located in relatively steep terrain and will entail removal of vegetation on uplands and along stream corridors.

This impact is considered less than significant because erosion-control plans, specifications, and estimates will be included in the project construction documents, which require that all soil directly or indirectly disturbed during construction be treated and stabilized with erosion-control measures, per City and Caltrans standard specifications for earth work. Construction of the project will require that an NPDES Storm Water Discharge Permit from the Central Valley RWQCB, which provides specific requirements on erosion control.

Mitigation Measure

None proposed.

Impact ER5: Potential for Exposure of Previously Unknown Hazardous Wastes to Construction Workers and/or Nearby Land Uses

Outside and Inside Widening Alternatives

The project ISA indicates that ADL may be found along some roadways in the project area above regulatory thresholds; bridge structures within the project area may potentially contain

asbestos-bearing construction materials, such as expansion joint material and abutment bearing pads; removal of yellow pavement stripping with lead-based paint may need to be removed along SR 99; and groundwater contamination associated with the former First Avenue Cleaners may occur in the project area. This impact is considered to be significant since the project could create a hazard to the public or the environment involving the accidental release of hazardous materials if measures are not taken. Implementation of Mitigation Measure ER5a would reduce this impact to a less-than-significant level.

Mitigation Measure ER5a: Implement Recommendations Related to Hazardous Materials Contained in the Project Initial Site Assessment

The ISA recommends that BCAG or Caltrans conduct the following:

- If it is necessary to remove soil from the project site, conduct tests of field samples of surface/near-surface soils for soluble lead, pH, and total lead to assess lead concentrations of these soils. After testing, the lead concentration of these soils can be evaluated to determine whether lead concentrations are below regulatory thresholds or whether lead levels are considered hazardous. If the latter conclusion is made, lead-contaminated soils must be handled in accordance with applicable state and federal regulations.
- Conduct an asbestos survey of any bridge structure within the project area to be disturbed.
- Sample and test yellow pavement stripping that may be removed to determine the presence of lead above regulatory thresholds. If lead content of the yellow pavement stripping is found to be above the regulatory thresholds, a mitigation plan should be developed to address the safe removal and disposal of lead-impacted paint.
- If construction workers are expected to come into contact with groundwater, sample groundwater in those areas and perform analytical testing to determine the presence of contaminants above the regulatory thresholds. If groundwater contamination is found above regulatory thresholds, prepare a mitigation plan to address the safe handling, dewatering, and/or disposal of contaminated groundwater.
- If leaks from electrical transformers that will either remain within the project construction zone or will require removal and/or relocation are encountered before or during construction, sample the transformer fluid and have it analyzed by qualified personnel for detectable levels of polychlorinated biphenyls (PCBs). If PCBs are detected, the transformer should be removed and disposed of in accordance with regulatory agency requirements. It is anticipated that, with the current standard of care, removal of any transformers for the project should not pose a significant hazardous materials risk.
- Prepare a health and safety plan to address worker safety and proper handling procedures for the materials identified above.

11.2.3 No-Project Alternative

Under the No-Project Alternative, no auxiliary lanes or interchange improvements would be constructed along SR 99. There would be no impacts on geology and soils or hazardous materials.

As part of the proposed project, the Bidwell Park Viaduct structure would be seismically retrofitted. Under the No-Project Alternative, the viaduct would not be retrofitted to current

standards. If a future project involving the viaduct is proposed, the retrofit would occur at that time.

Chapter 12 Visual Resources

12.1 Setting

The information below is summarized from the project Visual Resources Technical Report (Jones & Stokes 2003k); this report is available for review at BCAG offices. This chapter addresses impacts to visual resources.

12.1.1 Criteria for Visual Assessment

Identification of existing conditions with regard to visual resources entails three steps.

1. Objective identification of the visual features (visual resources) of the landscape.
2. Assessment of the character and quality of those resources relative to overall regional visual character.
3. Identification of the importance to people, or *sensitivity*, of views of visual resources in the landscape.

With an establishment of the baseline (existing) conditions, a proposed project or other change to the landscape can be systematically evaluated for its degree of impact. The degree of impact depends both on the magnitude of change in the visual resource (i.e., visual character and quality) and on viewers' responses to and concern for those changes. This general process is similar for all established federal procedures of visual assessment (Smardon et al. 1986) and represents a suitable methodology of visual assessment for other projects and areas.

The approach for this visual assessment is adapted from FHWA's visual impact assessment system (Federal Highway Administration 1983) in combination with other established visual assessment systems. The visual impact assessment process involves identification of:

- relevant policies and concerns for protection of visual resources;
- visual resources (i.e., visual character and quality) of the region, the immediate project area, and the project site;
- important viewing locations (e.g., roads) and the general visibility of the project area and site using descriptions and photographs;
- viewer groups and their sensitivity; and
- potential impacts.

Descriptions of visual character and quality in this assessment rely on the following standard terms (Federal Highway Administration 1983).

- **Vividness** – The visual power or memorability of landscape components as they combine in striking or distinctive visual patterns.

- **Intactness** – The visual integrity of the natural and artificial landscape and its freedom from encroaching elements. Intactness can be present in well-kept urban and rural landscapes, as well as in natural settings.
- **Unity** – The visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the artificial landscape.

Vividness, intactness, and unity are the basic components used to describe visual character and quality for most visual assessments (U.S. Forest Service 1974, Federal Highway Administration 1983).

In addition to their use as descriptors, vividness, unity, and intactness are used more objectively as part of a rating system to assess a landscape's visual quality. Visual quality is evaluated using the equation:

$$\text{Visual Quality} = \frac{\text{Vividness} + \text{Intactness} + \text{Unity}}{3}$$

Vividness, intactness, and unity are evaluated independently; each quality is assigned a rating from 1–7. On this scale, 1 = very low, 4 = average/moderate, and 7 = very high. The overall rating for visual quality follows the same 1–7 range. Ratings have been included in parentheses (e.g., VQ = 2) in the visual quality description of the landscape units.

Viewer sensitivity or concern is based on the visibility of resources in the landscape, the proximity of viewers to the visual resource, the relative elevation of viewers to the visual resource, the frequency and duration of views, the number of viewers, and the types and expectations of individuals and viewer groups.

The criteria for identifying importance of views are related in part to the position of the viewer relative to the resource. An area of the landscape that is visible from a particular location (e.g., an overlook) or series of points (e.g., a road or trail) is defined as a viewshed. To identify the importance of views of a resource, a viewshed may be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater is its importance to the viewer. Although distance zones in viewsheds may vary between different geographic regions or types of terrain, a commonly used set of criteria identifies the foreground zone as 0.4–0.8 kilometer (0.25–0.5 mile) from the viewer, the middleground zone as extending from the foreground zone to 4.8–8 kilometers (3–5 miles) from the viewer, and the background zone as extending from the middleground zone to infinity (U.S. Forest Service 1974).

Visual sensitivity also depends on the number and type of viewers and the frequency and duration of views. Generally, visual sensitivity increases with an increase in total numbers of viewers, the frequency of viewing (e.g., daily or seasonally), and the duration of views (i.e., how long a scene is viewed). Also, visual sensitivity is higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking, or camping; and homeowners; sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Forest Service 1974, Federal Highway Administration

1983, U.S. Soil Conservation Service 1978). Views from recreation trails and areas, scenic highways, and scenic overlooks are generally assessed as having high visual sensitivity.

12.1.2 Project Area Visual Environment

Regional Character

The project location is in Chico, which is in the central portion of the Sacramento Valley, approximately 145 kilometers (90 miles) north of Sacramento. The project region, as discussed in this section, is considered to be the area within a 48-kilometer (30-mile) radius of the project location.

The project region lies in a transitional zone that contains both the flat valley floor and the rolling foothills of the western slope of the Cascade Range. The project region is primarily urban, except at its western and southern boundaries. West and south of the urban center, agriculture is a primary land use, characterized by livestock grazing, field crops, and orchards. Rock outcrops and buttes are found south of the project location. Land use transitions from agriculture (in the region's outskirts), to strip malls and light commercial, then to primarily residential uses (at the region's center). The dominant types of natural vegetation are valley oak savannah and riparian woodlands, which occur in concentrated areas and varying densities because of the urban and agricultural nature of the project region. Water features in the project region include Big Chico, Little Chico, Mud, Butte, Comanche, and Sycamore Creeks and Lindo Channel.

A mix of agricultural, developed, and natural landscapes characterize the project region. The landscape pattern is influenced by development sprawling from the existing city core and the major roadways in the region. The visual quality of the project region and the area immediately surrounding the project area is moderate in vividness, intactness, and unity. (The project area is shown in Figures 3-3a, 3-3b, 3-5a, and 3-5b and is defined as the area proposed for any ground-disturbing activities, such as construction activities, construction staging area, and construction access.)

12.1.3 Project Vicinity Character

The project vicinity is defined as the area within 0.8 kilometer (0.5 mile) of the project location. SR 99 is elevated and transects both the project vicinity and Chico in a northwest-southeast direction. The northern two-thirds of SR 99 is characterized by primarily residential development, which abuts and is directly adjacent to the right-of-way; the southern one-third of SR 99 is characterized by the undeveloped open space of Bidwell Park, which extends in either direction from the right-of-way. Commercial development occurs in limited proportions on SR 32 and East 1st Avenue in close proximity to the respective interchanges with SR 99. Land uses include residential, public, and commercial. Development in the project vicinity is limited because the area consists of well-established neighborhoods; it usually includes infill and improvement projects.

Big Chico and Little Chico Creeks and Lindo Channel run through the project vicinity. Big Chico Creek, which is located within Bidwell Park and the Caltrans right-of-way adjacent to the park, runs east-west through the project vicinity. The creek corridors are characterized by a

dense mix of natural riparian vegetation with occasional glimpses of a shallow gravel streambed. The natural vegetation along the creeks is a small component of a fairly robust urban forest. Much of Chico includes a mature, relatively dense canopy of trees (typically deciduous broadleaves). The project vicinity is similarly densely vegetated, with ornamental trees in private yards and planted and naturally colonized trees along the highway corridor. The urban forest in the project vicinity includes remnant native oaks that have been preserved.

The visual quality of the project vicinity is moderate in vividness, intactness, and unity because of the visual obstructions caused by vegetation, elevated nature of SR 99, and commonality of the visual character of development in the region. There are very few views presented beyond the immediate roadway corridor because it is blocked by existing vegetation.

12.1.4 Study Area Landscape Units and Key Viewpoints

SR 99 is elevated, which causes a distinct separation between viewer groups affected by the proposed project. Therefore, for this analysis, the area surrounding the project area has been subdivided into four landscape units (Landscape Units 1–4) that are based on specific vantage points and differing sensitivities of those affected by the proposed project. Landscape Units 1–4 are designated SR 99, SR 99 Interchanges, Bidwell Park, and Residences, respectively, and are shown in Figure 12-1. The landscape units will provide the framework for analysis. The landscape units have been defined on the basis of similar visual features and homogeneous character. Key viewpoints, shown in Figure 12-2, have been chosen for their representation of the landscape unit within which they are located and those viewers affected.

Landscape Unit 1 – SR 99

Landscape Unit 1 is the 1.3-kilometer (0.8-mile) corridor of SR 99 between the SR 32 to East 1st Avenue interchanges. Viewers in this unit are limited to travelers on SR 99. Because the highway is elevated, with vegetation on either side, views are blocked from the highway to residences and vice versa. Vegetation also blocks middleground and background views to the surrounding area and region. A landscaped median planted with oleander and bottlebrush physically and visually separates northbound and southbound traffic. Approximately 1.5-meter (5-foot) breaks occur where drainage inlets are located in the planted median (Figure 12-3, Photo 1); larger breaks occur at the bridges for the Bidwell Park Viaduct and Palmetto Avenue overpass.

This landscape unit is dominated by the aforementioned vegetation and paved surface of the highway. Vegetation alongside the highway includes evergreen and deciduous tree and shrub species. Shoulder vegetation is dense and obstructs most views to Bidwell Park and adjacent residences throughout the year. Oleanders in the median obstruct views of oncoming traffic; the density of the growth varies seasonally and based on maintenance trimmings of the shrubs (Figure 12-3, Photo 2).

Lights are located at the SR 99 on- and off-ramps. The lights are the same height as tree canopies in the right-of-way and are located in close proximity to them; therefore, they do not stand out against their surroundings.

For travelers on SR 99, foreground views lack visual obstructions. Although the highway is elevated, viewing distance is limited to the foreground and middleground by vegetated barriers. These views consist of the paved road and adjacent vegetation. The visual quality of this landscape unit is moderately low (VQ = 2.7). Vividness (V = 2), intactness (I = 3), and unity (U = 3) are low.

Landscape Unit 2 – SR 99 Interchanges

Landscape Unit 2 includes the SR 99/SR 32 and SR 99/East 1st Avenue interchanges. Viewers in this unit include commercial properties and residences along SR 32 and East 1st Avenue near the SR 99 interchange.

Views are limited to the foreground and middleground because the SR 99 overpasses block views to the background. Aboveground utilities (e.g., roadway lights, traffic lights, and utility lines and poles) and infrastructure (e.g., overpasses) are prominent features in the viewshed (Figure 12-4, Photo 3). Vegetation is limited to right-of-way and ramp plantings and landscaped residences (Figure 12-4, Photo 4). The visual quality of this landscape unit is low (VQ = 2). Vividness (V = 2), intactness (I = 2), and unity (U = 2) are low.

Landscape Unit 3 – Bidwell Park

Landscape Unit 3 begins behind the properties that abut SR 32 and East 8th Street and ends at Vallombrosa Avenue. Viewers in this unit are primarily users of Bidwell Park.

Bidwell Park near SR 99 is characterized by riparian and oak woodland, and mixed and sycamore forest habitat types. An approximately 69-meter (225-foot) swath, including the area under the Bidwell Park Viaduct, is within Caltrans right-of-way. Sparse vegetation, mostly grasses and small shrubs, occurs under the viaduct. A narrow band of trees is growing through the gap between the northbound and southbound lanes.

Big Chico Creek flows west through this part of Bidwell Park. The viaduct transects the park, spanning the park and Big Chico Creek, creating a dominant barrier to the connectivity of the park that is highly visible to park users.

A prominent feature in Bidwell Park is a network of multi-use pathways, most of which are paved (Figure 12-5, Photo 5). The separated portions of the park are connected by pathway crossings under the viaducts. The underpass south of the Big Chico Creek is partially enclosed by a vertical retaining/support wall located directly adjacent to and south of the path, the overhead viaduct, and pier structures located north of the path. This enclosure creates a darkened situation; for safety reasons, the viaducts each contain two recessed lights (a total of four). The lights are positioned above the pathway to illuminate this darkened area during dusk and night. Other pathways are located on either side of the creek and include creek crossings. A pedestrian bridge crosses the creek directly adjacent to and downstream of the viaducts, but there are plans to relocate the bridge in 2005.

For park users, foreground views are somewhat obstructed by vegetation. Foreground views become more obstructed in close proximity to the viaduct (Figure 12-5, Photo 6). Foreground and middleground views are limited based on the viewer's location in the landscape. Views are generally limited because of the winding nature of the pathways and vegetation that blocks the

viewshed. Viewing distance increases on larger, straighter pathways. There are no background views. Views from these vantage points are of higher quality because of the naturalistic setting in an urban context. The visual quality of this landscape unit is moderate (VQ = 4). Vividness, intactness, and unity are also moderate (V = 4, I = 4, U = 4).

Landscape Unit 4 – Residences

Landscape Unit 4 starts at Vallombrosa Avenue and extends north to East 1st Avenue. Landscape Unit 1 separates this unit into two parts: one on the east and west sides of SR 99. Vallombrosa and East 1st Avenues allow access to either side of this landscape unit as they cross under SR 99.

The east side of this landscape unit includes residences that directly abut the right-of-way and a greater portion of residences that are separated from the right-of-way (Figure 12-6, Photo 7). Rey Way connects to Vallombrosa Avenue and runs parallel and directly adjacent to SR 99 until it terminates at the California Water Service property, separating residents from SR 99. Rey Circle, Filbert Avenue, and Sierra Vista Way run perpendicular to and terminate at Rey Way; this pattern gives residences along these streets limited views to SR 99. North of the California Water Services property, Sarah Avenue parallels SR 99 and connects to East 1st Avenue. Residences on the west side of Sarah Avenue are located between the right-of-way and Sarah Avenue and abut SR 99. These residences have direct views to the roadway from their backyards, but their views are limited by the densely vegetated right-of-way. These residences serve as a visual barrier for residences located on the east side of Sarah Avenue. Palmetto Avenue runs perpendicular to Sarah Avenue and under SR 99; it is a connector between the east and west sides of this landscape unit.

On the west side of this landscape unit, Sheridan Avenue connects to Vallombrosa and East 1st Avenues and parallels SR 99 (Figure 12-6, Photo 8). Most residences on this street are located between the right-of-way and Sheridan Avenue and abut the right-of-way. These residences have direct views to the roadway from their backyards, but their views are limited by the densely vegetated right-of-way. Residences on the east side of Sheridan Avenue block views of SR 99 for most homes on the west side of Sheridan Avenue. Filbert Avenue and Sierra Vista Way (cross streets) run perpendicular to Sheridan Avenue and terminate at the right-of-way. Residences on these cross streets that are nearest to the ends of the streets abut the right-of-way. Residences on the cross streets on the east side of Sheridan Avenue have direct views to SR 99. Palmetto Avenue runs perpendicular to Sheridan Avenue and under SR 99; it is a connector between the east and west sides of this landscape unit.

For east- and west-side residences, foreground views are blocked by street trees, the vegetated right-of-way, or SR 99. Residences abutting SR 99 do so with their backyards; foreground views for these residences are limited by the vegetated right-of-way and raised nature of SR 99. Foreground and middleground views are limited throughout this landscape unit and consist of glimpses of adjacent residential properties. Viewing distance is decreased because SR 99 is elevated; therefore, background views do not exist. The visual quality of this landscape unit is moderately average (VQ = 3.7). Vividness is moderately low (V = 3), and intactness and unity are moderate (I = 4, U = 4).

12.1.5 Viewer Groups and Responses

Roadway Users

One of the largest viewer groups of the proposed project are travelers along SR 99. Because SR 99 is a commercial and commuter route, frequent viewers include truck drivers and commuters. Speeds on SR 99 average 65 miles per hour during peak and off-peak hours (Stanek pers. comm.).

During commute hours, single views could have long duration; however, viewers who frequently travel the freeway generally possess low visual sensitivity to their surroundings. The passing landscape becomes familiar to these viewers, and their attention is typically not focused on the passing. At standard highway speeds during off-peak hours, views are of short duration and freeway users are fleetingly aware of surrounding traffic, road signs, their immediate surroundings within the automobile, and other visual features.

This viewer group also includes drivers using the SR 32 and East 1st Avenue interchanges with SR 99. These viewers have low sensitivity to their surroundings because of their concentrated effort on merging onto SR 99 or slowing down and exiting/merging from SR 99 onto local streets.

Park Users

Bidwell Park users who would view the proposed project are more likely to regard the natural and built surroundings as a holistic visual experience; however, structures for SR 99 already exist in the park. Park users would be moderately sensitive to visual changes in the environment because the baseline condition includes existing disturbance and development.

Residents

Residents in Landscape Unit 4 are most likely to be affected by the proposed project because of their proximity to SR 99. Residences abut the Caltrans right-of-way and are separated from it by fences. Residents in this unit are likely accustomed to the traffic and sight of the vegetated right-of-way and SR 99. Residences face away from SR 99, toward tree-lined streets, creating a neighborhood atmosphere; extreme focus is not placed on SR 99.

Fourteen-foot noise barriers are proposed along SR 99 to mitigate noise impacts associated with this project (see Chapter 7, “Noise”). Retaining walls and noise barriers would completely block views residents have of the freeway. According to public comments received on the proposed project, residents have expressed support for the construction of noise barriers, inferring that noise from the highway is a greater disturbance and detractor from the neighborhood atmosphere than the visual intrusion represented by the noise barriers.

12.1.6 Regulatory Setting and Relevant Public Policies

Land use changes and development within the City are subject to City policies, including visual resource and aesthetic policies, design guidelines, and ordinances such as tree preservation/removal ordinances.

The City does not presently have tree removal or preservation ordinances that protect native oaks and other tree species. Chico Municipal Code, Chapter 14.41, “Street Trees,” prohibits street

trees in City-owned rights of way from removal without written permission from the City Council or the Bidwell Park and Playground Commission. The proposed project would not affect trees in City-owned rights of way or in Bidwell Park. The City also does not have lighting or design guidelines in place.

SR 99 is not designated in federal, State, or local plans as a scenic roadway or as a corridor worthy of protection for maintaining and enhancing scenic viewsheds.

Additional applicable policies and guidelines are discussed below.

City of Chico

General Plan

Vallombrosa Avenue is listed in the City's General Plan (Blayney Dyett 1999) as a scenic roadway, but under a policy to create design guidelines for such roadways (as none exist now). The City also wants to establish SR 32 as a scenic route under policy CD-G-2; however, it is currently not listed.

The following policies from the General Plan may be applicable to the project.

Community Design

CD-G-4: Minimize the intrusion of Highway 99 and its interchanges on the visual character and form of the city.

CD-G-10: Heighten the visual prominence of the creek corridors which help to establish a sense of orientation and identity within the city.

CD-G-11: Open up creeks to public view and access.

CD-I-29: Require visual simulations of proposed development.

Open Space

OS-G-14: Preserve and enhance Chico's creeks and the riparian corridors adjacent to them as open space corridors for the visual amenity, drainage, fisheries, wildlife habitats, flood control and water quality value.

Bidwell Park Master Management Plan

The Bidwell Park & Playground Commission's Bidwell Park Master Management Plan (park plan) (Bidwell Park & Playground Commission 1990) addresses circulation and access and security, safety, and public health issues in general and within specific management zones of the park. Coordination with park officials is advocated. The park plan has not identified areas within the project corridor as currently having a need for additional lighting. A construction easement in Bidwell Park west of SR 99 will be required with project implementation so that existing paved roads in the park can be used for construction access (delineated in Figures 3-3a and 3-5a). No vegetation or tree removal in Bidwell Park will occur with project implementation; trees to be removed are located within the Caltrans right-of-way for SR 99.

The park plan has the following policies that may be applicable to the project.

Security, Safety, and Public Health

Goal: To provide a secure, safe, and healthy environment for all park users.

Objective 10: Implement design solutions in areas where safety and security are compromised by physical circumstances.

Management Zones

Zone 7 – Vallombrosa West

Issue 4: SR 99 and Vallombrosa Avenue create noise and visual blight at the eastern end of this area. Widening in the future may increase this impact.

Recommendation b: Allow climbing vines and vegetation to cover the support structures of the freeway.

12.2 Environmental Impacts and Mitigation Measures

This section describes impacts and mitigation measures for the proposed project. This section has been divided into “General Impacts” (impacts occurring throughout the project area) and “Specific Landscape Unit Impacts” (impacts directly affecting a particular landscape unit). Specific landscape unit impacts have been illustrated through the use of photo simulations. A photo simulation has not been completed for Landscape Unit 2 (SR 99 interchanges) because of its close assimilation with Landscape Unit 1 (SR 99). A representative photo for each unit has been chosen to the best degree possible to depict (a) existing conditions, (b) Outside Widening Alternative conditions, and (c) Inside Widening Alternative conditions.

Generally, because the project involves making improvements to an existing state highway, the visual quality and character of the area would not be substantially altered relative to baseline conditions. Within the project limits, SR 99 is not a designated scenic highway, and the project would not damage scenic resources. The project area lacks scenic vista areas; consequently, the project would not have any adverse effects on scenic vistas.

Impacts that would occur as a result of the proposed project include temporary changes in views as a result of construction; potential glare and light impacts; and visual impacts resulting from topography and grade changes, removal of vegetation, and reduction of right-of-way planting areas for the creation of new lanes. These impacts would potentially affect all four landscape units in the project area.

12.2.1 Methodology

See the “Criteria for Visual Assessment” section above.

12.2.2 Significance Thresholds

Appendix G of the State CEQA Guidelines provides guidance for evaluation of project effects on visual resources. Based on these guidelines, the project is considered to have a significant impact on visual resources if it would:

- Substantially degrade the existing visual character or quality of the site and its surroundings;
or
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

Impact V1: Temporary Visual Changes Due to Construction

Outside Widening Alternative

Construction of the proposed improvements would create temporary changes in views of and from the project area. Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewshed of SR 99, public roadways, and residential properties. Safety and directional signage would also be a visible element. Construction for the initial phase is expected to require approximately 2 years; the timing of subsequent phases depends on funding.

In addition to construction of the Outside Widening Alternative, other construction projects are proposed within the vicinity of the project area, including SR 99 median improvements and relocation of a pedestrian bridge (refer to “Related Projects” in Chapter 3). All viewer groups in the project area and vicinity would not be accustomed to seeing construction activities and equipment; their sensitivity to such impacts would be moderate.

Some residences would be subject to construction easements to accommodate construction access. For other adjacent residences, the construction easement would be adjacent to their backyards. The sensitivity of these residences to such impacts would be high. Impacts on these residences are considered significant because the residents would experience a short-term adverse change in the visual character of the area behind their residences. Implementation of Mitigation Measure V1a would reduce this temporary adverse visual impact related to construction to less than significant. Long-term visual impacts are discussed under Impacts V3 and V7.

Mitigation Measure V1a: Install Temporary, Visual Barriers between Construction Zones and Residences

BCAG, Caltrans, or the contractor will install fencing (such as chain link with slats or fencing made of windscreen material) or other structures to obstruct undesirable views of construction activities from residences’ backyards that abut SR 99. The fencing would also help to maintain the privacy of residents. These fences would be approximately 2 meters (7 feet) high and would block views at the lower slope of the Caltrans right-of-way.

Inside Widening Alternative

Temporary visual changes would be similar to those occurring under the Outside Widening Alternative. However, construction-related impacts under the Inside Widening Alternative would be less on adjacent residences between Vallombrosa and Palmetto Avenues because all proposed improvements (freeway widening and recommended noise barrier construction) would be constructed from SR 99, not from the Caltrans right-of-way located adjacent to these residences (see Impacts V2 and V3 for more details on the recommended noise barrier and

Impact V3 for a more-detailed description of proposed vegetation removal under this alternative).

Mitigation Measure

The same mitigation would be required under this alternative as under the Outside Widening Alternative.

Impact V2: Permanent Changes in Light and Glare

Outside Widening Alternative

Nighttime Light. New nighttime lights are proposed to replace existing lights located on the ramps. The number of lights on the ramps and throughout the corridor would not increase. The change in intensity and location of light is not anticipated to result in a substantial change in light and glare.

Daytime and Nighttime Glare. The proposed railings and light standards would be concrete or galvanized steel; no reflective surfaces are proposed. These galvanized surfaces would naturally oxidize within a short time following installation and would not cause reflective daytime glare.

The noise study report for this project recommends constructing noise barriers to mitigate traffic noise impacts. Retaining walls would also be constructed as part of the earthwork for this alternative. These structures have large surfaces that may result in increased reflective glare from sunlight during the day and from artificial light sources at night. Project implementation would require that existing vegetation be removed along the entire Caltrans right-of-way within the project area, increasing the impact of glare (see Impact V3 for further details on vegetation removal). Addition of a three-beam barrier on either side of the existing median plantings (see “SR 99 Median Barrier Project” in Chapter 3) would also increase the impact of glare. The project landscaping plans include revegetating the areas on the residential side of the retaining walls and noise barriers with appropriate species, such as trees whose canopy can overhang the wall and climbing vines that can spread along the wall surface, to reduce reflective glare. Appendix E contains details on the proposed landscaping plan including proposed plant species. The freeway side of the noise barriers would not be revegetated. This impact is considered significant because reflective glare could occur from those surfaces facing freeway drivers. Residences could also experience increased glare until the landscape plantings mature. Implementation of Mitigation Measure V2a would reduce any significant glare impacts to a less-than-significant level.

Mitigation Measure V2a: Construct Walls with Low-Sheen and Non-Reflective Surface Materials

BCAG, Caltrans, or the contractor will construct retaining walls and noise barriers with low-sheen and non-reflective surface materials to reduce potential for glare. The finish would be matte and roughened. The use of smooth trowelled surfaces and glossy paint would be avoided.

Inside Widening Alternative

Light and glare impacts would be similar as under the Outside Widening Alternative. However, the vegetated area in the Caltrans right-of-way between Vallombrosa and Palmetto Avenues and

immediately adjacent to residential backyards would not be affected under the Inside Widening Alternative (see Impact V3 for more details on proposed vegetation removal). Therefore, residences in this area would not experience any potential glare impacts.

Mitigation Measure

The same mitigation would be required under this alternative as under the Outside Widening Alternative.

Impact V3: Permanent Visual Changes Resulting from Vegetation Removal

Outside Widening Alternative

Along SR 99, the existing roadside topography and grades would be functionally and visually affected to accommodate the freeway and bridge widening. Existing right-of-way vegetation would be removed throughout the project area within the Caltrans right-of-way, particularly in Landscape Unit 1 (SR 99), because the roadway would be widened to the outside of SR 99. Ramp intersection improvements at East 1st Avenue would require both full and sliver acquisitions of private property, and would result in the loss of some landscaping in Landscape Units 2 (SR 99 interchanges) and 4 (residences). Removing existing trees and vegetation along SR 99 and its slide slopes would change the current visual character of this portion of SR 99.

Vegetation in the right-of-way creates an attractive visual barrier between residences and SR 99, and provides a vegetated view for SR 99 drivers. An estimated 610 trees, 15 centimeters (6 inches) dbh or greater, would be removed along the SR99 shoulders and side slopes. Under post-project conditions, SR 99 drivers would view the recommended noise barrier rather than the existing vegetation. Concepts for aesthetic treatments of the noise barrier are shown in Appendix E; these treatments would reduce the visual impact of the noise barrier for SR 99 drivers and residences. A roughened wall surface would soften the verticality of the wall face by providing visual texture and reducing the amount of smooth surface that can reflect light. Choosing earth-toned colors for the wall surface would be less distracting to viewers and help the noise barrier blend with the planted vegetation as it matures. Adding a design motif to the wall face would reduce visual monotony, soften verticality, and be more visually pleasing to viewers than a plain wall surface.

A landscaping plan (Appendix E) is included as part of the project to revegetate the side slopes of SR 99 between the proposed noise barrier and residential backyards. The replanted side slopes would not appear to be as lush as the present side slopes until the new landscape plantings mature. Mitigation Measure V3a specifies performance standards to guide implementation of the landscaping plan and reduce this impact. (Also see Impacts V4, V5, and V7.)

Native trees would be removed in Landscape Unit 3 within the Caltrans right-of-way adjacent to Bidwell Park to accommodate the highway widening. An estimated 82 trees 15 centimeters (6 inches) dbh or greater would be removed from the Caltrans right-of-way adjacent to Bidwell Park under this alternative. As noted in Impact BR1 in Chapter 9, 19 trees in this area would not be removed during construction, including 11 trees between the bridge structures. These trees are part of the project area's visual character and are valuable in maintaining the natural character of Bidwell Park. Impacts on the riparian forest are described in Impact BR1.

Mitigation Measure BR1d calls for restoration and enhancement of the riparian forest that would be affected by project implementation. (Also see Impact V6.)

This impact is considered significant because the proposed project would change the visual character of the affected areas. Implementation of Mitigation Measures V3a, V3b, and BR1d would reduce this impact to a less-than-significant level.

Mitigation Measure V3a: Implement Project Landscaping Plan to Replace Trees that are Removed, Using the Specified Guidelines

BCAG, Caltrans, or the contractor would follow the following practices in implementing the project landscaping plan:

- The species composition would reflect species that are native and indigenous to the project area. The species list should include trees, shrubs, and an herbaceous understory of varying heights, as well as evergreen and deciduous types. Plant variety will increase the effectiveness of the screen by providing multiple layers, seasonality, more diverse habitat, and reduced susceptibility to disease.
- The planting design would be randomized to mimic natural patterns.
- Vegetation would be planted within the first year following project completion.
- An irrigation and maintenance program would be implemented during the plant establishment period.

Mitigation Measure V3b: Implement the Specified Best Management Practices for Inclusion in the Project Description of the Project Report

The following Best Management Practices are recommended:

- Apply California native grasses (Erosion Control Type D) at all locations with exposed soil and steep slopes, to prevent soil erosion, reduce water pollution, and help preserve the existing landscape character. Utilize other erosion control and water pollution prevention practices as well, and consult with the Caltrans Landscape Architect.
- Design for aesthetic treatment (materials, pattern, texture, concrete stain color) on any retaining walls, noise barriers, barriers, and construction elements. Coordinate with the Caltrans Landscape Architect for project aesthetics.
- Design for gradual grade transitions (slope rounding) at hinge and catch points of earthwork slopes, as well as flatter slopes (1:4 slope ratios) where applicable, so as to preserve the existing grade around the base of trees that are to remain, so their roots don't get impacted by cut or fill earthwork.
- Once a roadway design plan has been selected, it is required that landscape revegetation and erosion control plans be prepared for the project plans, specifications, and estimates (PS & E) development. Consult with the Caltrans Landscape Architect.
- For creek scour mitigation and prevention, use materials and colors that are "natural and local" in character. For example, where rock slope protection is installed, use rock that is local and indigenous to the region.

Mitigation Measure BR1d: Enhance Riparian Habitat by Developing and Implementing a Riparian Restoration and Monitoring Plan

A qualified biologist, under contract to BCAG, shall prepare a riparian restoration and monitoring plan to compensate for the unavoidable loss of riparian vegetation along Big Chico Creek. The plan will focus on replanting or enhancing riparian habitat along Big Chico Creek in the construction area, and in other areas along Big Chico Creek that are publicly owned and can be protected in perpetuity. A representative from DFG has indicated that riparian vegetation removal within Caltrans right-of-way resulting from viaduct widening should be compensated for at a minimum 2:1 ratio (acres of habitat restored to acres of habitat affected) (Miller and Olah, pers. comm.). Mitigation shall take place within the Big Chico Creek riparian corridor, to the extent feasible; additional measures, such as purchase of mitigation bank credits or off-site mitigation, shall be implemented for any acreage that cannot be restored within the Big Chico Creek riparian corridor. Restoration and enhancement will include removing nonnative vegetation and planting native trees and shrubs.

The riparian restoration and monitoring plan will be developed through coordination with representatives from BCAG, the City of Chico, Caltrans, DFG, and USFWS. It will include design specifications, an implementation plan, maintenance requirements, and a monitoring program. Monitoring for a minimum of 5 years will be conducted to document the success criteria (identified below) and to identify remedial actions that may be needed (such as, but not limited to replacement plantings, weed removal, rodent control, and irrigation system replacement). Monitoring may extend beyond 5 years if additional remedial measures are required and if the restoration area is not progressing towards achieving the success criteria:

- The riparian habitat is composed of a mix of native species similar to that removed during construction of the viaduct improvements.
- The following is established at the mitigation site: at least 75% total canopy cover of native riparian vegetation; less than 5% of total cover composed of noxious weeds or invasive, nonnative perennial species; and maximum 20% bare ground.
- The riparian species that dominate the mitigation site rate good or excellent vigor and growth. This assessment should be based on a qualitative comparison of leaf turgor, stem caliber, leaf color, and foliage density in the planted sites with individuals of the same species in the adjacent riparian areas.
- Plantings at each site are self-sustaining at the end of the monitoring period without human support (e.g., weed control, rodent control, or irrigation).

BCAG will be responsible for submitting annual monitoring reports to the appropriate resource agencies. The report will summarize the data collected during monitoring periods, describe the progress of the riparian habitat in terms of the success criteria, and discuss any remedial actions performed. A brief letter report summarizing the results of monitoring and recommending additional needed actions will be submitted to Caltrans, DFG, USFWS, NOAA Fisheries, and the City of Chico.

Inside Widening Alternative

Vegetation removal along SR 99 would be less under the Inside Widening Alternative than the Outside Widening Alternative. Vegetation removal along the SR 32 ramps and between

Palmetto Avenue and the East 1st Avenue interchange would be the same as under the Outside Widening Alternative because both alternatives require retaining walls at these locations. However, between Vallombrosa and Palmetto Avenues, vegetation removal would be less than under the Inside Widening Alternative. The recommended noise barrier would be placed approximately 0.6 meter (1.9 feet) from the existing outer edge of shoulder under this alternative. To accommodate this, vegetation removal would occur to the area extending approximately 1.5 meters (5 feet) beyond the existing outer edge of the shoulder. An estimated 308 trees, 15 centimeters (6 inches) dbh or greater, would be removed along the SR 99 shoulders and side slopes. The plant list and plant specifications shown in Appendix E would also apply to the Inside Widening Alternative; however the physical area that would be replanted under this alternative would be as described in this paragraph.

Placement of the noise barrier would block SR 99 drivers' views of existing trees and vegetation. The oleander and bottlebush median plantings would be completely removed to accommodate the roadway expansion, and a concrete barrier would be built at the centerline of the median.

Views from adjacent residences between Vallombrosa and Palmetto Avenues would change minimally under this alternative because vegetation removal would not be required, other than for the 1.5-meter (5-foot) area described above. Views from adjacent residences along the SR 32 ramps and between Palmetto Avenue and the East 1st Avenue interchange would be the same as under the Outside Widening Alternative because retaining walls are needed at these locations under both alternatives to minimize property acquisitions.

Impacts in the Caltrans right-of-way adjacent to Bidwell Park would be similar to those that would occur under the Outside Widening Alternative, except that the bridge would appear as a more-imposing structure. An additional 13 columns (i.e., beyond the number required for the Outside Widening Alternative) would be required to support the new bridge in the median. Construction of this bridge would result in a continuous bridge structure (rather than two separate bridges) that completely shades the area below it. An estimated 94 trees 15 centimeters (6 inches) dbh or greater would be affected by this alternative. Twelve existing trees in this area would be retained during construction.

This impact is considered significant because the proposed project would change the visual character of the affected areas. Implementation of Mitigation Measures V3a, V3b, and BR1d would reduce this impact to a less-than-significant level.

Mitigation Measure

The same mitigation would be required under this alternative as under the Outside Widening Alternative.

Impact V4: Permanent Changes to Views in Landscape Unit 1 (SR 99)

Existing conditions of Landscape Unit 1 are shown in Figure 12-7a.

Outside Widening Alternative

Users of SR 99 would experience visual changes resulting from the proposed project. Removal of all vegetation along the shoulders of the SR 99 right-of-way for the roadway widening and the addition of a 4.1-meter (14-foot) noise barrier would increase the amount of hardscape features viewed by drivers (Figure 12-7b). (Refer to Impacts V2 and V3 for further discussion of these impacts.) A thrie-beam railing is also being installed on either side of the existing median plantings as part of the Caltrans median barrier project. The vividness, intactness, and unity of this unit would be affected by the proposed project, and the visual quality rating (VQ = 2.7) would change to a lower rating (VQ = 2); therefore this impact is considered to be significant. Implementation of Mitigation Measure V4a would reduce this impact to a less-than-significant level.

Mitigation Measure V4a: Provide Aesthetic Treatments to the Noise Barrier

BCAG, Caltrans, or the contractor will provide aesthetic treatments to the noise barrier, as shown in Appendix E. As noted in Mitigation Measure V2a, low-sheen and non-reflective surface materials would be used. The finish should be matte and roughened. The use of smooth trowelled surfaces and glossy paint should be avoided.

Inside Widening Alternative

Impacts would be similar to those under the Outside Widening Alternative, except that the SR 99 oleander and bottlebrush median plantings would be completely removed to accommodate the roadway expansion and a concrete barrier would be built at the centerline of the median (Figure 12-7c). Removal of all vegetation along the shoulders of the SR 99 right-of-way would also occur under this alternative to accommodate the recommended noise barrier. Therefore, the amount of hardscape features viewed by drivers would increase (see Impacts V2 and V3 for further discussion of these impacts). Drivers would view the same amount of tree canopy overhanging the noise barriers as under the Outside Widening Alternative. They would view more hardscape features, however, through the replacement of median plantings with the roadway widening and concrete median barrier. The vividness, intactness, and unity of this unit would be affected by the proposed project, and the visual quality rating (VQ = 2.7) would change to a lower rating (VQ = 1.7); therefore, this impact is considered to be significant. Implementation of Mitigation Measure V4a would reduce this impact to a less-than-significant level.

Mitigation Measure

The same mitigation would be required under this alternative as under the Outside Widening Alternative.

Impact V5: Permanent Changes to Views in Landscape Unit 2 (SR 99 Interchanges)

Outside Widening Alternative

Aboveground utilities (including roadway lights, traffic lights, and utility lines and poles) and infrastructure (SR 99 overpass) are prominent features in this landscape unit. Vegetation is limited to the right-of-way and ramp plantings and landscaped residences near the interchanges. Viewers in this unit include commercial properties and residences along SR 32 and East 1st

Avenue near the SR 99 interchange. Ramp plantings would be removed and recommended noise barriers constructed along the SR 32 and East 1st Avenue ramps. The vividness, intactness, and unity of this unit would be minimally affected by the proposed project, and the visual quality rating (VQ = 2) would not change.

Adoption and construction of roundabouts would alter the visual character for all viewers. However, the visual quality rating (VQ = 2) would not change with project construction; therefore, this impact is considered less than significant. Implementation of Mitigation Measure V5a is not required, but it would improve the visual character of this landscape unit at East 1st Avenue.

Mitigation Measure V5a: Implement Landscape Plantings in Roundabout Islands

If roundabouts are implemented, center islands could be built to accommodate landscape plantings. Islands could be planted with low-growing vegetation so that drivers' views of oncoming and merging traffic are not obstructed.

Inside Widening Alternative

Impacts associated with the Inside Widening Alternative in Landscape Unit 2 would be the same as under the Outside Widening Alternative.

Mitigation Measure

Mitigation Measure V5a would also be optional under the Inside Widening Alternative.

Impact V6: Permanent Changes to Views in Landscape Unit 3 (Bidwell Park)

Existing conditions of Landscape Unit 3 are shown in Figure 12-8a.

Outside Widening Alternative

This unit would be subject to major visual impacts because of the park atmosphere and the prevalence of mature oaks and other native trees throughout this unit. After project implementation, Bidwell Park users would view the additional infrastructure of the underside of SR 99 related to the outside widening. This alternative includes the addition of 26 bridge columns (13 for new lanes in each direction) and overpasses. This alternative would require the removal of trees and understory to accommodate the proposed bridge widening. Park users are already conditioned to the highway infrastructure in this unit; however, the removal of natural vegetation, addition of more infrastructure, and perceived importance of the park as a natural amenity to the community would result in adverse impacts (Figure 12-8b). The vividness, intactness, and unity of this unit would be affected by the proposed project, and the visual quality rating (VQ = 4) would change to a lower rating (VQ = 3).

Opportunities exist to involve the community in the project, such as inviting local artists or school children to create a mural on the vertical retaining/support wall of SR 99 south of Big Chico Creek. Local involvement in such a project would reduce the perceived adverse impact.

This impact is considered significant because the project would lower the visual quality rating of this unit. Implementation of Mitigation Measure BR1d would reduce this impact to a less-than-significant level.

Mitigation Measure BR1d: Enhance Riparian Habitat by Developing and Implementing a Riparian Restoration and Monitoring Plan

See Impact V3 for a description of this measure.

Inside Widening Alternative

Similar to the Outside Widening Alternative, this unit will likely be subject to major visual impacts because of the park atmosphere and the prevalence of mature oaks and other native trees throughout this unit. Bidwell Park users will view the additional infrastructure of the underside of SR 99 related to the inside widening. This alternative includes the addition of 39 bridge columns (13 for the interior bridge addition and the rest for ramp improvements) and interior bridge (Figure 12-8c). Existing riparian and other vegetation types would be shaded out by the inside widening, and trees and understory would be removed under the bridge structures to accommodate the widening.

The inside widening would exclude natural lighting and create a darkened tunnel effect under the viaduct and for the pathway located south of Big Chico Creek. Park users are already conditioned to the highway infrastructure in this unit; however, the removal of natural vegetation, addition of more infrastructure, and perceived importance of the park as a natural amenity to the community would result in adverse impacts. The vividness, intactness, and unity of this unit would be affected by the proposed project, and the visual quality rating (VQ = 4) would change to a lower rating (VQ = 3).

Opportunities exist to involve the community in the project, such as inviting local artists or school children to create a mural on the vertical retaining/support wall of SR 99 south of Big Chico Creek. Local involvement in such a project would reduce the perceived impact.

Under the Inside Widening Alternative, two new lights would be added to the Bidwell Park Viaduct. One new light would be added under the new median bridge piece in line with the two existing lights over the maintenance/public road on the south end of the bridge, and the other over the maintenance/public road north of the creek between piers 6 and 7.

This impact is considered significant because the project would lower the visual quality rating of this unit. Implementation of Mitigation Measure BR1d would reduce this impact to a less-than-significant level.

Mitigation Measure

The same mitigation would be required under this alternative as under the Outside Widening Alternative.

Impact V7: Permanent Changes to Views in Landscape Unit 4 (Residences)

See Figures 12-9a and 12-10a for existing conditions of Landscape Unit 4.

Outside Widening Alternative

Residents are presently visually shielded, for the most part, from the multilane freeway and its infrastructure by the vegetated right-of-way adjacent to their backyards. Removal of this vegetation and addition of a retaining wall/noise barrier would alter, but still block, views from residences to SR 99 (see Figures 12-9b and 12-10b). Landscape character and views in the project area would change. The vividness, intactness, and unity of this unit would be affected by the proposed project, and the visual quality rating (VQ = 3) would change to a lower rating (VQ = 2).

This unit would likely be subject to the greatest visual impact because of the close proximity of residences located directly adjacent to SR 99 and the height of the retaining wall/noise barrier. The retaining wall/noise barrier would be approximately 7.0 meters (23 feet) high and have aesthetic treatments. Residents would view this barrier until the new landscape plantings mature. Residents located directly adjacent to SR 99 would have their fences replaced, if necessary, as part of the project. Viewer responses towards the retaining wall/noise barrier may vary. Some residents are expected to welcome the effective noise attenuation that the barrier will provide from SR 99, while others may prefer the vegetated right-of-way even though it is an ineffective noise shield; these responses would affect an individual's perception of the view. Residences separated from SR 99 by Rey Way (see Figure 12-9b) would likely be less sensitive to impacts than those with backyards or side yards directly abutting the Caltrans right-of-way since (see Figure 12-10b).

This impact is considered significant because the project would lower the visual quality rating of this unit. Implementation of Mitigation Measure V3a would reduce this impact to a less-than-significant level.

Mitigation Measure V3a: Implement Project Landscaping Plan to Replace Trees that are Removed, Using the Specified Guidelines

See Impact V3a for a description of this measure.

Inside Widening Alternative

A retaining wall is not required between Vallombrosa and Palmetto Avenues under the Inside Widening Alternative; however, a noise barrier is recommended along this area. Therefore, to accommodate the noise barrier, removal of vegetation along this area would be limited to an area approximately 1.5 meters (5 feet) wide beyond the existing outer edge of shoulder (see Impact V3). Views from residences located along Rey Way would change little under this alternative, because the noise barrier would not be visually intrusive (see Figure 12-9c). Residences that abut the Caltrans right-of-way would experience a greater change to their views than Rey Way residences due to their proximity (see Figure 12-10c). As with the Outside Widening Alternative, viewer responses towards the noise barrier are expected to vary. Some residents are expected to welcome the effective noise attenuation that the barrier will provide from SR 99, while others may prefer the vegetated right-of-way even though it is an ineffective noise shield; these responses would affect an individual's perception of the view.

Views from adjacent residences along the SR 32 ramps and between Palmetto Avenue and the East 1st Avenue interchange would be the same as under the Outside Widening Alternative because retaining walls are needed at these locations, under both alternatives, to minimize property acquisitions. Therefore, this impact is considered to be adverse primarily for those residences along the SR 32 ramps and between Palmetto Avenue and the East 1st Avenue interchange. Residents would view the aesthetically-treated barrier until the new landscape plantings mature.

This impact is considered significant because the project would lower the visual quality rating of this unit. Implementation of Mitigation Measure V3a would reduce this impact to a less-than-significant level.

Mitigation Measure

The same mitigation would be required under this alternative as under the Outside Widening Alternative.

Impact V8: Consistency with Local Visual Policies

Outside and Inside Widening Alternatives

Both alternatives are generally consistent with and would not conflict with local visual policies, as described below.

City of Chico General Plan Community

Design Element

CD-G-4: *Minimize the intrusion of Highway 99 and its interchanges on the visual character and form of the city.*

Replanting bare slopes and providing aesthetic treatments to the noise barrier will minimize adverse impacts on the visual character and form of the city.

CD-G-10: *Heighten the visual prominence of the creek corridors which help to establish a sense of orientation and identity within the city.*

The creek corridor within the project area would be revegetated and enhanced with implementation of the proposed Mitigation Measure BR1d, “Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan.”

CD-G-11: *Open up creeks to public view and access.*

Neither alternative would substantially change long-term public views of the creek with implementation of the proposed Mitigation Measure BR1d, “Enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan.” SR 99 currently exists over the creek. The project would not affect access to the creek.

CD-I-29: *Require visual simulations of proposed development.*

Figures 12-7 to 12-10 are visual photo simulations prepared for the proposed project.

Open Space

OS-G-14: *Preserve and enhance Chico's creeks and the riparian corridors adjacent to them as open space corridors for the visual amenity, drainage, fisheries, wildlife habitats, flood control and water quality value.*

As discussed in Mitigation Measure V3b, restoration of the creek corridor as mitigation for the project will restore or enhance portions of Big Chico Creek's riparian corridor and enhance the visual quality. Removal of invasive plant species, such as non-native blackberry species, through this enhancement will allow for views of the tiered forest understory.

Bidwell Park Master Management Plan

Objective 10: *Implement design solutions in areas where safety and security are compromised by physical circumstances.*

The Inside Widening Alternative would exclude natural lighting and create a darkened tunnel effect under the viaduct and for the pathway located south of Big Chico Creek. Therefore, this alternative includes the installation of two new lights to the Bidwell Park Viaduct. One new light would be added under the new median bridge piece in line with the two existing lights over the maintenance/public road on the south end of the bridge, and the other over the maintenance/public road north of the creek between piers 6 and 7.

The Outside Widening Alternative would not affect safety and security in Bidwell Park.

Recommendation b: *Allow climbing vines and vegetation to cover the support structures of the freeway.*

Caltrans' bridge maintenance staff has indicated that vines or other plants should not be planted near the bridge structural elements so as to encourage growth on the bridge columns. Such vegetative growth would prevent maintenance staff from seeing cracks or other evidence of pending structural problems. If vines happen to grow on the bridge columns naturally, Caltrans' bridge maintenance staff would remove the vines, as needed, to perform bridge maintenance activities and inspections. (Tatman pers. comm.) Therefore, this recommendation is not being implemented since its implementation presents bridge maintenance and safety issues.

Because the project is consistent with local visual policies, this impact is considered to be less than significant.

Mitigation Measure

None proposed.

12.2.3 No-Project Alternative

Under the No-Project Alternative, no auxiliary lanes or interchange improvements would be constructed along SR 99. There would be no impacts on visual resources.

Chapter 13 Public Services and Facilities

The information below is summarized from the project Community Impact Assessment (CIA) report (Jones & Stokes 2003d) this report is available for review at BCAG offices. This chapter addresses impacts to utilities and law enforcement and fire protection services.

13.1 Setting

13.1.1 Public Services and Facilities

Utilities

Water service is provided to the study area by California Water Service Company, Chico District, whose sole source of water is groundwater drawn from 60 deep wells in the Chico area (Michael Brandman Associates 1994). The City of Chico is responsible for wastewater collection, treatment, and disposal in the study area. Natural gas and electric services are provided to the study area by Pacific Gas & Electric. Telephone and cable television services are provided by SBC (Pacific Bell) and Chambers Cable, respectively.

Numerous utility lines are located in the vicinity of the project area. Overhead electrical, telephone and cable TV lines are located throughout the project area, including along East 1st Avenue, Sarah Avenue, Sheridan Avenue, Palmetto Avenue, Rey Way, and Vallombrosa Avenue. Underground telephone lines are located along East 8th Avenue. Underground storm drains and underground gas, sewer, and water lines are located within and adjacent to East 1st Avenue and elsewhere in the project area.

Public Services

Law enforcement in the study area is provided by the Chico Police Department and the California Highway Patrol. The Chico Police Department is located on Humboldt Road in the study area, approximately 0.5 kilometers (0.3 miles) east of the southern end of the project area where SR 32 meets SR 99. A police department substation is located in downtown Chico for use by footbeat and bicycle officers. Response times for emergency calls to the Chico Police Department average five to six minutes (Michael Brandman Associates 1994).

Fire protection and emergency ambulance/paramedic services for the study area are provided by the Chico Fire Department, which operates five fire stations. The two stations closest to the project area include Fire Station 1, located along West 9th Street, approximately 2 kilometers (1.3 miles) west of the southern end of the project area; and Fire Station 2, located along East 5th Avenue, approximately 1.6 kilometers (1.0 mile) west of the northern end of the project area. The Chico Fire Department seeks to maintain a 4-minute average emergency response time throughout most of Chico (Michael Brandman Associates 1994).

13.2 Environmental Impacts and Mitigation Measures

13.2.1 Methodology

Information for this section is based on information from the City of Chico General Plan EIR, the project engineer (Tatman pers. comm.) and service providers.

13.2.2 Significance Thresholds

Appendix G of the State CEQA Guidelines provides guidance for the evaluation of project land use, population, housing, social, and public services impacts. Based on these guidelines, the project is considered to have a significant impact if it would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, or other public facilities.

Impact PS1: No Long-Term Disruption of Services

Outside Widening Alternative

Construction, either with conventional intersections and roundabouts, could require relocation of four utility poles carrying overhead electrical, telephone, and cable television lines along East 1st Avenue to accommodate roadway widening. These poles are located between Sarah Avenue and Neal Dow Avenue (one pole on each side of East 1st Avenue, between the SR 99 northbound off-ramp and the freeway; one pole on the south side of East 1st Avenue), and between Sheridan Avenue and Holben Avenue (one pole on the south side of East 1st Avenue). Roadway widening could also require relocation of a phone booth, including the underground telephone line between the booth and an adjacent utility pole, located in front of Finnegan's Jug Liquors on East 1st Avenue. It is not anticipated that other underground utilities along East 1st Avenue, including California Water Service water lines, PG&E natural gas lines, and City sewer lines and storm drains would require relocation (Tatman pers. comm.).

Under the Outside Widening Alternative, a slight possibility exists that construction of retaining walls along the SR 99 mainline would conflict with underground gas lines under SR 99 on Filbert Avenue and Sierra Vista Avenue. Relocation of these lines could be required if piles are needed for the wall footings. Final project design will attempt to avoid this conflict (Tatman pers. comm.)

If services were stopped at any time due to utility relocations, the service providers would provide adequate advance notice to users. No new utilities would need to be installed as a result of this project. This impact is considered to be less than significant since the project would not result in substantial adverse impacts related to the provision of new utility infrastructure.

Mitigation Measure

None proposed.

Inside Widening Alternative

Under the Inside Widening Alternative, impacts on utilities located along East 1st Avenue would be the same as those identified for the Outside Widening Alternative. Unlike the Outside Widening Alternative, however, the Inside Widening Alternative does not have the potential for conflicts with the underground gas lines under SR 99 on Filbert Avenue and Sierra Vista Way. (Tatman pers. comm.) This impact is considered less than significant.

Mitigation Measure

None proposed.

Impact PS2: Potential for Temporary Disruptions to Law Enforcement, Fire Protection, and Emergency Medical Services

Outside and Inside Widening Alternatives

During project construction of either alternative, travel on SR 99, East 1st Avenue, Vallombrosa Avenue, and Palmetto Avenue could be temporarily disrupted, and Vallombrosa Avenue, Palmetto Avenue, and SR 99 ramps could be closed. Construction-related road disruptions and closures under the Outside or Inside Widening Alternatives are not anticipated to have major effects on response times for Chico Fire Department calls. When freeway ramps are temporarily closed or surface streets have reduced access, additional fire engines from different fire stations may be sent to the site of an emergency call or fire to reduce response time, if necessary. The potential exists, however, for construction at the SR 99/SR 32 interchange to affect the response times of engines from the City's Municipal Services Center and Fire Training Center located near the interchange; however, the project would not close or significantly disrupt access to East 8th Street, and engines could be sent from other station locations. Calls in the vicinity of East 1st Avenue are usually handled by the fire stations located on East 5th Street or Manzanita Avenue. If construction-related disruptions occur on East 1st Avenue, engines could reach calls using alternative routes. (Brown pers. comm.)

With roundabouts, response times to Sarah Avenue could increase due to the cul-de-sac that would be constructed at the Sarah Avenue/East 1st Avenue intersection. Emergency calls in this area, which are usually handled by the East 5th Avenue fire station, would probably require emergency vehicles to travel down East 5th Avenue to Neal Dow Avenue to reach Sarah Avenue rather than traveling down East 1st Avenue, potentially adding 1 minute to response times for calls at the end of the cul-de-sac. While adverse, this delay would not be considered substantial for most types of calls. (Brown pers. comm.)

Temporary road and ramp closures could adversely effect police response times in several locations. Closing Vallombrosa and Palmetto Avenues could cause delays in responding to police calls because these closures would force patrol cars to detour to East 1st Avenue to reach calls on either side of SR 99 if the officers are responding from a location on the opposite side of the freeway. The length of the delay would depend upon where the call is located and where the responding patrol car is located. Furthermore, closure of SR 99 ramps could also cause response delays because patrol cars often use SR 99 to respond to calls north of the Chico Police Station, which is located near the intersection of SR 99 and SR 32. Under the roundabouts option,

locating a cul-de-sac on Sarah Avenue could cause delays of up to a minute for calls at the north end of Sarah Avenue. (Weber pers. comm.)

This temporary impact is considered to be significant since project construction has the potential to affect response times by law enforcement, fire protection, and emergency personnel. Implementation of a TMP, as called for by Mitigation Measure LU3a would reduce this impact to less than significant since it would provide advance notice to emergency service providers and provide for emergency service vehicle access through detours, where feasible.

Mitigation Measure LU3a: Implement a Traffic Management Plan

BCAG or Caltrans will implement a TMP that will identify the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements. The TMP will specify time frames for roadway and ramp closures. On SR 99, all ramps and two lanes of traffic will be open in each direction during peak traffic periods. Any ramp or lane closures would occur during non-peak hours. Closures of Vallombrosa Avenue and Palmetto Avenue may last for as long as 6 months, although measures may be implemented to allow these streets to stay open during construction. Daytime access to businesses along East 1st Avenue and Sheridan Avenue will be retained during construction. To the extent that business access must be disrupted, the disruption will occur only at night. BCAG or Caltrans will notify affected businesses and residences at least 1 week in advance of any lane or roadway closures or impacts related to access. Personnel of emergency response services such as fire and police protection will also be notified 1–2 weeks in advance of any lane or roadway closures so that alternative routes could be taken. To the extent possible, emergency vehicles would be allowed through roadway segments temporarily closed for construction purposes (such as Vallombrosa and Palmetto Avenues).

13.2.3 No-Project Alternative

No construction would occur under this alternative. Therefore, no permanent or temporary impacts to utilities or emergency services would occur.

Chapter 14 Cumulative Impacts

14.1 Introduction

According to the State CEQA Guidelines:

Cumulative impacts refers to two or more individual effects, which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. (Section 15355.)

This chapter contains the cumulative impact analysis. It evaluates cumulative effects associated with the proposed project for each environmental issue evaluated in Chapters 4 through 13. The cumulative impact analysis contained in this chapter is largely based on information contained in the City of Chico General Plan Draft Environmental Impact Report (Michael Brandman Associates 1994) and the Chico General Plan, 1992–2012, 1995–1999 Five-Year Review (City of Chico Planning Division 2000), both of which are hereby incorporated by reference.

14.2 Growth Forecast for Traffic, Air Quality, and Noise Evaluations

For traffic, air quality, and noise, the cumulative 2027 analyses are presented in detail in Chapters 5, 6, and 7, respectively. Fehr & Peers Associates used the City of Chico Traffic Model to generate 2027 background traffic volume forecasts for these analyses. This traffic model has a base year of 1998 and forecasts traffic volumes to 2018. The land use inputs for this 2018 model assumes buildout of the City's General Plan. An adjustment process was used since the model's base year (1998) and travel demand forecasting year (2018) differ from the year traffic counts were taken for this project (2002) and the future conditions year analyzed for this project (2027). For 2002 to 2027, the travel demand model forecasts an average annual growth rate of 1.7% per year for with-project conditions. (Fehr & Peers Associates 2003.)

The with-project model assumes six lanes for SR 99 between SR 32 and East 1st Avenue (two through lanes and an auxiliary lane in each direction), four lanes for East 1st Avenue at the SR 99 interchange, and two lanes each for the northbound off-ramp to East 1st Avenue and the southbound off-ramp to SR 32. The no-project and with-project models assumes that Manzanita Avenue would have four lanes crossing Bidwell Park even though a recently approved widening project will provide only two lanes. This assumption was made since the City of Chico General Plan shows four lanes for Manzanita Avenue and a subsequent widening project is expected to be needed to handle future demand. If Manzanita Avenue remains two lanes at Bidwell Park, the demand for SR 99, the nearest parallel route, will be greater than the model runs predicted, and,

as a result, traffic operations in the study area will be worse than what is reported in the project traffic operations report. (Fehr & Peers 2003.)

14.3 Growth Forecast for Other Environmental Issues

For other environmental issues, cumulative impacts are summarized from the City of Chico General Plan EIR (Michael Brandman Associates 1994). The Chico General Plan, with a 20-year planning horizon (1992–2012), was adopted in 1994. The first 5-year review of the General Plan was completed in 2000 (City of Chico Planning Division 2000). The focus of this review was to determine how well the General Plan was performing and whether policies related to development and environmental conservation had been effective.

The adopted General Plan Land Use Diagram (Figure 14-1) depicts land uses and sets the Urban Development Boundary (UDB) showing the extent of planned urban development over the 20-year planning horizon. The projected capacity of the General Plan is approximately 134,000 persons assuming buildout of all developable land at anticipated densities and intensities. (City of Chico Planning Division 2000.)

Table 14-1 shows a summary of land development and availability of vacant land for development, as of late 1999, for all General Plan land uses. The City's sphere of influence (SOI) contains land totaling 21,960 acres. Of this land, about 17,189 had been developed as of late 1999, including parks and open space. Residential uses comprised 51% of the developed land, commercial uses comprised 7%, industrial uses comprised 6%, and public and semi-public uses, including parks, comprised 36%. Approximately 22% of the land (4,785 acres) in the SOI was vacant. (City of Chico Planning Division 2000.) Figure 14-2 presents vacant land in the SOI by residential land use designation.

A recent study conducted by the City (Hayes pers. comm.) found that additional land may be required to meet housing demand within Chico through the 2012 General Plan buildout date. According to this study, land is available to satisfy a 2% growth rate through the buildout period, but would not satisfy demand generated by a growth rate of 2.5%–3.0%. Chico grew at a rate of 4.1% between 1990 and 2000, indicating that more land may be required for residential development in the future. None of the areas being considered by the City for urban expansion are located near the project site.

14.4 Assessment of Cumulative Impacts

14.4.1 Land Use

Development allowed by the General Plan would result in the conversion of open space within the SOI to urban uses. As of late 1999, approximately 4,785 acres of vacant land were designated for urban development. A central theme of the General Plan is to maintain a compact urban form encouraging infill development and preventing encroachment onto agricultural lands to the west of the City and into the foothills to the east. (Michael Brandman Associates 1994.)

Table 14-1. City of Chico Land Availability Summary Update

Land Use Designation	Developed Prior to 1992	Developed 1992–1995	Developed 1996	Developed 1997	Developed 1998	Developed Through Nov. 30, 1999	Total Developed	Percent Developed	Total Acres Designated	Percent of Designated Land	Vacant Land	Percent Vacant Land of Designated Land
Rural	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Very low density	1,808.40	85.25	0.00	40.83	33.00	45.50	2,012.98	11.70	3,111.20	14.20	1,098.22	35.20
Low density	4,275.00	292.10	26.49	63.55	124.37	74.00	4,855.51	28.30	5,517.72	25.10	662.21	12.00
Medium density	904.00	26.11	6.50	20.94	26.29	13.55	997.34	5.80	1,368.73	6.20	371.34	27.10
Medium-high density	838.00	41.33	3.82	1.64	0.00	4.00	888.79	5.20	1,133.40	5.20	244.61	21.60
High density	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.20	50.00	100.00
Neighborhood core	85.00	11.63	0.00	0.00	0.00	0.00	96.63	0.60	173.00	0.80	76.37	44.10
Central business	120.00	0.16	0.00	0.00	0.00	0.00	120.16	0.70	120.82	0.60	0.66	0.50
Community commercial	506.46	57.73	12.87	4.01	4.80	7.20	607.13	3.50	791.06	3.60	208.18	26.30
Commercial services	138.41	0.00	0.70	17.98	20.00	0.00	177.00	1.00	268.00	1.20	91.00	34.00
Office	157.23	27.77	3.81	6.49	10.00	7.20	212.50	1.20	468.84	2.10	256.34	54.70
Industrial park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	225.00	1.00	225.00	100.00
Manufacturing and warehousing	1,003.00	50.13	9.02	4.00	2.60	16.70	1,085.45	6.30	2,467.00	11.20	1,381.55	56.00
Public facilities and services	1,016.00	0.00	1.27	0.00	0.00	0.00	1,017.27	5.90	1,137.27	5.20	120.00	10.60
Parks	3,667.00	0.00	0.00	0.00	0.00	0.00	3,893.89	22.60	3,893.89	17.70	0.00	0.00
Open space/greenways	900.00	325.00	0.00	0.00	0.00	0.00	1,225.00	7.10	1,225.00	5.60	0.00	0.00
Total	15,432.56	917.21	64.48	159.35	221.06	168.15	17,189.70	100.00	21,960.93	100.00	4,785.48	NA

Source: City of Chico Planning Division 2000.

Figure 4-3 of the General Plan presents the adopted Circulation System and planned future roadway improvements.

In addition to direct land use impacts, implementation of the General Plan could result in land use conflicts between proposed and existing uses. Proposed roadway improvements could result in land acquisitions from parcels that are developed. Temporary construction impacts related to construction noise, dust, and effects on access to businesses and residential uses may also occur.

The proposed project contributes a minor increment to these permanent (change in land uses) and temporary (construction-related) impacts. The project's incremental contribution to direct impacts on land uses is judged to be less than cumulatively considerable. Implementation of Mitigation Measures LU2a (provide at least 10 additional parking spaces for businesses at 1078 East 1st Avenue) and LU2b (provide exit driveway for business at 1108 Sheridan Avenue) would reduce direct land use impacts to a less-than-cumulatively-considerable level. Implementation of Mitigation Measure LU3a (implement a transportation management plan) would reduce the project's incremental contribution to construction impacts to a less-than-cumulatively-considerable level.

14.4.2 Transportation

The 2027 analysis conducted for traffic in Chapter 5 is inherently cumulative in nature. As noted above, travel demand forecasts were based on build out of the General Plan in 2018 and were extrapolated to 2027. Impact T7 discusses 2027 impacts on SR 99 and Impacts T8 and T9 evaluate 2027 impacts at the studied arterial intersections. The project is expected to result in acceptable LOS on the freeway and improve LOS at all arterial intersections compared to existing and 2007 no-project conditions, resulting in acceptable levels at all intersections with the exception of the northbound Sheridan Avenue approach to East 1st Avenue. Due to background growth that would occur by 2027, this intersection would degrade to LOS F in 2027. Therefore, the project does not incrementally contribute to cumulative impacts caused by traffic-generating development.

Construction of transportation improvement projects along SR 99 could result in temporary disruption of traffic circulation along this corridor. To the extent that these projects have overlapping construction windows with the proposed project, the proposed project would incrementally contribute to this short-term disruption. Implementation of Mitigation Measure LU3a (implement a transportation management plan) would mitigate the project's incremental contribution to this impact to a less-than-cumulatively-considerable level. If each proposed project implements such a plan, cumulative impacts would be minimized.

14.5 Air Quality

The 2027 analysis conducted for air quality and contained in Chapter 6 is inherently cumulative in nature since the traffic forecast upon which it is based assumes build out the City General Plan. The proposed project is found to conform with the 2001–2025 RTP and the 2002 FTIP, and therefore, it does not cause or contribute to a violation of the federal ozone air quality standard. In addition, the project would not cause a new violation or contribute to an existing

violation of CO standards in 2027. Therefore, although the project would incrementally increase CO concentrations for sensitive receptors, its incremental contribution to cumulative operational-related air quality impacts would be less than cumulatively considerable.

Cumulative development in the City's SOI would also result in an increase in exhaust, dust, and other miscellaneous short-term emissions associated with construction activity of proposed development. The proposed project would incrementally contribute emissions of ROG, NO_x, and PM₁₀ during its construction. Implementation of Mitigation Measure AQ1a (implement construction mitigation measures to reduce construction emissions, as required by the BCAQMD) would mitigate the project's incremental contribution to cumulative short-term emissions to a less-than-cumulatively-considerable level.

14.6 Noise

The 2027 analysis conducted for noise and contained in Chapter 7 is inherently cumulative in nature since the traffic forecast upon which it is based assumes build out of the City General Plan. The increase in existing noise levels in 2027 resulting from the proposed project is expected to be 3 dB or less (a 3 dB increase is barely perceptible and a 1–2 dB increase is considered imperceptible). Therefore, the project's incremental contribution to cumulative noise levels is less than cumulatively considerable under CEQA.

Cumulative development in the City's SOI would also result in short-term noise increases during construction. The proposed project would incrementally contribute to short-term noise increases during its construction. Implementation of Mitigation Measure N2a (employ noise-reduction construction measures) would mitigate the project's incremental contribution to cumulative noise impacts to a less-than-cumulatively-considerable level.

14.7 Hydrology and Water Quality

Proposed development and roadway improvements in the City's SOI would increase site imperviousness and, therefore, add to the amount of runoff. Drainages in the General Plan planning area, such as Mud Creek, Sycamore Creek (tributary to Mud Creek), Big Chico Creek, Lindo Channel/Sandy Gulch, Little Chico Creek, Comanche Creek, and Butte Creek may be affected by increases in runoff due to the development of the area (Michael Brandman Associates 1994). The proposed project would incrementally contribute to the increase in impervious surfaces and additional runoff. Caltrans requires that the proposed project be constructed to accommodate the 25-year storm event. As part of the proposed project, all new and existing drainage facilities would be sized to convey the anticipated flow from the proposed roadway improvements. Only minor modifications to the existing facilities would be required to accommodate the runoff consisting of new culverts and site grading to direct drainage to the appropriate culvert locations (Quincy Engineering 2002).

The hydrologic impacts resulting from the incremental stormwater runoff are considered to be less than cumulatively considerable because project drainage and flow control features would be implemented according to the project drainage plan (Quincy Engineering 2002).

With construction of planned development consistent with the City's SOI, long-term water quality could be affected by increased runoff. Water quality would be affected following site development by the introduction of urban pollutants, such as vehicles oils and greases, and heavy metals on roads, parking lots, and driveways; and fertilizers used on site landscaping. Uncontrolled, these urban pollutants could directly or indirectly affect aquatic life in the Sacramento River watershed over the life of the General Plan. The proposed project would incrementally contribute to this cumulative effect on water quality. The incremental long-term water quality impacts associated with the project are considered less than cumulatively considerable because permanent stormwater treatment BMPs would be implemented for the project, pursuant to the project's NPDES stormwater permit.

During the rainy season, development of planned land uses in the City's SOI could affect water quality during construction due to grading activities that could increase sedimentation and operation and maintenance of construction vehicles and equipment that could release contaminants. The proposed project would incrementally contribute to this cumulative short-term water quality effect. The incremental short-term water quality impacts associated with the project are considered less than cumulatively considerable because a SWPPP would be developed and implemented pursuant to Section A of the Caltrans' NPDES General Permit (Order No. 99-08-DWQ) (CAS000002).

14.8 Biological Resources

Cumulative development within City's SOI could affect sensitive biological communities and special-status species and their habitat. Development called for by the General Plan would increase the number of residents in the planning area, thereby increasing disturbances, such as illicit trash disposal and increased pollutants through urban runoff, within natural habitats. Development in the planning area may also have a cumulative effect on fish species if construction directly or indirectly involves removal of streamside riparian habitat, in-water disturbance, erosion, or pollutant runoff. (Michael Brandman Associates 1994.)

The proposed project would incrementally affect these biological resources. Implementation of Mitigation Measures BR1a (conduct a biological resources education program for construction crews and enforce construction restrictions), BR1b (install a construction barrier fencing around the construction area to protect sensitive biological resources that will be avoided), BR1c (retain a biologist to monitor construction activities in and near Big Chico Creek), BR1d (enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan), BR4a (fence elderberry shrubs to be protected), BR4b (inspect buffer area fences during construction), BR4c (water down construction areas to control dust in the vicinity of elderberry shrubs), BR4d (compensate for direct and indirect effects on Valley elderberry longhorn beetle habitat), BR6a (conduct a preconstruction survey for nesting Swainson's hawks and begin construction activities and remove trees during the Swainson's hawk nonbreeding season [September 15 to March 1]), BR7a (begin construction activities and remove trees and shrubs during the nonbreeding season for most birds [generally, August 15 to March 1]), BR10a (conduct preconstruction surveys for special-status species bats and avoid construction activities, if maternity colonies are found within the project area, until after migration), BR11a (implement measures to protect fish species and water quality of Big Chico Creek), and BR13a (avoid

construction activities that could disturb nesting swallows) would reduce the project's incremental impact to less than cumulatively considerable. Implementation of similar mitigation measures for each proposed development affecting biological resources would mitigate the cumulative effect on biological resources.

14.9 Cultural Resources

Planned development in the City's SOI has the potential to damage cultural resources located on or under the construction sites if these resources are not properly recorded or removed. No known cultural resources are known to occur within the proposed project area. The project's incremental contribution to potential adverse effects on unknown cultural resources would be avoided by implementing Mitigation Measure CR1a (implement a plan for the unanticipated discovery of cultural resources). If each proposed development implements this measure, cumulative loss of cultural resources would not occur.

14.10 Earth Resources

Proposed development in the City's SOI could result in the following significant cumulative impacts on earth resources and related to hazardous materials (Michael Brandman Associates 1994):

- Low to moderate soil erosion potential on most soils planned for development; higher soil erosion potential occurs in the hillside areas that are largely preserved with implementation of the General Plan;
- Alteration of topography for residential development (only 3% of the total growth area acreage under the General Plan comprise hillside development);
- Potential exposure of construction workers to hazardous materials during construction of proposed development and roadway improvements.

The proposed project would incrementally contribute to these cumulative impacts. The following measures will be implemented to reduce the proposed project's contribution to these cumulative impacts to a less-than-cumulatively-considerable level:

- Conformance with City grading permit requirements;
- Conformance with Caltrans' and Uniform building Code standards for seismic safety;
- Conformance with Caltrans' and City standard specifications for earth work; and
- Mitigation Measure ER5a: Implement recommendations related to hazardous materials contained in the project initial site assessment.

The additive impacts of proposed development in the City's SOI related to seismic safety, ground instability and erosion, and hazardous materials would also be reduced if each proposed development incorporated similar measures into project design.

14.11 Visual Resources

Clearing, excavation, and grading activities associated with construction of development in the City's SOI could result in adverse short-term changes to views. Planned development could also alter the existing visual character of the area in the long-term and affect the area's visual amenities, including agricultural area to the west, the foothills to the east, and Bidwell Park and smaller creekside greenways within the City. Future development and roadway improvements could also incrementally add to ambient atmospheric lighting. Implementation of Mitigation Measures V1a (install temporary, visual barriers between construction zones and residences), V2a (construct walls with low-sheen and non-reflective surface materials), V3a (implement project landscaping plan to replace trees that are removed, using the specified guidelines), V3b (implement the specified best management practices for inclusion in the project description of the project report), BR1d (enhance riparian habitat by developing and implementing a riparian restoration and monitoring plan), V4a (provide aesthetic treatments to the noise barrier), and V5a (implement landscape plantings in roundabout islands) would reduce the project's incremental impact to visual resources to less than cumulatively considerable.

14.12 Public Services and Facilities

If construction overlaps with construction of other proposed development in the City's SOI, and if these projects share common infrastructure, cumulative impacts could occur on water, wastewater, and other utility lines. Emergency response activities could be affected if multiple, concurrent projects are constructed along routes used by emergency response vehicles. The project's incremental contribution to these impacts is expected to be minor since the project includes funding for relocation of utilities. Users of these utilities would also be notified prior to the disruption of services, and emergency response providers would be notified of construction plans and schedules in advance.

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15.2 Personal Communications

Brown, Steve. Fire chief. City of Chico Fire Department, Chico, CA. January 30, 2003 – telephone conversation.

Finn, Kelly. Biologist. National Oceanic and Atmospheric Administration. Sacramento, CA. Field visit – October 7, 2002.

Fuller, Ken. Biologist. U.S. Fish and Wildlife Service. Sacramento, CA. Telephone conversation and electronic messages – December 2002.

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Ly, Justin. Biologist. U.S. Fish and Wildlife Service. Sacramento, CA. Telephone conversations – October 2002. Field visit – October 7, 2002.

Miller, Jack. Biologist. California Department of Fish and Game, Region 1. Redding, CA. Field visit – October 7, 2002.

Olah, Jennifer. Biologist. Caltrans, District 3. Marysville, CA. Field visit – October 7, 2002.

Pietrzak, Jeffrey. Landscape Architect. Caltrans, North Region Office of Landscape Architecture. Electronic messages to Debbie Loh - May 16 and June 23, 2003.

Sellers, Clif. Assistant community development director. City of Chico Community Development Department, Chico, CA. January 29, 2003 – telephone conversation.

Stanek, David. Traffic engineer, Fehr & Peers Associates, Inc. April 12, 2002 – technical memorandum on existing conditions prepared for Alan Glen, Quincy Engineering.

Tatman, Karen. Project engineer. Quincy Engineering, Inc., Sacramento, CA. October 11, 2002 – letter to Caltrans District 3; January 27 and 28, 2003 – electronic mail; February–May 2003 – telephone conversations; April 24 and 25, 2003 – electronic mail.

Weber, Mike. Lieutenant. City of Chico Police Department, Patrol Division, Chico, CA.
February 10, 2003 – telephone conversation.

15.3 List of Agencies Consulted

During preparation of the draft EIR and associated documents, the following organizations were contacted or input from the following organizations was obtained.

15.3.1 Federal Organizations

Federal Highway Administration
National Oceanic and Atmospheric Administration – Fisheries
U. S. Army Corps of Engineers
U.S. Fish and Wildlife Service

15.3.2 State Organizations

Northeast Information Center, California State University, Chico
California Department of Fish and Game
California Department of Toxic Substances
California Department of Transportation
California Department of Water Resources
Native American Heritage Commission
State Historic Preservation Officer

15.3.3 Local/Regional Organizations

Butte County Air Quality Management District
Butte County Assessors Office
Butte County Association of Governments
Butte County Department of Environmental Health
Central Valley Regional Water Quality Control Board
Chico Cycling Club
City of Chico Fire Department
City of Chico Parks Department
City of Chico Planning Department
City of Chico Police Department
City of Chico Public Works Department

15.3.4 Other Organizations

Association for Northern California Records and Research
Bidwell Mansion State Historic Park
California Water Service Company
Chico Museum
Ehmann Home-Butte County Historical Society

Native American groups (see the project HPSR [Jones & Stokes 2003f] for a complete list)
Paradise Fact and Folklore
Stansbury Home Preservation Association

Chapter 16 List of Preparers

Debra Loh, Associate Principal, B.A., Geography/Ecosystems; M.A., Environmental Planning, 20 years of experience

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Contribution: Noise

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Contribution: Noise

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Contribution: Botany

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Contribution: Wildlife Biologist

Simon Page (formerly with Jones & Stokes), Environmental Specialist, B.S., Soil and Water Science, 12 years of experience

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Contribution: Visual Resources

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Contribution: Graphics, cartography

Jody Job, Publications Specialist, 24 years of experience

Contribution: Word processing and document coordination and assembly

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Roger Trott, Independent Consultant, B.A., Economics; M.S., Agricultural Economics, 16 years of experience

Contribution: Community Impact Assessment and Relocation Impact Statement

Alan Telford, Fehr & Peers, Traffic Engineer, B.S., Civil Engineering, 20 years of experience

Contribution: Transportation

David Stanek, Fehr & Peers, Traffic Engineer, B.S., Civil Engineering; M.S., Civil Engineering,
7 years of experience

Contribution: Transportation

Appendix A Notice of Preparation and Comments Received



BUTTE COUNTY ASSOCIATION of GOVERNMENTS

965 FIR STREET, CHICO, CALIFORNIA 95928-6301 • (530) 879-2468 • FAX: (530) 879-2444 • [WWW.BCAG.ORG](http://www.bcag.org)

Notice of Preparation of an Environmental Impact Report

Lead Agency

Lead Agency: Butte County Association of Governments
Project Title: State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue
Street Address: 965 Fir Street
City/State/Zip: Chico, CA 95928-6301
Contact: Andy Newsum

The Butte County Association of Governments (BCAG) is the lead agency for the preparation and review of an environmental impact report (EIR) for the State Route (SR) 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue in the City of Chico. BCAG has prepared this Notice of Preparation (NOP) pursuant to Section 15082 of the California Environmental Quality Act (CEQA) Guidelines. The environmental document for this project will be prepared as a joint EIR/categorical exclusion (EIR/CE) that meets the requirements of CEQA and the National Environmental Policy Act (NEPA) to give BCAG the flexibility to use federal funding. The Federal Highway Administration will serve as NEPA lead agency.

BCAG is soliciting the views of interested persons and agencies on the scope and content of the environmental information that is germane to the proposed project. Agencies will need to use the EIR prepared under the direction of the BCAG when considering permits or other approvals for the project. Because of the time limits mandated by State law, your response must be sent at the earliest possible date but no later than the 30-day review period ending on **November 30, 2002.**

Please send written comments to the Butte County Association of Governments, to the attention of Andy Newsum at the above address. Please include the name of the contact person for your agency, if applicable.

Additional public meetings/hearings will be held on this project in spring 2003 and winter 2003/2004.

Project Title

State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue

Project Location

The proposed project is located on SR 99 between the SR 32 and East 1st Avenue interchanges and on East 1st Avenue in the vicinity of the SR 99/East 1st Avenue interchange, in the City of Chico (City), in Butte County (Figures 1 and 2). SR 99 is an important interregional route that runs north to south, connecting Bakersfield to Red Bluff and other points north. For the Chico area, SR 99 serves as one of the few crossings through Bidwell Park and over Big Chico Creek, and serves as a local connection between the northern and southern halves of the city.

Project Purpose and Need

Rapid growth within Butte County, specifically within Chico, has produced increased traffic congestion on SR 99. The limited number of local road connections across Bidwell Park, which bisects the town, adds to the congestion problem. High volumes of local traffic attempt to merge with the through traffic on SR 99. Vehicles exiting northbound SR 99 to East 1st Avenue frequently back up onto the freeway. Traffic studies indicate that accident rates exceed the statewide average. The proposed project would improve the operational characteristics of SR 99 between SR 32 and East 1st Avenue by providing an auxiliary lane in each direction. The California Department of Transportation (Caltrans) and the Butte County Association of Governments (BCAG) are proposing this project to:

- Alleviate existing safety problems and operational deficiencies and reduce traffic delays and congestion.
- Provide improved access across Bidwell Park for local traffic from the SR 32 interchange to the East 1st Avenue interchange.
- Address vehicles that have difficulty entering SR 99 in the northbound and southbound directions.
- Help to alleviate congestion problems on SR 99 at the northbound off-ramp to East 1st Avenue.

Description of Alternatives

Two build alternatives will be considered in the environmental document. The Outside Widening Alternative would provide an auxiliary lane to the outside of SR 99, using retaining walls to reduce impacts on adjacent properties; the existing freeway median and travel lanes would be unaffected, and a new lane with shoulder would be constructed adjacent to the existing outer (#2) freeway lane. The Inside Widening Alternative would realign the existing freeway lanes into the median in order to use the existing outer lanes as auxiliary lanes. Both of these alternatives also involve the following:

- widening the southbound SR 32 off-ramp to provide for two lanes (these improvements would be the same for both alternatives);
- widening East 1st Avenue to two lanes in each direction within the project area, with left-turn lanes to the freeway on-ramps. Two optional configurations are being considered for the SR 99/East 1st Avenue intersections: conventional ramp intersections or roundabouts. If roundabouts are determined to be feasible, they will be evaluated in the environmental document. (these improvements would be the same for both alternatives);
- widening the northbound East 1st Avenue off-ramp to provide two left-turn lanes and one right-turn lane (these improvements would be the same for both alternatives);
- widening the southbound East 1st Avenue on-ramp to two lanes (these improvements would be the same for both alternatives); and
- widening the Bidwell Park Viaduct and the Palmetto Avenue undercrossing structures, including providing full 1.5-m (5-foot) inside shoulders and full 3.0-m (10-foot) outside shoulders.

Under the Outside Widening Alternative, both structures would be widened to the outside, retaining separate northbound and southbound structures. The existing Bidwell Park Viaduct structures are each supported by 13 columns (total of 26 existing columns). Widening the Bidwell Park Viaduct structures to the outside would require the placement of one additional column alongside each of the existing columns or a total of 26 new columns. The Palmetto Avenue Undercrossing structures are each supported by two pier walls. These pier walls would be widened to the outside to support the widened bridge so that the finished supports would still be one solid wall for each bridge.

Under the Inside Widening Alternative, the Bidwell Park Viaduct structures would be widened to the inside to provide for the auxiliary lane and standard inside shoulders, but would also be widened to the outside for a portion of the structure to accommodate the ramp merges and to provide for standard outside shoulders. The inside widening requires removing the inside railing and connecting the two bridges. This new bridge portion would be supported by new single columns constructed between the existing columns; 13 columns on spread footings would be added in the median. A cast-in-place box girder structure would be constructed to connect the two existing bridges. The outside widening necessary to match the ramps and to provide standard outside shoulders on both sides of the structure would be supported by one additional

column constructed to the outside of each of the existing columns. A total of 39 new columns would be constructed. The Palmetto Avenue Undercrossing pier walls would be connected to support the inside widening and would also be widened to the outside to provide for ramp merges and standard outside shoulders so that the finished supports would both be one solid wall supporting one finished bridge.

In addition to the two build alternatives, the environmental document will analyze the No-Project Alternative.

Right-of-Way Acquisition

Both alternatives would have the same right-of-way acquisitions. No full takes of right-of-way would be required. However, two businesses and eight residences would experience sliver takes of right-of-way. A temporary construction easement would also be required for eleven residences along Sheridan Avenue and Sarah Avenue for construction of a retaining wall. These residences would lose fences, but the fences would be replaced as part of the project.

Focus of the EIR/CE

The attached checklist identifies those environmental topics that will be addressed in the EIR/CE.

Environmental Checklist Form

1. **Project Title:** State Route 99 Auxiliary Lane Project between State Route 32 and East 1st Avenue
2. **Lead Agency Name and Address:** Butte County Association of Governments
965 Fir Street
Chico, CA 95928-6301
3. **Contact Person and Phone Number:** Andy Newsum
(530) 879-2468
4. **Project Location:** The proposed project is located on SR 99 between the SR 32 and East 1st Avenue interchanges and on East 1st Avenue in the vicinity of the SR 99/East 1st Avenue interchange, in the City of Chico (City), in Butte County.

Environmental Factors Potentially Affected

The environmental factors checked below would potentially be affected by this project (i.e., the project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

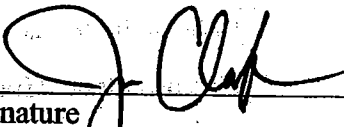
☒ Aesthetics	☐ Agricultural Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology/Soils
☒ Hazards and Hazardous Materials	☒ Hydrology/Water Quality	☒ Land Use/Planning
☐ Mineral Resources	☒ Noise	☒ Population/Housing
☐ Public Services	☒ Recreation	☒ Transportation/Traffic
☒ Utilities/Service Systems	☒ Mandatory Findings of Significance	

Determination:

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards and (2) has been addressed by mitigation measures based on the earlier analysis, as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

Signature



Printed Name

JON A. CLARK

Date

10/28/02

For

BUTTE COUNTY ASSOCIATION OF GOVTS.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
I.	AESTHETICS. Would the project:				
a.	Have a substantial adverse impact on a scenic vista?		X		
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?				X
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?		X		
d.	Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?		X		

Ia-d. The proposed project would result in modified views of SR 99 for motorists and adjacent residential uses and could result in the installation of additional light fixtures. Views of Bidwell Park by park users would also be modified with construction of improvements to the Bidwell Park Viaducts and associated vegetation removal. There are no scenic highways located in the study area.

The EIR/CE will analyze changes to views from roadways, nearby residential land uses, and Bidwell Park, and the potential for light and glare impacts.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
II.	AGRICULTURAL RESOURCES. In determining whether impacts on agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation. Would the project:				
a.	Convert prime farmland, unique farmland, or farmland of statewide importance (farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b.	Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?				X
c.	Involve other changes in the existing environment that, because of their location or nature, could result in conversion of farmland to non-agricultural use?				X

IIa-c. The proposed project would not result in the conversion of agricultural resources or conflict with a Williamson Act contract.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
III.	AIR QUALITY. When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations. Would the project:				
a.	Conflict with or obstruct implementation of the applicable air quality plan?		X		
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?		X		
d.	Expose sensitive receptors to substantial pollutant concentrations?		X		
e.	Create objectionable odors affecting a substantial number of people?			X	

IIIa-e. The proposed project could result in construction-related emissions and an increase in carbon monoxide concentrations that could contribute to violation of air quality standards. The project also may expose sensitive receptors to pollutants. The project does not have the potential to alter air movement, moisture, or temperature or cause any change in climate. Paving of roadway surfaces may result in less-than-significant short-term localized odor.

The EIR/CE will include an analysis of construction-related emissions including reactive organic gases, nitric oxides, sulfur dioxide, carbon monoxide, and particulate matter, and an estimate of carbon monoxide concentrations at a number of nearby sensitive receptors. The project will also be evaluated to determine whether it meets the U.S. Environmental Protection Agency's transportation conformity rule to ensure that the project is consistent with the State Implementation Plan for attaining federal air quality requirements.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
IV.	BIOLOGICAL RESOURCES. Would the project:				
a.	Have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b.	Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
c.	Have a substantial adverse impact on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		X		
f.	Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?		X		

IVa-f. The proposed project crosses over Big Chico Creek as it flows through Bidwell Park and could affect special-status wildlife, plant, and anadromous fish species; fish habitat; plant communities and associated wildlife habitats; native trees; and federally protected wetlands. Site-specific biological resource surveys that conform to the requirements of the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the California Department of Fish and Game will be conducted to document the presence or absence of these resources. The EIR/CE will identify impacts on these resources and appropriate mitigation measures, if necessary.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
V.	CULTURAL RESOURCES. Would the project:				
a.	Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?		X		
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		X		
c.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		
d.	Disturb any human remains, including those interred outside of formal cemeteries?		X		

Va-d. The proposed project could result in changes in or disturbances to potential historic or archeological resources. A site-specific cultural resources survey will be conducted for historic and archeological resources within the study area.

Impacts of the project on significant cultural resources will be evaluated in the EIR/CE.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
VI.	GEOLOGY AND SOILS. Would the project:				
a.	Expose people or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving:				
	1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
	2. Strong seismic groundshaking?			X	
	3. Seismic-related ground failure, including liquefaction?			X	
	4. Landslides?			X	
b.	Result in substantial soil erosion or the loss of topsoil?		X		
c.	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?			X	
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?				X

Via-e. While active faults are not known to cross the study area, ground-shaking could occur if faults in or around Butte County should move. The potential for the project to result in erosion, changes in topography, unstable soil conditions, or subsidence of land will be evaluated in the EIR/CE. These hazards are expected to be less than significant because of the distance of the nearest active site and the features that will be incorporated into the project to address the potential for these hazards. Use of design standards specified by Caltrans and in the Uniform Building Code and compliance with the City of Chico's standard specifications for earthwork will ensure that the potential for impacts of the project are minimized. The proposed project would not entail the installation of septic tanks or alternative waste disposal systems.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
VII.	HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		X		
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c.	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?		X		
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?		X		
e.	Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?				X
f.	Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?				X
g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h.	Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including areas where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

VIIa-h. An initial site assessment will be conducted for the proposed project that identifies any significant hazardous materials issues, including the presence of underground storage tanks in the project area, that could affect the constructability, feasibility, or cost of the proposed project. Construction of the proposed project is unlikely to result in the release of hazardous

materials, based on implementation of standard construction practices which are regulated and controlled by law.

The project site is not located in the vicinity of a public airport or private airstrip. Construction-related activities will not result in interference with the implementation of emergency response or evacuation plans, based on implementation of standard construction practices and vehicle access plans. Emergency access to the project site will be maintained during construction. The project will not result in the exposure of people or structures to wildland fires.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
VIII.	HYDROLOGY AND WATER QUALITY.				
	Would the project:				
a.	Violate any water quality standards or waste discharge requirements?		X		
b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?				X
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on-site or off-site?		X		
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on-site or off-site?		X		
e.	Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?		X		
f.	Otherwise substantially degrade water quality?		X		
g.	Place housing within a 100-year flood hazard area, as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map?				X
h.	Place within a 100-year flood hazard area structures that would impede or redirect floodflows?		X		

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
i.	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?		X		
j.	Contribute to inundation by seiche, tsunami, or mudflow?				X

VIIIa-j. Increased roadway and other impervious surfaces resulting from the proposed project may increase the rate and amount of surface stormwater runoff that could discharge to existing surface drainage channels and, ultimately, to Big Chico Creek. The EIR/CE will qualitatively evaluate short- and long-term impacts on water quality. A floodplain risk assessment will also be conducted to determine impacts on the base floodplain.

The project would not affect groundwater supplies, place housing within a 100-year floodplain, or contribute to inundation by a seiche, tsunami, or mudflow.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
IX.	LAND USE AND PLANNING. Would the project:				
a.	Physically divide an established community?				X
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental impact?		X		
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?		X		

IXa-c. The proposed project entails improvements to an existing facility, and therefore would not divide an established community. Short-term (such as access, noise, and visual changes) and long-term (construction of improvements to the viaducts) impacts to Bidwell Park and the consistency of the project to the Bidwell Park management plan will be evaluated. The consistency of the project with other local policies and plans will also be evaluated in the EIR/CE.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
X.	MINERAL RESOURCES. Would the project:				
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				X

Xa-b. The proposed project would not result in the loss of known mineral resources. The project area is not designated as an important mineral resource recovery site.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
XI.	NOISE. Would the project:				
a.	Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?		X		
b.	Expose persons to or generate excessive groundborne vibration or groundborne noise levels?		X		
c.	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
d.	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
e.	Be located within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?				X
f.	Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?				X

XI a-f. The proposed project could result in short- and long-term increases in ambient noise levels because of increased traffic noise associated with the project. The project could also increase ground vibration during construction. The EIR/CE will evaluate projected noise levels during construction.

The project site is not located in the vicinity of a public airport or private air strip.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
XII.	POPULATION AND HOUSING. Would the project:				
a.	Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?		X		
b.	Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?				X
c.	Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?				X

The EIR/CE will evaluate the potential for growth inducement related to the proposed improvements. The proposed project will not require displacement of residential or commercial structures. However, right of way acquisition would result in loss of frontage, landscaping, and similar sliver takes from two businesses and eight residential properties. In addition, temporary construction easements would be required for some residences along Sheridan and Sarah Avenues.

Implementation of the proposed project is not anticipated to disrupt or divide the existing physical arrangement of an established community (including a low-income or minority community). The potential social and economic effects (including the project's consistency with Executive Order 12898) resulting from implementation of the proposed project will be evaluated in the socioeconomics analysis of the EIR/CE.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
XIII.	PUBLIC SERVICES. Would the project:				
a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
	Fire protection?				X
	Police protection?				X
	Schools?				X
	Parks?				X
	Other public facilities?				X

XIIIa. The proposed project would not increase the demand for public services.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
XIV.	RECREATION. Would the project:				
a.	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical impact on the environment?		X		

XIVa-b. The proposed project would not increase the use of existing parks. Existing bicycle/pedestrian facilities within Bidwell Park may be temporarily affected during construction of improvements to the viaducts. These impacts will be analyzed in the EIR/CE.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
XV.	TRANSPORTATION/TRAFFIC. Would the project:				
a.	Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?		X		
b.	Cause, either individually or cumulatively, exceedance of a LOS standard established by the county congestion management agency for designated roads or highways?		X		
c.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d.	Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		X		
e.	Result in inadequate emergency access?			X	
f.	Result in inadequate parking capacity?		X		
g.	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?		X		

XVa-g. The proposed project would alleviate existing traffic safety problems and operational deficiencies and reduce congestion. The EIR/CE will analyze post-project levels of service, as well as post-project traffic operations, including delay and safety considerations. Impacts on parking and non-vehicular traffic will also be assessed. The consistency of the project with existing City transportation policies will be evaluated.

Construction-related activities will not result in the interference with implementation of emergency response or evacuation plans based on implementation of standard construction practices and vehicle access plans. Emergency access to the project site will be maintained during construction.

The project will not result in a change in air traffic patterns. The project will be designed to current Caltrans and City design standards and will not result in hazards to safety from design features.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
XVI.	UTILITIES AND SERVICE SYSTEMS. Would the project:				
a.	Exceed wastewater treatment requirements of the applicable regional water quality control board?				X
b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?				X
c.	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?		X		
d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?				X
e.	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
g.	Comply with federal, state, and local statutes and regulations related to solid waste?				X

XVIa-g. The proposed project would not affect water supplies or wastewater treatment capacity. Construction materials generated by the proposed project would become the property of the construction contractor who would be responsible for disposing of the construction waste at the appropriate landfill or at a facility that recycles concrete into aggregate base or other product. The EIR/CE will identify the need (if any) for additional stormwater drains and the need for relocating existing public infrastructure, such as communication lines or water lines, temporarily or permanently.

		Potentially Significant Impact	Potentially Significant Impact; Mitigation May Be Required	Less-than- Significant Impact	No Impact
XVII. MANDATORY FINDINGS OF SIGNIFICANCE					
a.	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		X		
b.	Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental impacts of a project are considerable when viewed in connection with the impacts of past projects, the impacts of other current projects, and the impacts of probable future projects.)		X		
c.	Does the project have environmental impacts that will cause substantial adverse impacts on human beings, either directly or indirectly?		X		

This Initial Study identifies potential impacts of the proposed project without mitigation and therefore each identified environmental effect is characterized as having either a potentially significant impact, less than significant impact, or no impact. The potential for the project to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory will be further addressed in the EIR/CE.

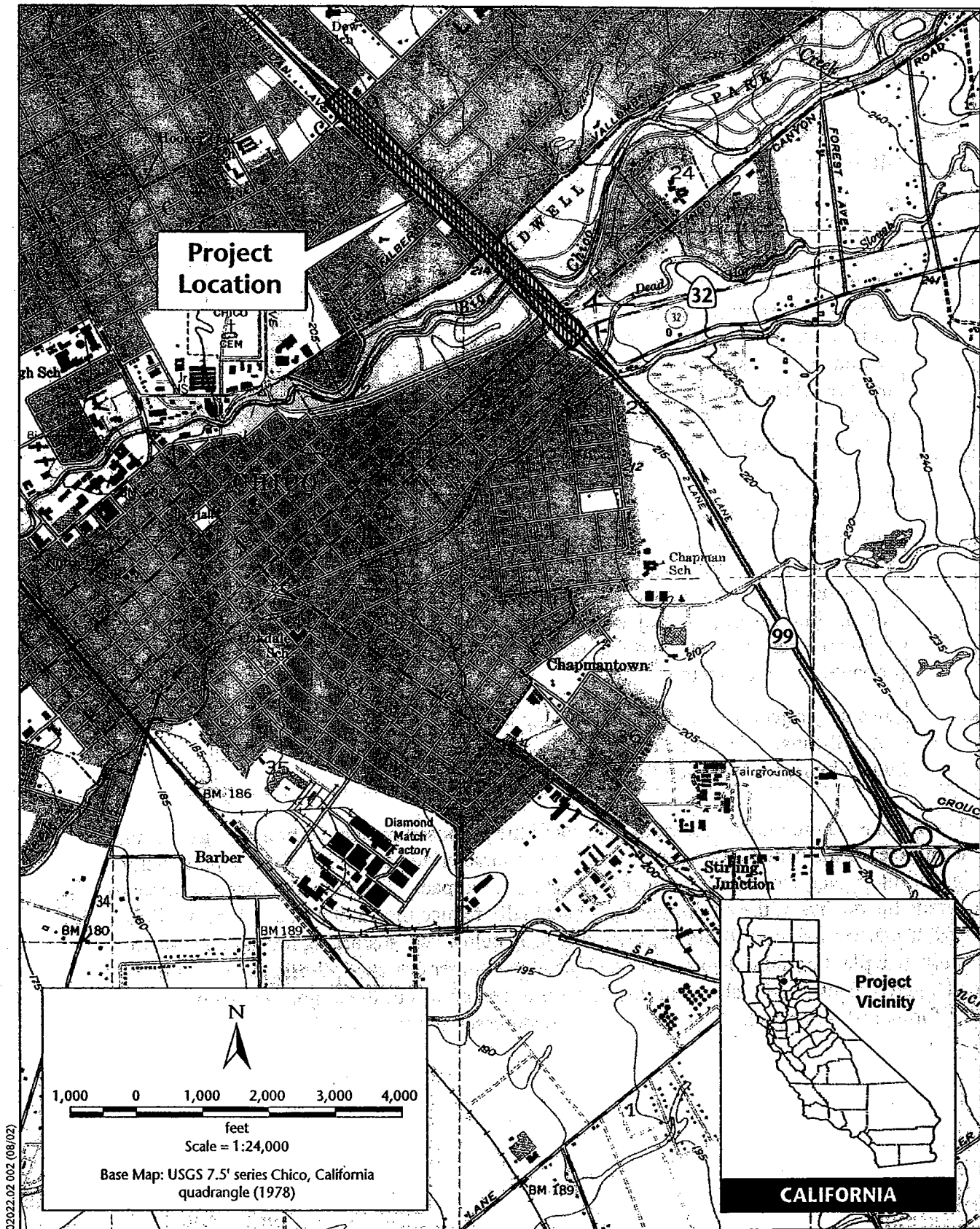


Figure 1
Project Vicinity



Gray Davis
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse



Tal Finney
Interim Director

Notice of Preparation

November 1, 2002

To: Reviewing Agencies

Re: SR 99 Auxiliary Lane Project Between SR 32 & E. 1st Ave., Chico, CA
SCH# 2002112002

RECEIVED
NOV 08 2002
B.C.A.G.

Attached for your review and comment is the Notice of Preparation (NOP) for the SR 99 Auxiliary Lane Project Between SR 32 & E. 1st Ave., Chico, CA draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

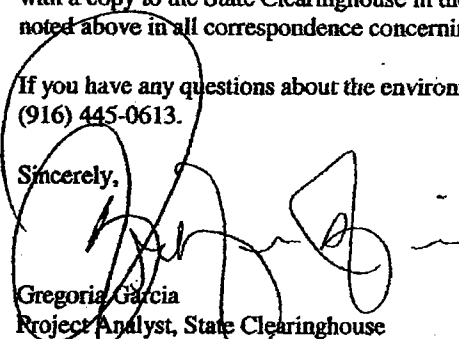
Please direct your comments to:

Andy Newsum
Butte County Association of Governments
965 Fir Street
Chico, CA 95928

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,


Gregoria Garcia
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency



Residents Outraged About Roads

c/o LINDO VIEW MANOR HOMEOWNERS ASSOCIATION
6 Summerwood Court * Chico, CA 95926 * Tel/fax 530 892-1818 * the3gairs@aol.com

RECEIVED

NOV 11

B.L.G.

11/1/2002

Mr. Andy Newsum
Butte County Association of Governments
965 Fir Street
Chico, CA 95928-6301

Response to the EIR on your Project:

State Route 99 Auxiliary Lane Project between State Route 32 and East First Avenue.

Dear Mr. Newsum:

During the public presentation of your plans to deal with traffic flow and congestion in the project area, I suggested an alternative method of achieving your goals. I notice that this alternative has been completely ignored in the preparation of your (Notice of Preparation) document and consequently you will not investigate the environmental impact of this alternative.

I require you to include this option as a solution to the traffic problem under review and to consider its principles as an answer to other stretches of route 99 as you develop solutions to those problems.

In my opinion, you are only tinkering with the problem by adjusting road widths and with the work you propose on entry and exit ramps, and will just move the congestion you cause to other areas with the same or similar attendant problems.

Overview

1. The congestion and accidents are caused by back-up of traffic at the poorly engineered exit and entry ramps, not by the adequacy or inadequacy of the road width.
2. At your presentation, you stated that there are too many exit ramps on this stretch of road and that they exceed the State Route standard.

3. We have many more efficient ways available to us now to improve traffic flow between points of congestion, so that the numbers of cars the roads can handle are greatly increased.

4. The problem with all approaches that re-engineer the exit ramps is that all they do is feed traffic into local roads that are not built to take those volumes and cause danger and congestion throughout large areas of our city, most of which is residential, destroying the quality of life by unnecessary traffic.

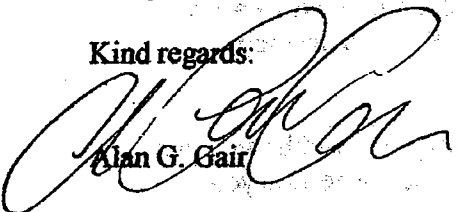
Proposed alternative plan.

1. Close the East First Avenue exit and entry ramps.
2. Develop a modern roundabout solution at 99 and 32.
3. Consider a similar roundabout solution at 20th and East Park Avenue.
4. Reduce the numbers of stoplight interruptions to traffic flow and local congestion at exit lane.

As you will all know, the roundabout traffic flow arguments and figures on reduction of accidents, etc. are incontrovertible. Roundabouts are being extensively used in the United States and throughout the world. We urge you to take California out of the dark ages of road engineering and follow the proven examples that have solved problems worse than ours.

I look forward to seeing this alternative proposal evaluated, not only for its improvement to traffic on 99, but also for the quality of life improvements it will bring to our residential areas and the large reduction in the costs associated with these unnecessary alterations to the roads and bridges through the woodlands and trees of Bidwell Park and along the route.

Kind regards:


Alan G. Gair

PLEASE ACKNOWLEDGE.



California Regional Water Quality Control Board

Central Valley Region

Robert Schneider, Chair

Winston H. Hickox
Secretary for
Environmental
Protection

Redding Branch Office
Internet Address: <http://www.swrcb.ca.gov/~rwqcb5>
415 Knollcrest Drive, Suite 100, Redding, California 96002
Phone (530) 224-4845 • FAX (530) 224-4857



Gray Davis
Governor

6 November 2002

Andy Newsum
Butte County Association of Governments
965 Fir Street
Chico, CA 95928-6301

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NOV 08 2002

B.C.A.G.

COMMENTS ON STATE ROUTE 99 AUXILIARY LANE PROJECT—NOTICE OF PREPARATION FOR EIR SCH# 2002112002, CHICO, BUTTE COUNTY

We have reviewed a Notice of Preparation for an Environmental Impact Report (EIR) dated 28 October 2002. The project involves constructing an auxiliary lane on State Route 99 between State Route 32 and East 1st Avenue in Chico. We have the following comments.

Wetlands and/or stream course alteration – The project proponent may need to apply for a Clean Water Act Section 404 permit (§404 permit) from the U.S. Army Corps of Engineers. A §404 permit is required for activities involving a discharge of dredged or fill material to waters of the United States. "Waters of the United States" include wetlands, riparian zones, streambeds, rivers, lakes and oceans. The Army Corps of Engineers Butte County contact for §404 permits is Mr. Matt Kelly, (916) 557-7724.

Projects requiring a §404 permit also require a water quality certification (pursuant to Section 401 of the Clean Water Act) verifying that the project does not violate State water quality standards. A water quality certification is required for any project that impacts water of the State (such as streams and wetlands). Activities that fall under the water quality certification process include, but are not limited to: stream crossings, the modification of stream banks or stream courses, and the filling or modification of wetlands. A water quality certification must be obtained prior to construction. Failure to obtain a water quality certification, when required, may result in enforcement action. The Regional Board Contact for water quality certifications is Scott A. Zaitz, who can be reached at the letterhead address or by telephoning (530) 224-4784.

Construction storm water - A Construction Activities Storm Water Permit is required for storm water discharges associated with a construction activity where clearing, grading, and excavation result in a land disturbance of five acres or more. Storm water discharges from construction activity that results in a land disturbance of less than five acres, but which is part of a larger common plan development of five acres or more also requires a construction storm water permit. Construction commencing on or after 10 March 2003 will require a construction storm water permit, if the area of land disturbance is one acre or more. A construction storm water permit, if required, must be obtained prior to construction. Failure to obtain a construction storm water permit, when required, may result in enforcement action. The filing fee for a construction storm water permit is \$700. If the facility is under individual waste

California Environmental Protection Agency



The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <http://www.swrcb.ca.gov/>

discharge requirements, the \$700 filing fee will be waived. Construction storm water permits can be obtained from Scott A. Zaitz (see above contact information).

If you have any questions, please contact me at (530) 224-3249 or the letterhead address.



Ray Bruun, P.E.
Associate Engineer
Shasta-Cascade Watershed

RB: kj

DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



November 12, 2002

Andy Newsum
Butte County Association of Governments
965 Fir Street
Chico, California 95928

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NOV 13 2002

B.C.A.G.

Staff for The Department of Water Resources has reviewed State Clearinghouse Document Number 2002112002 Notice of Preparation for the SR 99 Auxiliary Lane Project Between SR 32 & E.1st Ave, Chico CA and provides the following comments:

Portions of the project are within Big Chico Creek, an adopted plan of flood control, over which The Reclamation Board has jurisdiction and exercises authority. The California Code of Regulations, Title 23, Waters, Article 3, require that a Board permit be obtained before the start of any work including excavation and construction activities where The Reclamation Board has jurisdiction.

Section 8(b)(2) of the Regulations states that applications for permits submitted to the Board must include a completed environmental questionnaire that accompanies the application and a copy of any environmental documents if they are prepared for the project. For any foreseeable significant environmental impacts, mitigation for such impacts shall be proposed. Applications are reviewed for compliance with the California Environmental Quality Act.

Section 8(b)(4) of the Regulations states that additional information, such as geotechnical exploration, soil testing, hydraulic or sediment transport studies, biological surveys, environmental surveys and other analyses may be required at any time prior to Board action on the application.

If you have any questions, please contact me at (916) 653-0402, or Samuel Brandon at (916) 653-6491.

Sincerely,

A handwritten signature in black ink, appearing to read "Sterling Sorenson".

Sterling Sorenson
Water Resources Engineering Associate
Floodway Protection Section

cc: Richard Marshall, Chief
Flood Project Inspection Section
3310 El Camino Avenue, Room B-20
Sacramento CA 95821



Resources Agency

☒ Resources Agency
Nadell Gayou

☐ Dept. of Boating & Waterways
Bill Curry

☐ California Coastal
Commission
Elizabeth A. Fuchs

☐ Dept. of Conservation
Roseanne Taylor

☐ Dept. of Forestry & Fire
Protection
Allen Robertson

☒ Office of Historic
Preservation
Hans Kreutzberg

☒ Dept. of Parks & Recreation
B. Noah Highman
Environmental Stewardship
Section

☒ Reclamation Board
Pam Bruner

☐ S.F. Bay Conservation &
Devel. Comm.
Steve McAdam

☒ Dept. of Water Resources
Resource Agency
Nadell Gayou

Health & Welfare

☐ Health & Welfare
Wayne Hubbard
Dept. of Health/Drinking Water

Food & Agriculture

☐ Food & Agriculture
Steve Shafter
Dept. of Food and Agriculture

Fish and Game

☐ Dept. of Fish & Game
Scott Flint
Environmental Services Division

☐ Dept. of Fish & Game 1
Donald Koch
Region 1

☒ Dept. of Fish & Game 2
Barry Curtis
Region 2

☐ Dept. of Fish & Game 3
Robert Flocas
Region 3

☐ Dept. of Fish & Game 4
William Laudermilk
Region 4

☐ Dept. of Fish & Game 5
Don Chadwick
Region 5, Habitat Conservation
Program

☐ Dept. of Fish & Game 6
Gabriela Gatchel
Region 6, Habitat Conservation
Program

☐ Dept. of Fish & Game 6 I/M
Tammy Allen
Region 6, Inyo/Mono, Habitat
Conservation Program

☐ Dept. of Fish & Game M
Tom Napoli
Marine Region

Independent Commissions

☐ California Energy Commission
Environmental Office

☒ Native American Heritage
Comm.
Deddie Treadway

☐ Public Utilities Commission
Ken Lewis

☒ State Lands Commission
Betty Silva

☐ Governor's Office of Planning
& Research
State Clearinghouse Planner

☐ Colorado River Board
Gerald R. Zimmerman

☐ Tahoe Regional Planning
Agency (TRPA)
Lyn Barnett

☐ Office of Emergency Services
John Fowden, Manager

☐ Delta Protection Commission
Debby Eddy

☐ Santa Monica Mountains
Conservancy
Paul Edelman

☐ Dept. of Transportation
Mike Eagan
District 1

☐ Dept. of Transportation 2
Don Anderson
District 2

☒ Dept. of Transportation 3
Jeff Puwerman
District 3

☐ Dept. of Transportation 4
Jean Finney
District 4

☐ Dept. of Transportation 5
David Murray
District 5

☐ Dept. of Transportation 6
Marc Birnbaum
District 6

☐ Dept. of Transportation 7
Stephen J. Buswell
District 7

☐ Dept. of Transportation 8
Linda Gimnes,
District 8

☐ Dept. of Transportation 9
Katy Walton
District 9

☐ Dept. of Transportation 10
Tom Durmas
District 10

☐ Dept. of Transportation 11
Bill Fidge
District 11

☐ Dept. of Transportation 12
Bob Joseph
District 12

☐ Business, Trans. & Housing

☐ Housing & Community Development
Cathy Creaswell
Housing Policy Division

☐ Caltrans - Division of Aeronautics
Sandy Hearnard

☒ California Highway Patrol
Lt. Julie Page
Office of Special Projects

☐ Dept. of Transportation
Ron Helgeson
Caltrans - Planning

☐ Dept. of General Services
Robert Sleppy
Environmental Services Section

☐ Air Resources Board

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Jim Lerner

☒ Transportation Projects
Kurt Karpent

☐ Industrial Projects
Mike Tolstrup

☐ California Integrated Waste
Management Board
Sue O'Leary

☐ State Water Resources Control
Board
Diane Edwards
Division of Clean Water Programs

☐ State Water Resources Control
Board
Greg Franz
Division of Water Quality

☐ State Water Resources Control
Board
Mike Falkenstein
Division of Water Rights

☒ Dept. of Toxic Substances Control
CEQA Tracking Center

☐ Regional Water Quality Control
Board (RWQCB)

☐ RWQCB 1
Cathleen Hudson
North Coast Region (1)

☐ RWQCB 2
Environmental Document
Coordinator
San Francisco Bay Region (2)

☐ RWQCB 3
Central Coast Region (3)

☐ RWQCB 4
Jonathan Bishop
Los Angeles Region (4)

☐ RWQCB 5S
Central Valley Region (5)

☐ RWQCB 5F
Central Valley Region (5)
Fresno Branch Office

☒ RWQCB 5R
Central Valley Region (5)
Redding Branch Office

☐ RWQCB 6
Latonian Region (6)

☐ RWQCB 6V
Latonian Region (6)
Victorville Branch Office

☐ RWQCB 7
Colorado River Basin Region (7)

☐ RWQCB 8
Santa Ana Region (8)

☐ RWQCB 9
San Diego Region (9)

**Document Details Report
State Clearinghouse Data Base**

SCH# 2002112002
Project Title SR 99 Auxiliary Lane Project Between SR 32 & E. 1st Ave., Chico, CA
Lead Agency Butte County Association of Governments

Type NOP Notice of Preparation
Description Addition of auxiliary lane and widening of city surface street at interchange.

Lead Agency Contact

Name Andy Newsum
Agency Butte County Association of Governments
Phone 530 879-2468 **Fax**
email
Address 965 Fir Street
City Chico **State** CA **Zip** 95928

Project Location

County Butte
City Chico
Region
Cross Streets SR 32 & E. 1st Ave.
Parcel No. state row
Township 22N **Range** 1E **Section** **Base** MDBM

Proximity to:

Highways 99
Airports
Railways
Waterways Big Chico Creek
Schools Middle School, Elementary School
Land Use Existing state highway

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Noise; Population/Housing Balance; Recreation/Parks; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 2; Native American Heritage Commission; State Lands Commission; Caltrans, District 3; California Highway Patrol; Air Resources Board, Transportation Projects; Department of Toxic Substances Control; Regional Water Quality Control Bd., Region 5 (Redding); Reclamation Board

Date Received 11/01/2002 **Start of Review** 11/01/2002 **End of Review** 12/02/2002



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
PPN 2945

November 20, 2002

Mr. Andy Newsum
Butte County Association of Governments
965 Fir Street
Chico, California 95928-6301

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NOV 21 2002

B.C.A.G.

Dear Mr. Newsum:

Thank you for the opportunity to review the Notice of Preparation of an Environmental Impact Report for the State Route (SR) 99 Auxiliary Lane Project. The proposed project involves the construction of auxiliary lanes (a lane in each direction) between SR 32 and East 1st Avenue in Butte County, California. The enclosures are intended to assist you in your continued environmental review of this proposal. Future consultation with the U.S. Fish and Wildlife Service (Service) may be required under the Fish and Wildlife Coordination Act if project activities are anticipated to impact jurisdictional wetlands, and/or the Endangered Species Act if project activities are anticipated to affect federally listed species.

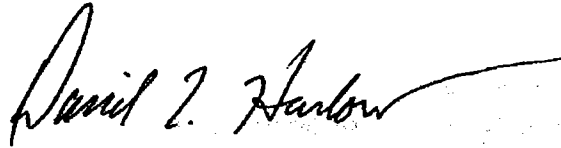
Enclosure A provides a list of sensitive species that may occur in or near the project site. The Service recommends that surveys be completed by a qualified biologist on the proposed project site to confirm the presence or absence of special-status species or their habitats. Enclosure B recommends general guidelines for identifying and mitigating project impacts to fish, wildlife, and their habitats. The Council on Environmental Quality developed regulations for implementing the National Environmental Policy Act, and defines mitigation to include: (1) avoiding the impact; (2) minimizing the impact; (3) rectifying the impact; (4) reducing or eliminating the impact over time; and (5) compensating for impacts. The Service supports and adopts this definition of mitigation and considers the specific elements to represent the desirable sequence of steps in the mitigation planning process. Accordingly, we maintain the best way to mitigate adverse biological impacts is avoidance when at all possible.

Mr. Andy Newsum

2

We encourage you to use these guidelines to develop a comprehensive environmental document that addresses these needs. If you have any questions regarding these comments, please contact Jerry Bielfeldt (Watershed Planning Branch) in the Sacramento Fish and Wildlife Office at (916) 414-6584.

Sincerely,



David L. Harlow
Acting Field Supervisor

Enclosures

cc:

AES, Portland, OR

RM, CDFG, Region 2, Rancho Cordova, CA (w/o enclosures)

Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Selected Quads Listed Below

Reference File No. 1-1-03-SP-0278

State Route 99 Auxiliary Lane, Chico

November 7, 2002

QUAD: 577A CHICO

Listed Species

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)

Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS

Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

Conservancy fairy shrimp, *Branchinecta conservatio* (E)

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

vernal pool tadpole shrimp, *Lepidurus packardii* (E)

Plants

Butte County (Shippee) meadowfoam, *Limnanthus floccosa ssp. californica* (E)

Proposed Species

Invertebrates

Critical habitat, vernal pool invertebrates, See Federal Register 67:59883 (PX)

Plants

Critical habitat, vernal pool plants, See Federal Register 67:59883 (PX)

Candidate Species

Birds

Western yellow-billed cuckoo, *Coccyzus americanus occidentalis* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern**Mammals**

- pale Townsend's big-eared bat, *Corynorhinus (=Plecotus) townsendii pallescens* (SC)
- Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
- Marysville Heermann's kangaroo rat, *Dipodomys californicus eximius* (SC)
- spotted bat, *Euderma maculatum* (SC)
- greater western mastiff-bat, *Eumops perotis californicus* (SC)
- small-footed myotis bat, *Myotis ciliolabrum* (SC)
- long-eared myotis bat, *Myotis evotis* (SC)
- fringed myotis bat, *Myotis thysanodes* (SC)
- long-legged myotis bat, *Myotis volans* (SC)
- Yuma myotis bat, *Myotis yumanensis* (SC)
- San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

- tricolored blackbird, *Agelaius tricolor* (SC)
- grasshopper sparrow, *Ammodramus savannarum* (SC)
- short-eared owl, *Asio flammeus* (SC)
- western burrowing owl, *Athene cunicularia hypugaea* (SC)
- oak titmouse, *Baeolophus inornatus* (SLC)
- Aleutian Canada goose, *Branta canadensis leucopareia* (D)
- Swainson's hawk, *Buteo Swainsoni* (CA)
- ferruginous hawk, *Buteo regalis* (SC)
- Lawrence's goldfinch, *Carduelis lawrencei* (SC)
- Vaux's swift, *Chaetura vauxi* (SC)
- black tern, *Chlidonias niger* (SC)
- black swift, *Cypseloides niger* (SC)
- white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)
- little willow flycatcher, *Empidonax traillii brewsteri* (CA)
- American peregrine falcon, *Falco peregrinus anatum* (D)
- greater sandhill crane, *Grus canadensis tabida* (CA)
- loggerhead shrike, *Lanius ludovicianus* (SC)
- Lewis' woodpecker, *Melanerpes lewis* (SC)
- long-billed curlew, *Numenius americanus* (SC)
- Nuttall's woodpecker, *Picoides nuttallii* (SLC)
- white-faced ibis, *Plegadis chihi* (SC)
- bank swallow, *Riparia riparia* (CA)

rufous hummingbird, *Selasphorus rufus* (SC)
 California thrasher, *Toxostoma redivivum* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylei* (SC)
 western spadefoot toad, *Spea hammondi* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
 longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
 Sacramento anthicid beetle, *Anthicus sacramento* (SC)
 California linderiella fairy shrimp, *Linderiella occidentalis* (SC)

Plants

Butte County calycadenia, *Calycadenia oppositifolia* (SLC)
 Butte fritillary, *Fritillaria eastwoodiae* (SC)
 adobe lily, *Fritillaria pluriflora* (SC) *
 veiny monardella, *Monardella douglasii* ssp. *venosa* (SC) *
 Butte County sidalcea (=checkerbloom), *Sidalcea robusta* (SC)

KEY:

(E)	Endangered	Listed (in the Federal Register) as being in danger of extinction.
(T)	Threatened	Listed as likely to become endangered within the foreseeable future.
(P)	Proposed	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX)	Proposed Critical Habitat	Proposed as an area essential to the conservation of the species.
(C)	Candidate	Candidate to become a proposed species.
(SC)	Species of Concern	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(SLC)	Species of Local Concern	Species of local or regional concern or conservation significance.
(MB)	Migratory Bird	Migratory bird
NMFS	NMFS species	Under the jurisdiction of the National Marine Fisheries Service. Contact them directly.
(D)	Delisted	Delisted. Status to be monitored for 5 years.
(CA)	State-Listed	Listed as threatened or endangered by the State of California.
(*)	Extirpated	Possibly extirpated from this quad.
(**)	Extinct	Possibly extinct.
	Critical Habitat	Area essential to the conservation of a species.

Endangered and Threatened Species that May Occur in or be Affected by
Projects in the Area of the Following California Counties
Reference File No. 1-1-03-SP-0278
State Route 99 Auxiliary Lane, Chico
November 7, 2002

BUTTE COUNTY

Listed Species

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

California tiger salamander, *Ambystoma californiense* (C/E)

Critical habitat, California red-legged frog, *Rana aurora draytonii* (T)

Fish

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS

Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS

Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Sacramento splittail, *Pogonichthys macrolepidotus* (T)

delta smelt, *Hypomesus transpacificus* (T) *

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Invertebrates

Conservancy fairy shrimp, *Branchinecta conservatio* (E)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

vernal pool tadpole shrimp, *Lepidurus packardii* (E)

Plants

Butte County (Shippee) meadowfoam, *Limnanthes floccosa* ssp. *californica* (E)

Greene's tuctoria (=Orcutt grass), *Tuctoria greenii* (E)

Hoover's spurge, *Chamaesyce hooveri* (T)

hairy Orcutt grass, *Orcuttia pilosa* (E)

Proposed Species

Invertebrates

Critical habitat, vernal pool invertebrates, See *Federal Register* 67:59883 (PX)

Plants

Critical habitat, vernal pool plants, See *Federal Register* 67:59883 (PX)

Candidate Species**Birds**

Western yellow-billed cuckoo, *Coccyzus americanus occidentalis* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Critical habitat, Central Valley fall/late fall-run chinook, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern**Mammals**

Marysville Heermann's kangaroo rat, *Dipodomys californicus eximius* (SC)

Pacific fisher, *Martes pennanti pacifica* (SC)

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Sierra Nevada snowshoe hare, *Lepus americanus tahoensis* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

long-legged myotis bat, *Myotis volans* (SC)

pale Townsend's big-eared bat, *Corynorhinus (=Plecotus) townsendii pallascens* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

spotted bat, *Euderma maculatum* (SC)

Birds

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

American bittern, *Botaurus lentiginosus* (SC)

American dipper, *Cinclus mexicanus* (SLC)

American peregrine falcon, *Falco peregrinus anatum* (D)

California spotted owl, *Strix occidentalis occidentalis* (SC)

California thrasher, *Toxostoma redivivum* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)

Nuttall's woodpecker, *Picoides nuttallii* (SLC)

Swainson's hawk, *Buteo Swainsoni* (CA)

Vaux's swift, *Chaetura vauxi* (SC)

bank swallow, *Riparia riparia* (CA)

black swift, *Cypseloides niger* (SC)

black tern, *Chlidonias niger* (SC)

common loon, *Gavia immer* (SC)
 ferruginous hawk, *Buteo regalis* (SC)
 grasshopper sparrow, *Ammodramus savannarum* (SC)
 greater sandhill crane, *Grus canadensis tabida* (CA)
 hermit warbler, *Dendroica occidentalis* (SC)
 little willow flycatcher, *Empidonax traillii brewsteri* (CA)
 loggerhead shrike, *Lanius ludovicianus* (SC)
 northern goshawk, *Accipiter gentilis* (SC)
 oak titmouse, *Baeolophus inornatus* (SLC)
 olive-sided flycatcher, *Contopus cooperi* (SC)
 rufous hummingbird, *Selasphorus rufus* (SC)
 short-eared owl, *Asio flammeus* (SC)
 tricolored blackbird, *Agelaius tricolor* (SC)
 western burrowing owl, *Athene cunicularia hypugaea* (SC)
 white-faced ibis, *Plegadis chihi* (SC)
 white-headed woodpecker, *Picoides albolarvatus* (SLC)

Reptiles

California horned lizard, *Phrynosoma coronatum frontale* (SC)
 San Joaquin coachwhip (=whipsnake), *Masticophis flagellum ruddocki* (SC)
 northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

Amphibians

Cascades frog, *Rana cascadae* (SC)
 foothill yellow-legged frog, *Rana boylei* (SC)
 mountain yellow-legged frog, *Rana muscosa* (SC)
 western spadefoot toad, *Spea hammondi* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
 longfin smelt, *Spirinchus thaleichthys* (SC)
 river lamprey, *Lampetra ayresi* (SC)

Invertebrates

California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
 Sacramento Valley tiger beetle, *Cicindela hirticollis abrupta* (SC)
 Sacramento anthicid beetle, *Anthicus sacramento* (SC)

Plants

Ahart's (dwarf) rush, *Juncus leiospermus* var. *ahartii* (SC)
 Ahart's whitlow-wort (=Ahart's paronychia), *Paronychia ahartii* (SC)
 Brandegee's clarkia, *Clarkia biloba* ssp. *brandegeae* (SLC)

- Butte County calycadenia, *Calycadenia oppositifolia* (SLC)
 Butte County catchfly (=long-stiped campion), *Silene occidentalis* ssp. *longistipitata* (SC)
 Butte County golden (=Jim's) clover, *Trifolium jokerstii* (SLC)
 Butte County morning-glory, *Calystegia atriplicifolia* ssp. *buttensis* (SC)
 Butte County sidalcea (=checkerbloom), *Sidalcea robusta* (SC)
 Butte fritillary, *Fritillaria eastwoodiae* (SC)
 California beaked-rush, *Rhynchospora californica* (SC)
 Cantelow's lewisia, *Lewisia cantelowii* (SC)
 Enterprise clarkia, *Clarkia mosquinii* ssp. *xerophila* (SC)
 Feather River stonecrop, *Sedum albomarginatum* (SC)
 Ferris's milk-vetch, *Astragalus tener* var. *ferrisiae* (SC)
 Hall's rupertia (=Hall's California tea), *Rupertia hallii* (SLC)
 Henderson's bent grass, *Agrostis hendersonii* (SC)
 Jepson's onion, *Allium jepsonii* (SC)
 Mosquin's clarkia, *Clarkia mosquinii* ssp. *mosquinii* (SC)
 Quincy lupine, *Lupinus dalesiae* (SC) *
 Red Bluff (dwarf) rush, *Juncus leiospermus* var. *leiospermus* (SC)
 adobe lily, *Fritillaria pluriflora* (SC)
 big-scale (=California) balsamroot, *Balsamorhiza macrolepis* var. *macrolepis* (SLC)
 brittlescale, *Atriplex depressa* (SC)
 closed-lip (closed-throated) beardtongue, *Penstemon personatus* (SC)
 clustered lady's-slipper, *Cypripedium fasciculatum* (SC)
 cut-leaved ragwort, *Senecio* (=Packera) *eurycephalus* var. *lewisrosei* (SLC)
 heartscale, *Atriplex cordulata* (SC)
 lesser saltscale, *Atriplex minuscula* (SC)
 little mousetail, *Myosurus minimus* ssp. *apus* (SC)
 pink creamsacs, *Castilleja rubicundula* ssp. *rubicundula* (SLC)
 scalloped moonwort, *Botrychium crenulatum* (SC)
 subtle orache, *Atriplex subtilis* (SLC)
 upswept moonwort, *Botrychium ascendens* (SC)
 valley sagittaria (=Sanford's arrowhead), *Sagittaria sanfordii* (SC)
 veiny monardella, *Monardella douglasii* ssp. *venosa* (SC)
 white-stemmed (=whitestem) clarkia, *Clarkia gracilis* ssp. *albicaulis* (SLC)

ENCLOSURE B

The goal of the U.S. Fish and Wildlife Service is to conserve, protect and enhance fish, wildlife, and their habitats by timely and effective provision of fish and wildlife information and recommendations. To assist us in accomplishing this goal, we would like to see the items described below discussed in your environmental documents for the proposed project.

Project Description. The document should very clearly state the purposes of, and document the needs for, the proposed project so that the capabilities of the various alternatives to meet the purposes and needs can be readily determined.

A thorough description of all permanent and temporary facilities to be constructed and work to be done as a part of the project should be included. The document should identify any new access roads, equipment staging areas, and gravel processing facilities which are needed. Figures accurately depicting proposed project features in relation to natural features (such as streams, wetlands, riparian areas, and other habitat types) in the project area should be included.

Affected Environment. The document should show the location of, and describe, all vegetative cover types in the areas potentially affected by all project alternatives and associated activities. Tables with acreages of each cover type with and without the project for each alternative would also be appropriate. We recommend that all wetlands in the project area be delineated and described according to the classification system found in the Service's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin 1979). The Service's National Wetland Inventory maps would be one starting point for this effort.

The document should present and analyze a full range of alternatives to the proposed project. At least one alternative should be designed to avoid all impacts to wetlands, including riparian areas. Similarly, within each alternative, measures to minimize or avoid impacts to wetlands should be included.

Lists of fish and wildlife species expected to occur in the project area should be in the document. The lists should also indicate for each species whether or not it is a resident or migrant, and the period(s) of the year it would be expected in the project area.

Environmental Consequences. The sections on impacts to fish and wildlife should discuss impacts from vegetation removal (both permanent and temporary), filling or degradation of wetlands, interruption of wildlife migration corridors, and disturbance from trucks and other machinery during construction and/or operation. These sections should also analyze possible impacts to streams from construction of outfall structures, pipeline crossings, and filling. Impacts on water quality, including nutrient loading, sedimentation, toxics, biological oxygen demand, and temperature in receiving waters should also be discussed in detail along with the resultant effects on fish and aquatic invertebrates. Discussion of indirect impacts to fish, wildlife, and their habitats, including impacts from growth induced by the proposed project, should also be addressed in the document. The impacts of each alternative should be discussed in sufficient detail to allow comparison between the alternatives.

The cumulative impacts of the project, when viewed in conjunction with other past, existing, and foreseeable projects, need to be addressed. Cumulative impacts to fish, wildlife, wetlands and other habitats, and water quality should be included.

Mitigation Planning. Under provisions of the Fish and Wildlife Coordination Act, the Service advises the U.S. Army Corps of Engineers on projects involving dredge and fill activities in "waters of the United States", of which wetlands and some riparian habitats are subcategories. Since portions of this proposal may ultimately require a Corps permit, the Service will subsequently be involved under the Coordination Act. Therefore, if you have not done so already, we suggest that you or your representative consult the Corps regarding onsite wetlands and related habitats that may fall under their jurisdiction, and include this information in the draft document. When reviewing Corps public notices, the Service generally does not object to projects meeting the following criteria:

1. They are ecologically sound;
2. The least environmentally damaging reasonable alternative is selected;
3. Every reasonable effort is made to avoid or minimize damage or loss of fish and wildlife resources and uses;
4. All important recommended means and measures have been adopted, with guaranteed implementation to satisfactorily compensate for unavoidable damage or loss consistent with the appropriate mitigation goal; and
5. For wetlands and shallow water habitats, the proposed activity is clearly water dependent and there is a demonstrated public need.

The Service may recommend the "no project" alternative for those projects which do not meet all of the above criteria, and where there is likely to be a significant fish and wildlife resource loss.

When projects impacting waterways or wetlands are deemed acceptable to the Service, we recommend full mitigation for any impacts to fish and wildlife. The Council on Environmental Quality regulations for implementing the National Environmental Policy Act define mitigation to include: 1) Avoiding the impact; 2) minimizing the impact; 3) rectifying the impact; 4) reducing or eliminating the impact over time; and 5) compensating for impacts. The Service supports and adopts this definition of mitigation and considers the specific elements to represent the desirable sequence of steps in the mitigation planning process. Accordingly, we maintain that the best way to mitigate for adverse biological impacts is to avoid them altogether.

The document should describe all measures proposed to avoid, minimize, or compensate for impacts to fish and wildlife and their habitats. The measures should be presented in as much detail as possible to allow us to evaluate their probable effectiveness.

4

The plan should require the preparation of "as-built" plans. Such plans provide valuable information, especially if the mitigation effort fails. Similarly, a "time-zero" report should be mandated. This report would describe exactly what was done during the construction of the mitigation project, what problems were encountered, and what corrections or modifications to the plans were undertaken.

The plan should detail how the site is to be maintained during the mitigation establishment period, and how long the establishment period will be. It will also be important to note what entity will perform the maintenance activities, and what entity will ultimately own and manage the site. In addition, a mechanism to fund the maintenance and management of the site should be established and identified. A permanent easement should be placed on the property used for the mitigation that would preclude incompatible activities on the site in perpetuity.

Finally, in some cases, a performance bond may be required as part of the mitigation plan. The amount of the bond should be sufficient to cover the costs of designing and implementing an adequate mitigation plan (and purchasing land if needed) should the proposed plan not succeed.

Reference

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C. 103 pp.

2525 Dominic Drive, Suite J
Chico, CA 95928

(530) 891-2882
(530) 891-2878 Fax



W. James Wagoner
Air Pollution Control Officer
Robert McLaughlin
Asst. Air Pollution Control Officer

November 26, 2002

Andy Newsum
Butte County Association of Governments
965 Fir Street
Chico, CA 95928-6301

RECEIVED

DEC 02 2002

B.C.A.G.

Re: Notice of Preparation of an Environmental Impact Report (EIR) for State Route 99
Auxiliary Lane Project between State Route 32 and East 1st Avenue

Dear Mr. Newsum:

The District has reviewed the information submitted for the above-proposed project. Based on the information provided the District submits the following.

The District recommends including in the analysis of construction-related emissions the potential diesel exhaust particulate emission. Diesel exhaust particulate emissions are a State toxic air contaminant.

The District appreciates the opportunity to comment on the proposed project. If you have any questions or comments, please contact the District at 891-2882.

Sincerely,

A handwritten signature in black ink, appearing to read "Gail Williams", written in a cursive style.

Gail Williams,
Air Quality Planner

File No. 3455



P.O. Box 2285

Chico, CA 95927

(530) 343-8356
(VELO)

(800) 482-2453
(4U2-BIKE)

FAX (530) 342-4646
(34A-GOGO)

Email:
Ed@chicovelo.com
OKg

Web Site:
www.chicovelo.com
OKg



Andy Newsum
Butte County Association of Governments
965 Fir St
Chico, CA 95928-6301

11-26-02

Re: EIR for SR 99 Auxiliary Lane Project

This project is a good opportunity to reestablish the surface street grid where it has been severed by the building of SR 99. Adding a bicycle/pedestrian tunnel to relink Filbert Ave would be a good amenity. It would not only provide access to the neighborhood as an alternative to a busy Vallombrosa Ave, but could also provide low cost "fill" for the parts of the project that would require it.

I hope that this possibility can be addressed in the EIR for this project.

Ed
Ed McLaughlin
Gen Mgr
Chico Velo Cycling Club

RECEIVED

NOV 27 2002

B.C.A.G.

Environmental Impact Report

comments for BCAG

11/26/02

1. Aesthetics

a, c, & d.

As a nearby resident of the proposed project, this aspect is of importance to me. I'd like to see:

1) routing to the inner as opposed to outer direction. This will lessen the negative impact on residents, & cost less (due to less grading being done). I also do not want to see Hwy 99 turned into a ~~4~~⁴ lane or more, etc) wider freeway thru the central valley, thus promoting sprawl.

2) I would also like to see the issues of noise & light/glare addressed as much as possible. Negative impact on nearby residents/businesses should be lessened as much as possible. Without sounding too much like a "NIMBY", the fact is that these homes have been here for about 50 years & it isn't our fault that the planning created this situation.

3) Specifically: how to avoid extra light from new fixtures spilling into residents? How effective could a sound wall be in lessening new noise? How many trees would be taken out for the new ramps (there is a beautiful Emperor tree near the S. Bond ramp at E. 1st). Will the traffic mess on E. 1st Ave be worsened or improved by the project?

2. Air Quality: I feel that mass transit, as opposed to bigger highways leading to more cars, is the best way to improve the air quality. What is the position of BCAG & local/state agencies on this issue. I'd like to see a high speed rail link from, say, Sac. → Redding.
(light rail)

How can violation of air quality be avoided/mitigated with this project? I don't know, but sure don't look forward to breathing more auto pollution in my home!

4) Biological Resources

Of course, all concerned must preserve as much as possible of biological resources. I do feel, however, that it is better to sacrifice the oleander bushes (in middle of road now) by routing inside than going outside with new lanes (which could also destroy trees).

5) Cultural Resources - I am not familiar with this area

6) Geology - As I've said, routing to the outside would be difficult due to the steep grade, causing erosion.

7) Hydrology - How to avoid local flooding & channel runoff?

8) Land Use - Try to do what is best for Bidwell Park.

Also, you state that the project will improve the established community, but this could also include substantial negative impacts on nearby residents, so please keep our concerns foremost in mind.

9) Noise - What can you do to lessen the impact of more noise on my neighborhood? Will you pay for double-pane windows, for example? Put up sound walls?

10) Population/Housing - This is a problem, how new/bigger highways leads to sprawl. ~~that~~ This can only be addressed by looking at the BIG picture by many (often competing, with different interests) agencies, local & state/national govt. Has this issue been addressed? I doubt it.

11) Recreation - any improvements to bike & pedestrian trails in Bidwell Park appreciated, we use them often

12) Traffic - I know you will say that the speed limit is up to the State, but I feel it's important to bring this up. The speed limit on Hwy 99, (from 20th St. to East Ave, where congestion is the worst) should be immediately reduced to 55 MPH.

People do not have a right to go fast thru a congested area. Look at Hwy 101 thru the Eureka area; signs are posted well in advance that a congested area is coming up, & flashing lights tell motorists to slow down. We should do the same.

How will congestion on E 1st Ave be affected by the project? I will be glad to see an improvement in safety regarding ON/OFF ramps

I would also like to know the No Project results.

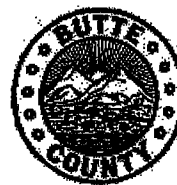
Sincerely,

Mark S. Jance

1027 Sheridan Ave
Chico 95926

343-7546

Appendix B Public Review Process



PUBLIC INFORMATION MEETING FOR THE SR 99 / CHICO CORRIDOR STUDY

**MAY 29, 2002
6:00 to 9:00 p.m.**

**CITY OF CHICO
421 Main St.
Council Chambers**

The Butte County Association of Governments (BCAG) is hosting a public scoping meeting to discuss proposed improvements to State Route (SR) 99. The proposed improvements consist of adding northbound (NB) and southbound (SB) auxiliary lanes on SR 99 between SR 32 and East 1st Avenue interchanges, the widening of SR 32 on and off ramps and East 1st Avenue on and off ramps. Included in the project will be the widening of East 1st Avenue to two lanes in each direction through the interchange and dual left turn lanes on the NB off-ramp to facilitate the turning movement from the ramp onto westbound East 1st Avenue. A Project Development Team which consists of representatives from BCAG, Caltrans, Butte County, the City of Chico, and members of the consultant team have been assembled to help identify issues and develop consensus on the proposed improvements.

The meeting will include:

6:00 to 6:30 Presentation
6:30 to 7:00 Review exhibits showing proposed improvement options (open-house style)
7:00 to 7:30 Repeat Presentation
7:30 to 9:00 Question and Answer Period

The meeting's objective is to provide the public the opportunity to ask questions, provide input, and share concerns with the consultant team and the Project Development Team. Residents living adjacent to the project are strongly encouraged to attend this initial public scoping meeting.

Special Accommodations

For individuals with disabilities, we can provide services such as sign language interpreting, real-time captioning, note-takers, reading or writing assistance, or training/meeting materials in Braille, large print, audiocassette or computer disk. To obtain such services or copies in one of these alternative formats, please contact Andy Newsum at Butte County Association of Governments 965 Fir Street, Chico or call 530-879-2468 one week prior to the meeting.

For individuals that cannot attend this meeting, comments may be provided by letter or phone. Written comments should be sent to:

**Butte County Association of Governments (BCAG)
965 Fir Street, Chico, CA 95928
Phone (530) 879-2468
Attn: Andy Newsum, BCAG Project Manager
Internet Web Site - www.bcag.org**

**To obtain more information you may
contact Andy Newsum, BCAG at**

(530) 879-2468

or

**Alan Glen, Quincy Engineering at
(916) 368-9181**

or

Write to:

Mr. Andy Newsum

Project Manager

Butte County Association Of Governments

965 Fir Street

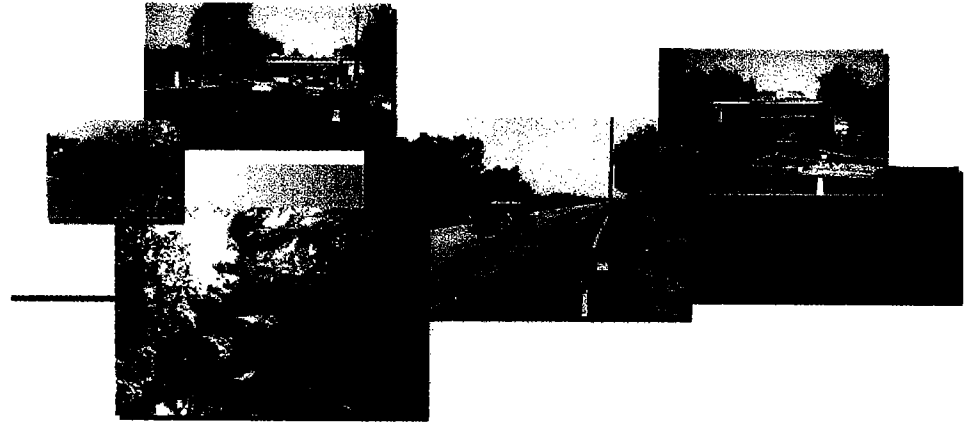
Chico, CA 95928

Email: anewsum@bcag.org

Thank you for attending.



STATE ROUTE 99 AUXILIARY LANES PROJECT PUBLIC SCOPING MEETING



May 29, 2002

6:00 p.m. to 9:00 p.m.

**City Of Chico
Council Chambers
421 Main Street
Chico**



**U.S. Department
of Transportation
Federal Highway
Administration**



What is the purpose of this meeting?

Butte County Association of Governments (BCAG), in cooperation with Caltrans, Butte County, and the City of Chico, is hosting this public scoping meeting to provide the public an opportunity to review project exhibits and the scope of the environmental document, obtain information about the project, ask questions, and provide input to the project team as this project progresses. Your comments and questions provide insight into important local issues that should be considered.

Tonight's Agenda

- 6:00 to 6:30 p.m. Project Presentation:** an overview by the project team
6:30 to 7:00 p.m. Open House: an opportunity to review displays, ask questions, and enjoy refreshments.
7:00 to 7:30 p.m. Repeat Presentation
7:30 to 9:00 p.m. Question and Answer Period

What is being proposed?

The project proposes to reduce congestion and improve traffic operations and safety on State Route (SR) 99 between the SR 32 and East 1st Avenue interchanges and on East 1st Avenue in the area of the SR 99 interchange.

Project features include:

- ◇ Adding northbound and southbound auxiliary lanes on SR 99 between the SR 32 and East 1st Avenue interchanges
- ◇ Widening East 1st Avenue to 2 lanes in each direction through the interchange area with left turn lanes to the freeway on ramps
- ◇ Widening the northbound East 1st Avenue off ramp to provide 2 left turn lanes and 1 right turn lane
- ◇ Widening the southbound SR 32 off ramp to provide for two lanes
- ◇ Widening the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures on SR 99

Why is this work needed?

The City of Chico has experienced rapid growth. Increased traffic has produced congestion on SR 99. Due to limited road connections across Bidwell Park, local traffic depends on SR 99 for circulation in this corridor. Traffic projections show that traffic congestion will worsen and delays will increase if no improvements are made.

What has been accomplished so far?

At the request of BCAG and the City of Chico, Caltrans began investigating opportunities to provide improvements to SR 99 to help reduce traffic congestion. A public information workshop was held October 28, 1999 in Chico to allow residents, local officials, and interest groups to discuss issues related to possible improvements on SR 99. At that meeting, Caltrans presented options for providing an auxiliary lane to the outside of SR 99 with and without the use of retaining walls. As a result of input received at the meeting, a third alternative was added to the project that would provide an auxiliary lane to the inside within the freeway median.

Caltrans approved a Project Study Report on November 21, 2000, allowing BCAG to program funding to further study a potential project by developing a Project Report and preparing Environmental Documentation. Work has begun on this phase of the project. A Project Development Team consisting of representatives from BCAG, Caltrans, Butte County, City of Chico and members of a consultant team have been assembled to help identify issues and develop consensus on the proposed improvements.

Two alternatives are currently being studied:

- ◇ **OUTSIDE WIDENING:** Provide an auxiliary lane on SR 99 by widening the freeway to the outside using retaining walls to reduce impacts to adjacent properties.
- ◇ **MEDIAN WIDENING:** Provide an auxiliary lane on SR 99 by widening the freeway to the inside within the median.

What is the schedule?

ACTIVITY	SCHEDULE
Environmental Studies	Spring 2002 through Summer 2003
2nd Public Meeting	Summer 2003
Prepare Environmental Document	Summer 2003
Circulate Draft Environmental Document	Winter 2003/2004
Approve Environmental Document (ED)	Winter 2004/2005
Right-of-Way Acquisition & Final Design	12-18 months after ED approved
Construction*	18-24 months after final R/W

*The northbound and southbound auxiliary lanes may be split into separate construction projects to meet available funding. However, the environmental document will analyze all construction phases of the project.

Public Scoping Meeting

State Route 99 Auxiliary Lanes Project

Route 32 to East 1st Avenue



U.S. Department
of Transportation
Federal Highway
Administration



**QUINCY
ENGINEERING, INC.**

May 29, 2002

The Evening's Agenda

● **6:00 - 6:30 PM**

Presentation

● **6:30 - 7:00 PM**

**Open House, Review Exhibits,
Questions and Answers**

● **7:00 - 7:30 PM**

Repeat Presentation

● **7:30 - 9:00 PM**

**Open House, Review Exhibits,
Questions and Answers**

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

***Project Background* - Andy Newsum, BCAG Project Manager**



Purpose of Tonight's Meeting

- X Involve the public early in the process, keep them involved**
- X Identify issues or concerns regarding the proposal**

Project Funding and Sponsors

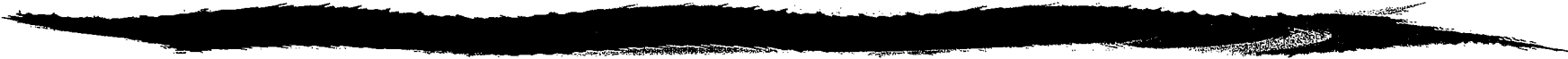
- X FHWA**
- X Caltrans**
- X BCAG**
- X City of Chico**

Project Study Report- approved in November 2000

- X Identified three alternatives**
- X Operations and Safety Project**
- X Public Workshop- October 1999**

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

***Project Background* - Andy Newsum, BCAG Project Manager**



- **BCAG's State Route 99 Corridor Study identified this project as one of the top priorities**
- **Cooperative Agreement for BCAG to manage project through Project Report and Environmental Document**
- **BCAG has hired a consultant team to conduct environmental studies and complete preliminary engineering to complete an Environmental Document.**

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Development Process - Alan Glen, Quincy Engineering

- **Identify needs**

- **Project Study Report- approved in November 2000**

 - ✕ **Identifies scope, estimated cost, and probable schedule**

- **Program project**

 - ✕ **Identify funding**

- **Preliminary Engineering and Environmental Studies**



 - ✕ **Identify issues, impacts, and resolutions**

 - ✕ **Prepare Project Report and Environmental Document**

- **Final Engineering Design and R/W Acquisition**

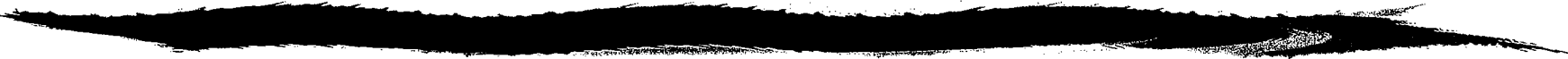
 - ✕ **Acquire right-of-way, obtain permits and prepare construction contract documents**

- **Construction**

- **Maintenance and operations**

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Purpose and Need



Reduce Traffic Delays and Congestion

- X Peak hour traffic volumes are approaching capacity**
- X High volume of merging vehicles**

Improve Safety and Operations

- X Accident rate higher than statewide average**
- X Short merge area for ramps**
- X East 1st Avenue off-ramp traffic backs up onto freeway**
- X Narrow shoulders exist on Bidwell Viaduct**

Provide Improved Access Across Bidwell Park

- X Limited north-south park crossings**
- X 70% of traffic of northbound on-ramp traffic exits at East 1st Avenue**

Project Overview



● PSR Alternatives that are being studied:

- X Alternative 1 - Outside widening with retaining walls**
- X Alternative 2 - Outside widening with major R/W impacts**
 - This Alternative has been DROPPED!!!!**
- X Alternative 3 - Median widening**
- X No Build**

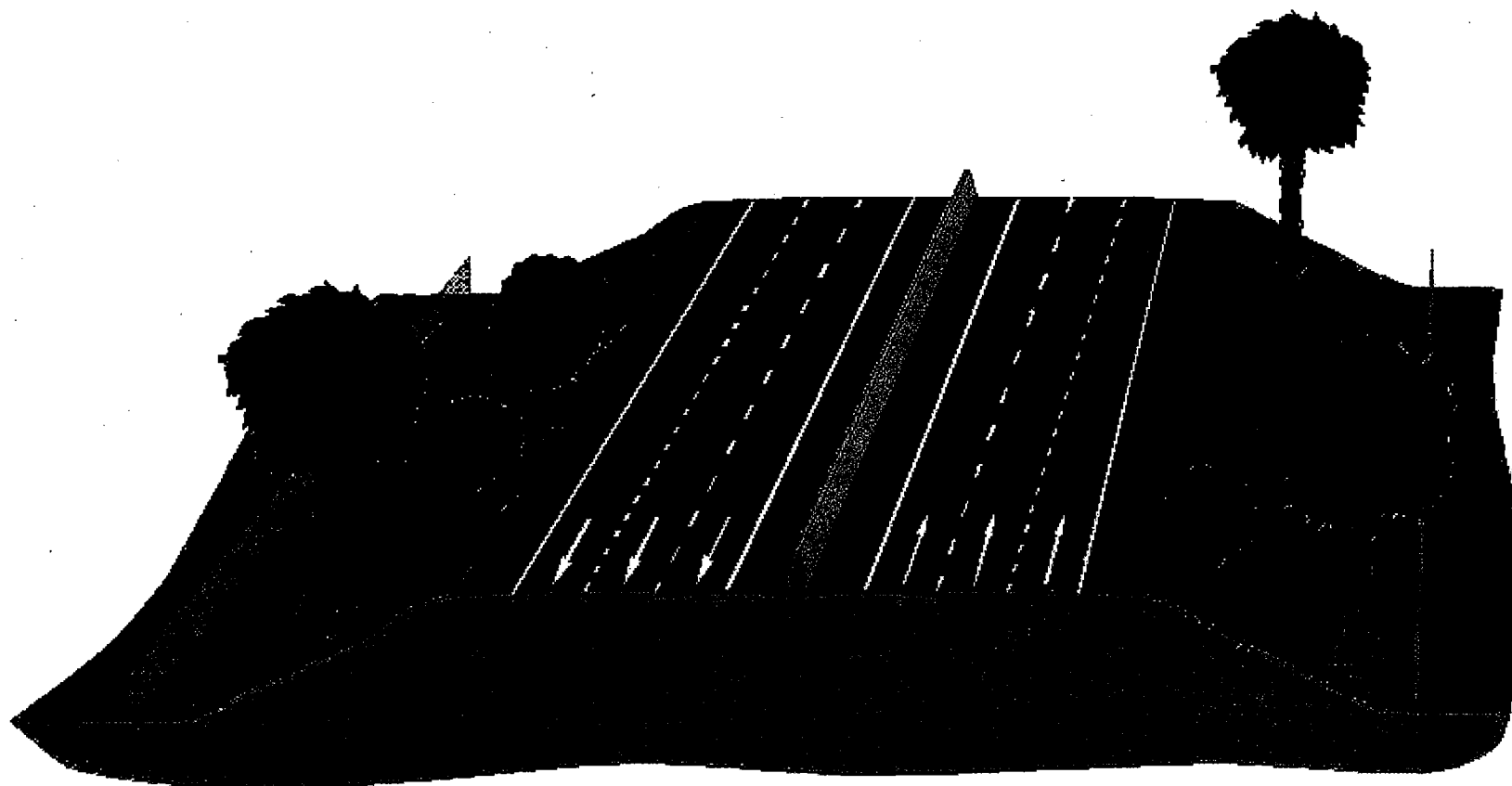
Project Overview (cont'd)



Proposed project features:

- X Adding northbound and southbound auxiliary lanes on Route 99**
- X Widening East 1st Avenue to two lanes in each direction**
- X Widening the northbound off-ramp to provide two left-turn lanes and one right-turn lane**
- X Widening the southbound off-ramp to provide a two-lane exit**
- X Widening the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures, including full shoulders**

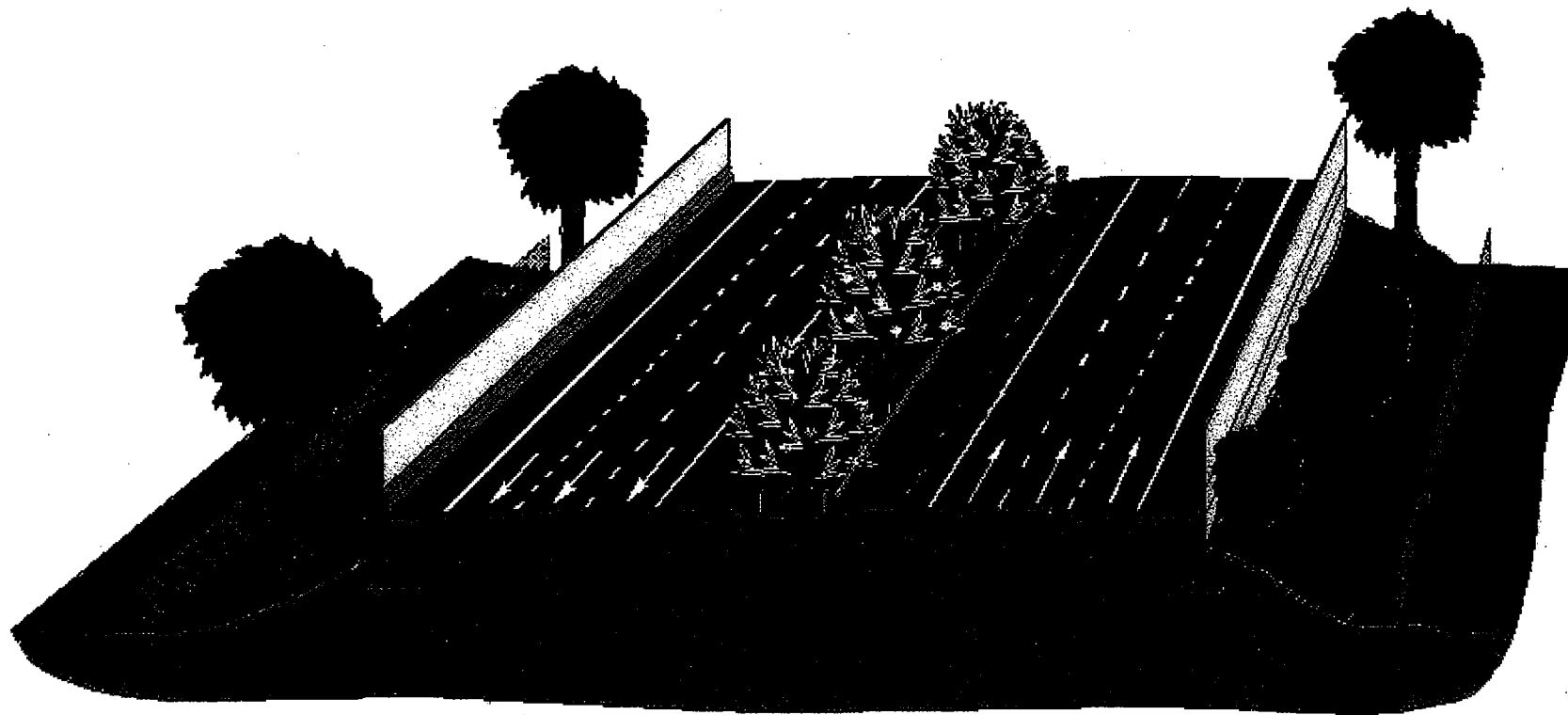
Median Widening Alternative



MEDIAN WIDENING ALTERNATIVE

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Outside Widening Alternative

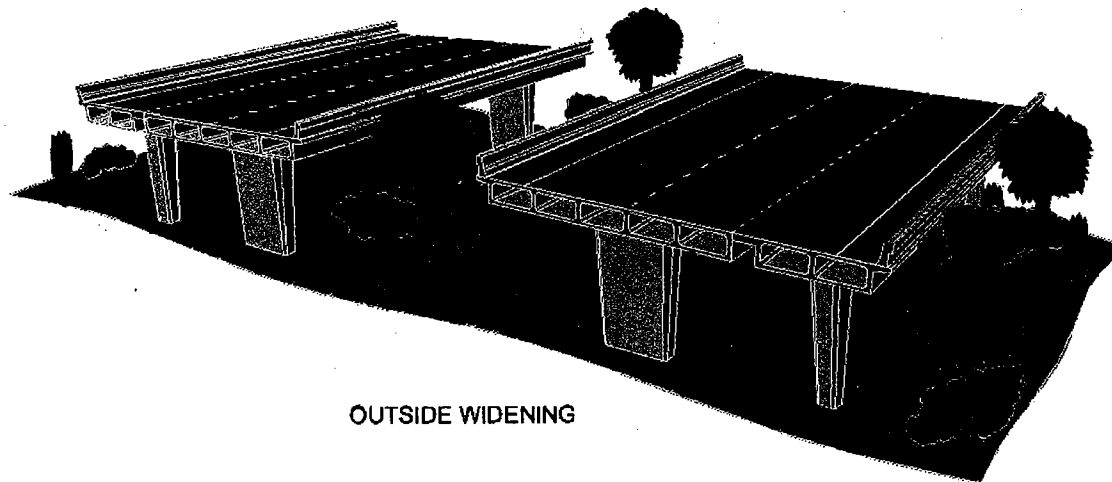


OUTSIDE WIDENING ALTERNATIVE

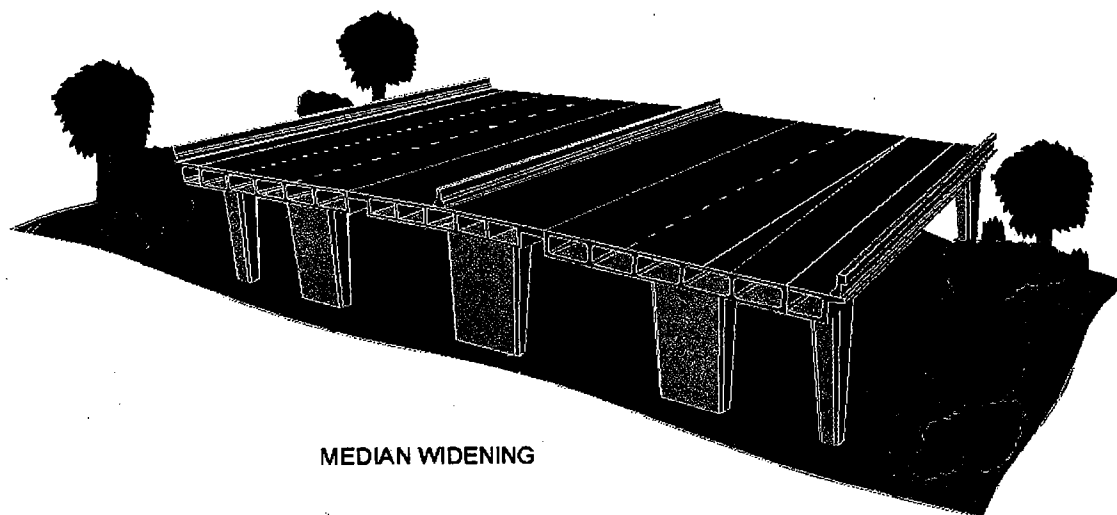
***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Bidwell Park Viaduct Alternatives

STATE ROUTE 99 AUXILIARY LANES PROJECT BIDWELL PARK VIADUCT



OUTSIDE WIDENING

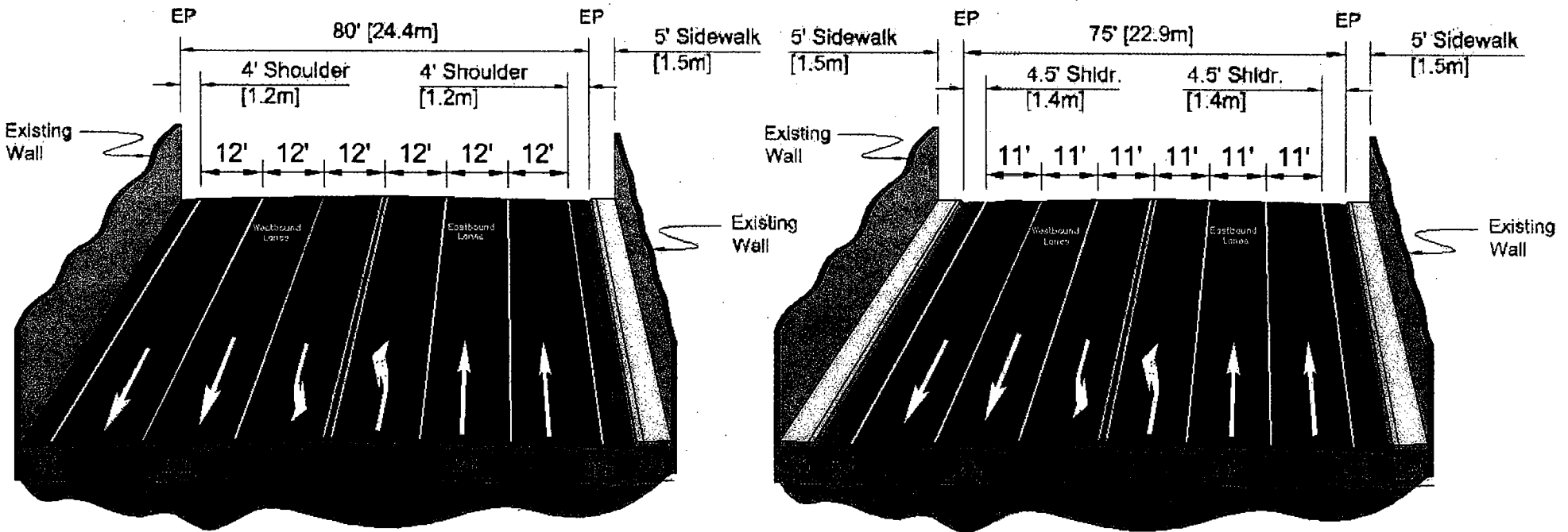


MEDIAN WIDENING

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

East 1st Avenue Options

STATE ROUTE 99 AUXILIARY LANES PROJECT EAST 1ST AVENUE UNDER STATE ROUTE 99



OPTION A
FULL LANE WIDTHS WITH 1 SIDEWALK

OPTION B
REDUCED LANE WIDTHS WITH 2 SIDEWALKS

**State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue**

Project Phasing



● The project will likely be phased to align with funding constraints:

X Phase 1:

- Widen lower half of northbound off-ramp at East 1st Avenue
- Widen East 1st Avenue to accommodate additional through-lane in each direction

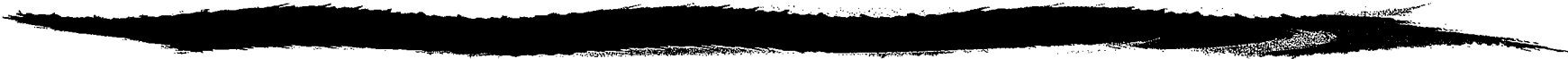
X Phase 2:

- Widen northbound on-ramp at Route 32
- Construct northbound auxiliary lane
- Widen upper half of northbound off-ramp at East 1st Avenue

X Phase 3:

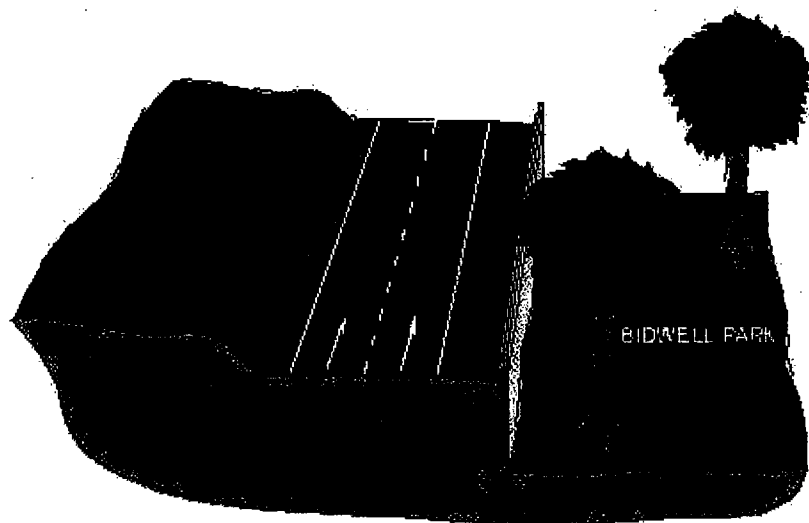
- Widen southbound off-ramp to Route 32
- Construct southbound auxiliary lane
- Widen southbound on-ramp from East 1st Avenue

Noise Implications

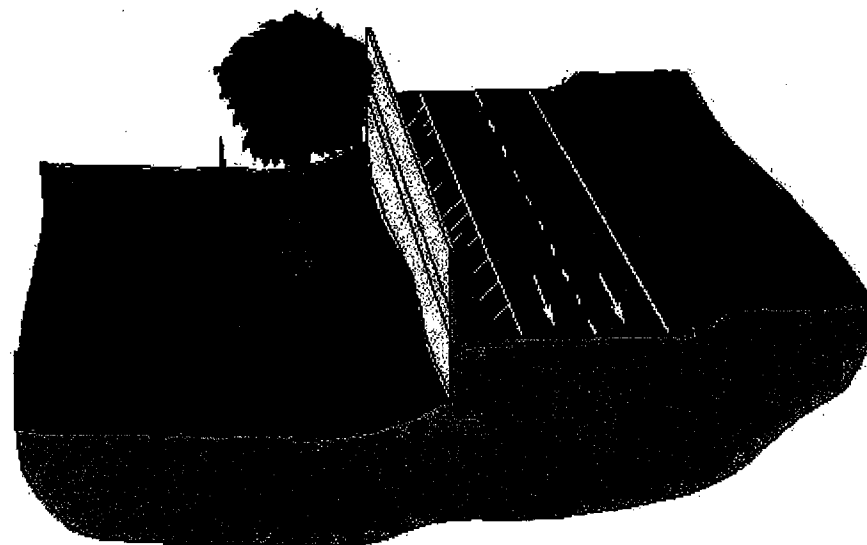


- A Noise Study will be conducted**
 - X Existing noise levels will be measured**
 - X Future noise levels will be predicted**
 - X Attenuation is considered feasible and reasonable if:**
 - Noise levels approach or exceed standard**
 - Project contributes substantial noise increase**
 - Attenuation of at least 5 dBA can be achieved**
 - Cost must be “reasonable”**
 - X Noise walls may also be recommended for the Bidwell Park Viaduct**
 - X Walls will not be constructed unless the community supports it!**

Possible Noise Walls



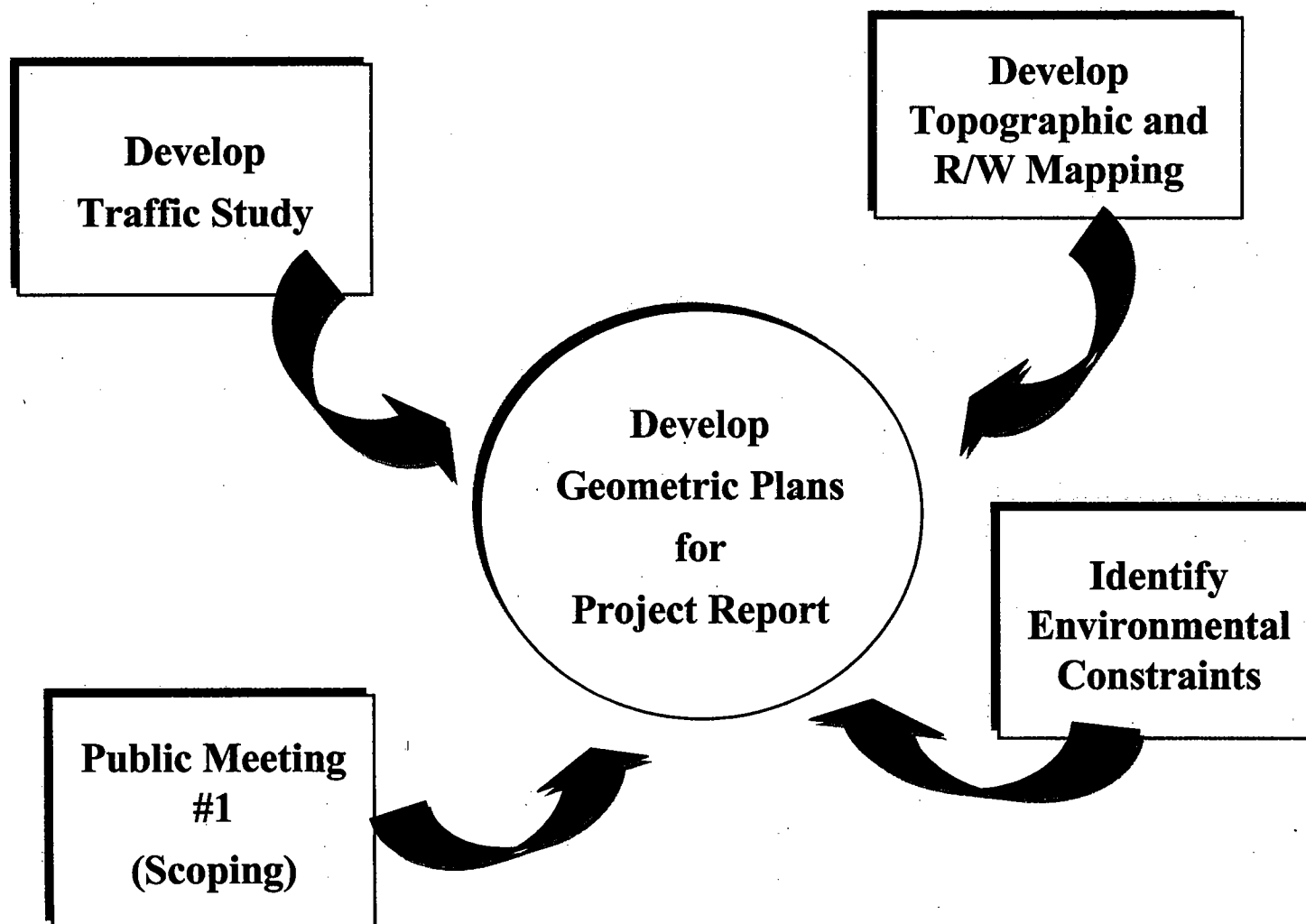
NORTHBOUND ON RAMP



SOUTHBOUND ON RAMP

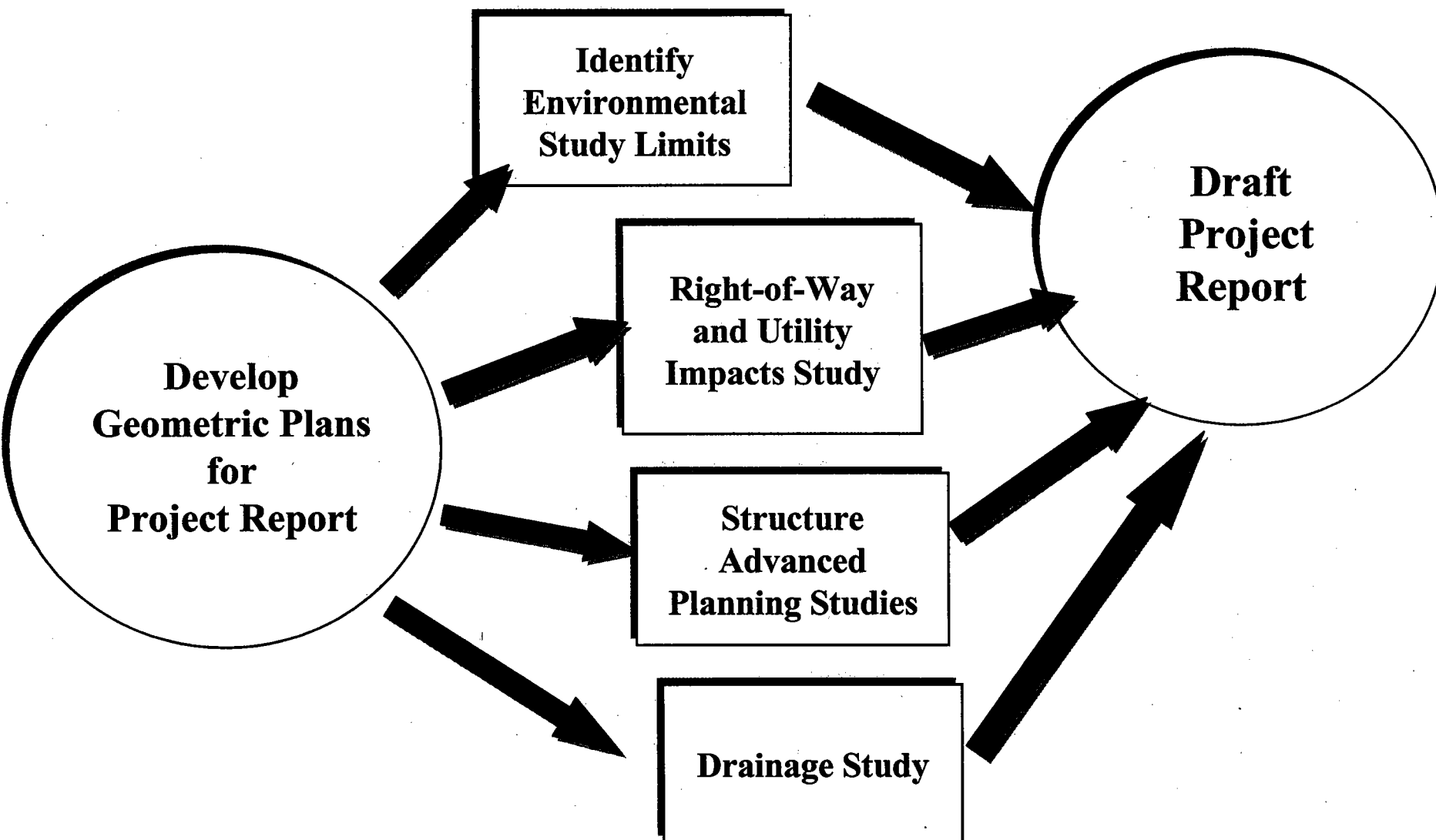
**State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue**

Project Report and Environmental Document Phase



***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Report and Environmental Document (cont'd)



***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Report and Environmental Document (cont'd)

Environmental Technical Studies (Spring 2002 to Summer 2003):

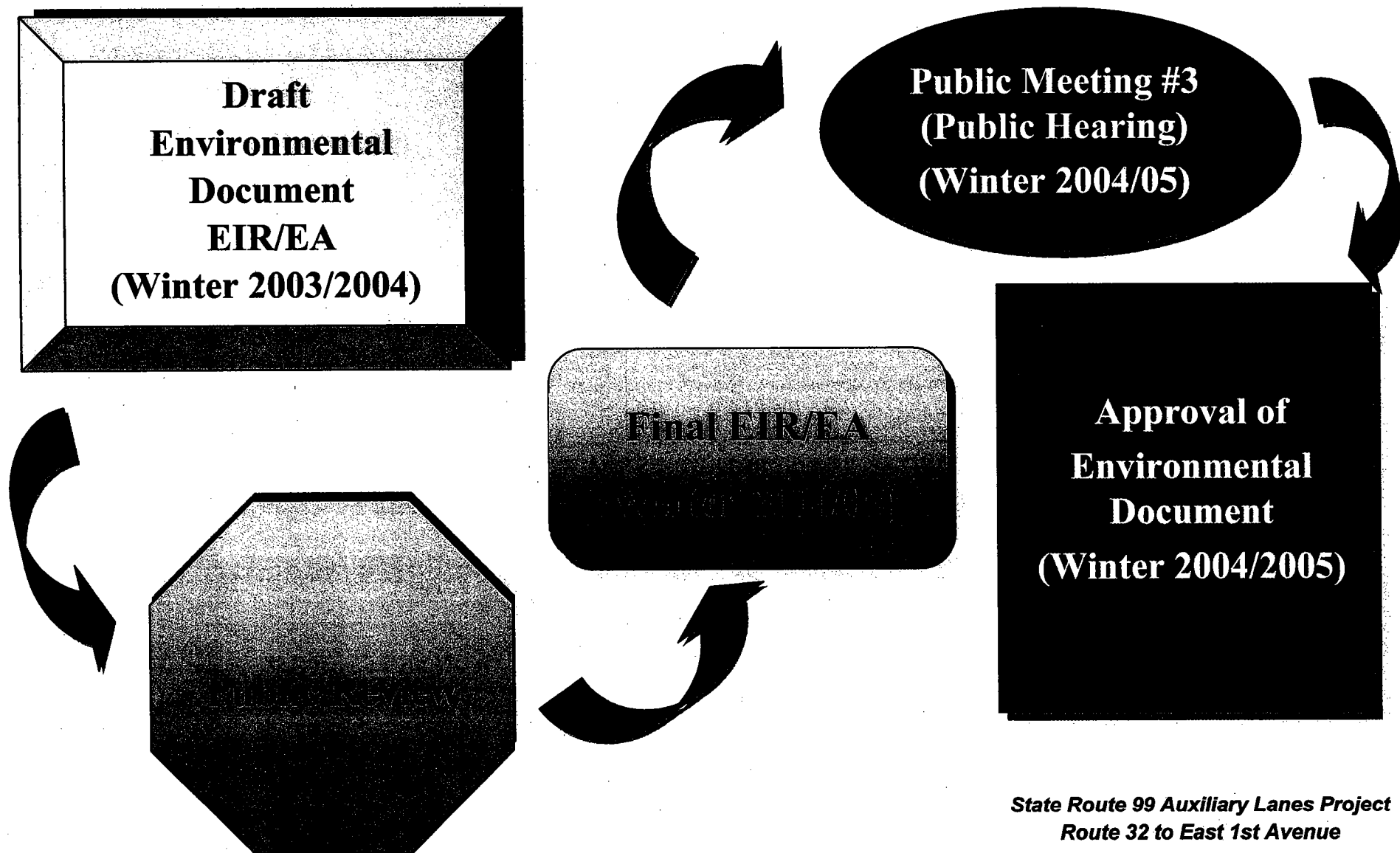
**Natural Environment
Community Impacts
Relocation Impact
Noise
Air Quality
Hazardous Materials
Cultural Resources
Geologic Resources
Visual Resources
Growth Inducement and
Cumulative Impact
Section 4(f)
Transportation**

**Public Meeting #2
(Summer 2003)**

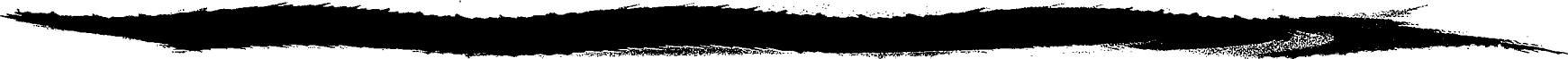
**Draft
Environmental
Document
EIR/EA
(Winter 2003/2004)**

**State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue**

Project Report and Environmental Document (cont'd)



Environmental Review Process - Debbie Loh, Jones & Stokes



- **Disclose significant environmental issues and impacts**
- **Identify ways to avoid or minimize environmental impacts**
- **Reduce environmental impacts by requiring implementation of feasible mitigation measures**
- **Disclose reasons for agency approval of projects with significant environmental impacts**
- **Foster interagency coordination in the review of projects**
- **Enhance public participation in the planning process**

Environmental Issues



- **Biological resources (Big Chico Creek)**
- **Section 4(f) - Bidwell Park and historic sites**
- **Cultural resources - structures and archeology**
- **Noise - construction and operations**
- **Air quality - construction and operations**
- **Visual resources - photo-simulations**
- **Transportation- change of access, construction closures**

PSR Estimated Project Costs

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	<u>Total</u>
Outside Widening	\$3.2 mil	\$5.4 mil	\$5.7 mil	\$14.3 mil
Median Widening	\$3.2 mil	\$7.8 mil	\$7.9 mil	\$18.9 mil

Cost Estimates include construction and R/W, in Year 2000 dollars

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Schedule

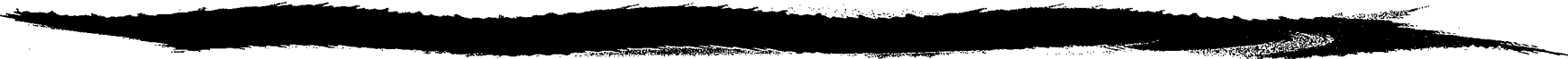


● Environmental Studies	Spring 2002 to Fall 2003
● Second Public Meeting	Summer 2003
● Circulate Draft Environmental Document	Winter 2003/2004
● Third Public Meeting (Public Hearing)	Winter 2004/2005
● Approval of Environmental Document	Winter 2004/2005
● Right-of-Way Acquisition	12 months after ED Approval
● Final Design	12 months after ED Approval
● Construction*	12 months after final R/W

** To be constructed in phases*

**State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue**

Public Input Opportunities



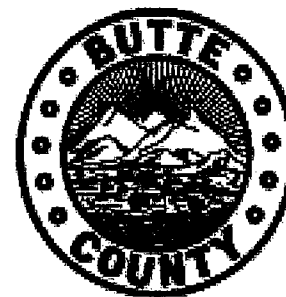
- **Fill out a comment card tonight or mail it in**
- **Sign in so that you will be on our mailing list**
- **Contact us by mail or phone - see the handout**
- **Attend future meetings**
- **Review the Draft Environmental Document in Winter 2003/2004**

***State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Questions?



U.S. Department
of Transportation
**Federal Highway
Administration**



**State Route 99 Auxiliary Lanes Project
Route 32 to East 1st Avenue**



Butte County Association
of Governments

State Route 99 Auxiliary Lanes Project
Public Scoping Meeting
May 29, 2002

NAME: _____
ADDRESS: _____
CITY, ZIP : _____

1. Please provide your comments on the 2 alternatives shown at this meeting:

Outside Widening Alternative:

Median Widening Alternative:

2. Do you prefer one alternative over the other?

☐ Prefer Outside Widening ☐ Prefer Median Widening ☐ No Preference

3. Are there other alternatives that should be considered?

4. Do you have any other comments that the Team should consider during environmental studies?
(please be as specific as possible)

Your comments are important.

Please drop this form into the comment box at this meeting or
mail it to the address shown on the back of this form.

You may also respond at our web site: www.bcag.org under the Planning/Programming icon

Please respond by June 14, 2002

RETURN ADDRESS

**Butte County Association of Governments
965 Fir Street
Chico, CA 95928-6301
Attention: Mr. Andy Newsum**



PUBLIC INFORMATION MEETING FOR THE STATE ROUTE 99 AUXILIARY LANES PROJECT

**MARCH 12, 2003
6:00 to 9:00 p.m.**

**CITY OF CHICO
421 Main St.
Council Chambers**

The Butte County Association of Governments (BCAG) is hosting a second public meeting to discuss proposed improvements to State Route (SR) 99. The proposed improvements consist of adding northbound (NB) and southbound (SB) auxiliary lanes on SR 99 between SR 32 and East 1st Avenue interchanges, the widening of SR 32 on and off ramps and East 1st Avenue on and off ramps. Included in the project will be the widening of East 1st Avenue from west of Sheridan Avenue to east of Sarah Avenue in order to facilitate movement through the interchange. A Project Development Team which consists of representatives from BCAG, Caltrans, Butte County, the City of Chico, and members of the consultant team have been assembled to help identify issues and develop consensus on the proposed improvements.

The meeting will include:

6:00 to 7:00 Open House to Review Project Exhibits
7:00 to 8:00 Formal Presentation
8:00 to 9:00 Open House to review Project Exhibits

The meeting's objective is to provide the public with project design alternatives and the opportunity to ask questions, provide input, and share concerns with the consultant team and the Implementing Agencies. The meeting will address:

- Construction within Bidwell Park
- Impacts to Adjacent Businesses and Residences
- Vehicle, Bicycle and Pedestrian Access Through the Project
- Possible Roundabouts at the East First Avenue/Hwy 99 Ramp Intersections
- Limited Access at the Sarah and Sheridan Avenues Intersections
- Possible Installation of cul-de-sac at the north end of Sarah Avenue

Residents living adjacent to the project are strongly encouraged to attend this second public scoping meeting.

Special Accommodations

For individuals with disabilities, we can provide services such as sign language interpreting, real-time captioning, note-takers, reading or writing assistance, or training/meeting materials in Braille, large print, audiocassette or computer disk. To obtain such services or copies in one of these alternative formats, please contact Andy Newsum at Butte County Association of Governments 965 Fir Street, Chico or call 530-879-2468 one week prior to the meeting.

For individuals that cannot attend this meeting, comments may be provided by letter or phone. Written comments should be sent to:

**Butte County Association of Governments (BCAG)
965 Fir Street, Chico, CA 95928
Phone (530) 879-2468
Attn: Andy Newsum, BCAG Project Manager
Internet Web Site - www.bcag.org**

To obtain more information you may contact
Andy Newsum, BCAG

at
(530) 879-2468

or

Alan Glen, Quincy Engineering

at
(916) 368-9181

or

Write to:

Mr. Andy Newsum

Project Manager

Butte County Association Of Governments

965 Fir Street

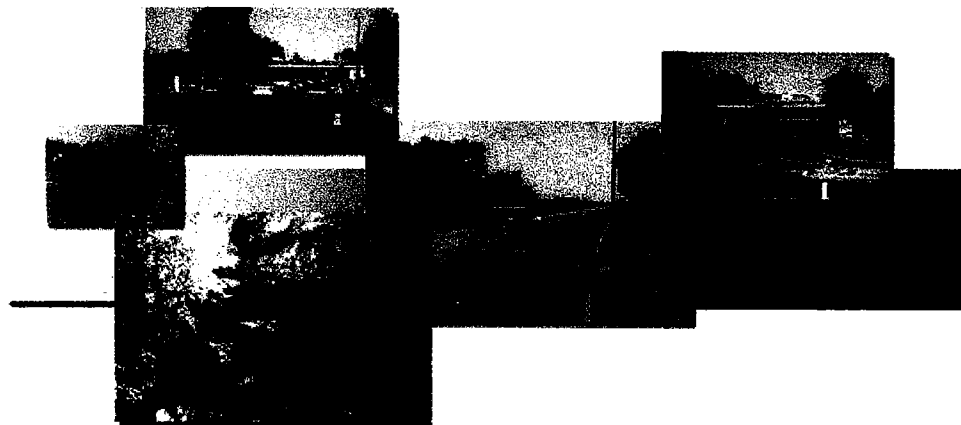
Chico, CA 95928

Email: anewsum@bcag.org

Thank you for attending.



STATE ROUTE 99 AUXILIARY LANES PROJECT PUBLIC INFORMATION MEETING



March 12, 2003

6:00 p.m. to 9:00 p.m.

City Of Chico
Council Chambers
421 Main Street
Chico



U.S. Department
of Transportation
Federal Highway
Administration



What is the purpose of this meeting?

Butte County Association of Governments (BCAG), in cooperation with the Federal Highway Administration (FHWA), Caltrans, Butte County, and the City of Chico, is hosting this public information meeting to provide the public an opportunity to review project exhibits, obtain information about the project, ask questions, and provide input to the project team as this project progresses. Your comments and questions provide insight into important local issues that should be considered.

Tonight's Agenda

6:00 to 7:00 p.m.	Open House: an opportunity to review displays, ask questions, and enjoy refreshments.
7:00 to 8:00 p.m.	Project Presentation: an overview by the project team followed by questions and answers.
8:00 to 9:00 p.m.	Open House

What is being proposed?

The project proposes to reduce congestion and improve traffic operations and safety on State Route (SR) 99 between the SR 32 and East 1st Avenue Interchanges and on East 1st Avenue in the area of the SR 99 Interchange.

Project features include:

- Adding northbound and southbound auxiliary lanes on SR 99 between the SR 32 and East First Avenue Interchanges
- Widening East First Avenue through the interchange area
- Widening the northbound East First Avenue off-ramp
- Widening the southbound SR 32 off-ramp to provide for two lanes
- Widening the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures on SR 99

Why is this work needed?

The City of Chico has experienced rapid growth. Increased traffic has produced congestion on SR 99. Due to limited road connections across Bidwell Park, local traffic depends on SR 99 for circulation in this corridor. Traffic projections show that traffic congestion will worsen and delays will increase if no improvements are made.

What has been accomplished so far?

A Project Development Team consisting of representatives from BCAG, FHWA, Caltrans, Butte County, City of Chico and members of a consultant team have been assembled to help identify issues and develop consensus on the proposed improvements. A public scoping meeting was held May 29, 2002 in Chico to allow residents, local officials, and interest groups to discuss issues related to possible improvements on SR 99. At that meeting, the project team presented two alternatives for widening SR 99: **Outside Widening** and **Inside Widening**, both with signalized ramp intersections on East First Avenue. As a result of input received at the meeting, the team has studied an alternative to replace the existing signalized freeway ramp intersections on East First Avenue with two-lane roundabouts. The alternatives currently being studied are:

STATE ROUTE 99	■ OUTSIDE WIDENING: Provide an auxiliary lane on SR 99 by widening the freeway to the outside using retaining walls to reduce impacts to adjacent properties. ■ INSIDE WIDENING: Provide an auxiliary lane on SR 99 by widening the freeway to the inside within the median with limited retaining walls along the ramps to reduce impacts to adjacent properties.
EAST FIRST AVENUE	■ SIGNALIZED RAMP INTERSECTIONS: Widen East First Avenue through the interchange area to provide four lanes westbound (two through and two left-turn lanes) and two lanes eastbound (one through and one left-turn lane). ■ ROUNDABOUTS: Widen East First Avenue and replace the existing signalized ramp intersections with two-lane roundabouts.

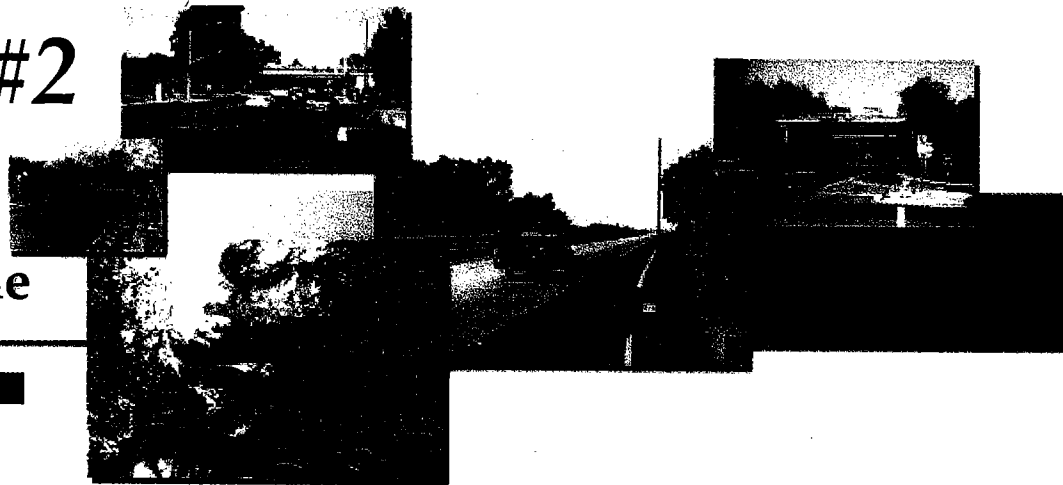
What is the schedule?

ACTIVITY	SCHEDULE
Environmental Studies	Spring 2002 through Summer 2003
Prepare Environmental Document	Summer 2003
Circulate Draft Environmental Document	Winter 2003/2004
3 rd Public Meeting	Winter 2003/2004
Approve Environmental Document (ED)	Summer 2004
Right-of-Way Acquisition & Final Design	12-18 months after ED approved
Construction*	18-24 months after final R/W

* The northbound and southbound auxiliary lanes may be split into separate construction projects to meet available funding. However, the environmental document will analyze all construction phases of the project.

Public Meeting #2

State Route 99
Auxiliary Lanes Project
Route 32 to East 1st Avenue



March 12, 2003

The Evening's Agenda

● 6:00 - 7:00 PM

Open House: Review Exhibits,
Talk with Project Staff

● 7:00 - 8:00 PM

Presentation: an Overview of the
Project followed by Questions and
Answers

● 8:00 - 9:00 PM

Open House: Review Exhibits,
Talk with Project Staff

State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

Project Background

Andy Newsum, BCAG Project Manager

● Purpose of tonight's meeting

- X Seek public input on the project alternatives**

● Scope of project

- X State Route 99 from SR 32 to East 1st Avenue including improvements to East 1st Avenue with the interchange**

● Project funding and sponsors

- X FHWA**
- X Caltrans**
- X BCAG**
- X City of Chico**

● Project Study Report - approved in November 2000

- X Identified three alternatives**
- X Safety and Operations Project**
- X Public Workshop - October 1999**

***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Background (cont'd)

- **BCAG's State Route 99 Corridor Study identified this project as one of the top priorities**
- **Cooperative Agreement for BCAG to manage project through Project Report and Environmental Document**
- **BCAG has hired a consultant team to conduct environmental studies and complete preliminary engineering to complete an Environmental Document.**
- **The Public Scoping Meeting for the Environmental Phase was held on May 29, 2002. We will report on the comments received from this meeting later in this presentation.**

Project Development Process

Alan Glen, Quincy Engineering

- **Identify needs**
- **Project Study Report - approved in November 2000**
 - ✕ Identifies scope, estimated cost, and probable schedule
- **Program project**
 - ✕ Identify funding, \$6.7 million programmed through Phase 1 construction
- **Preliminary Engineering and Environmental Studies**
 -  ✕ Identify issues, impacts, and resolutions
 - ✕ Prepare Project Report and Environmental Document
- **Final Engineering Design and R/W Acquisition**
 - ✕ Acquire right-of-way, obtain permits and prepare construction contract documents
- **Construction**
- **Maintenance and operations**

*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

Project Purpose & Need



Reduce Traffic Delays and Congestion

- X Peak hour traffic volumes are approaching capacity**
- X High volume of merging vehicles**



Improve Safety and Operations

- X Accident rate higher than statewide average**
- X Short merge area for ramps**
- X East 1st Avenue off-ramp traffic backs up onto freeway**
- X Narrow shoulders exist on Bidwell Park Viaduct**

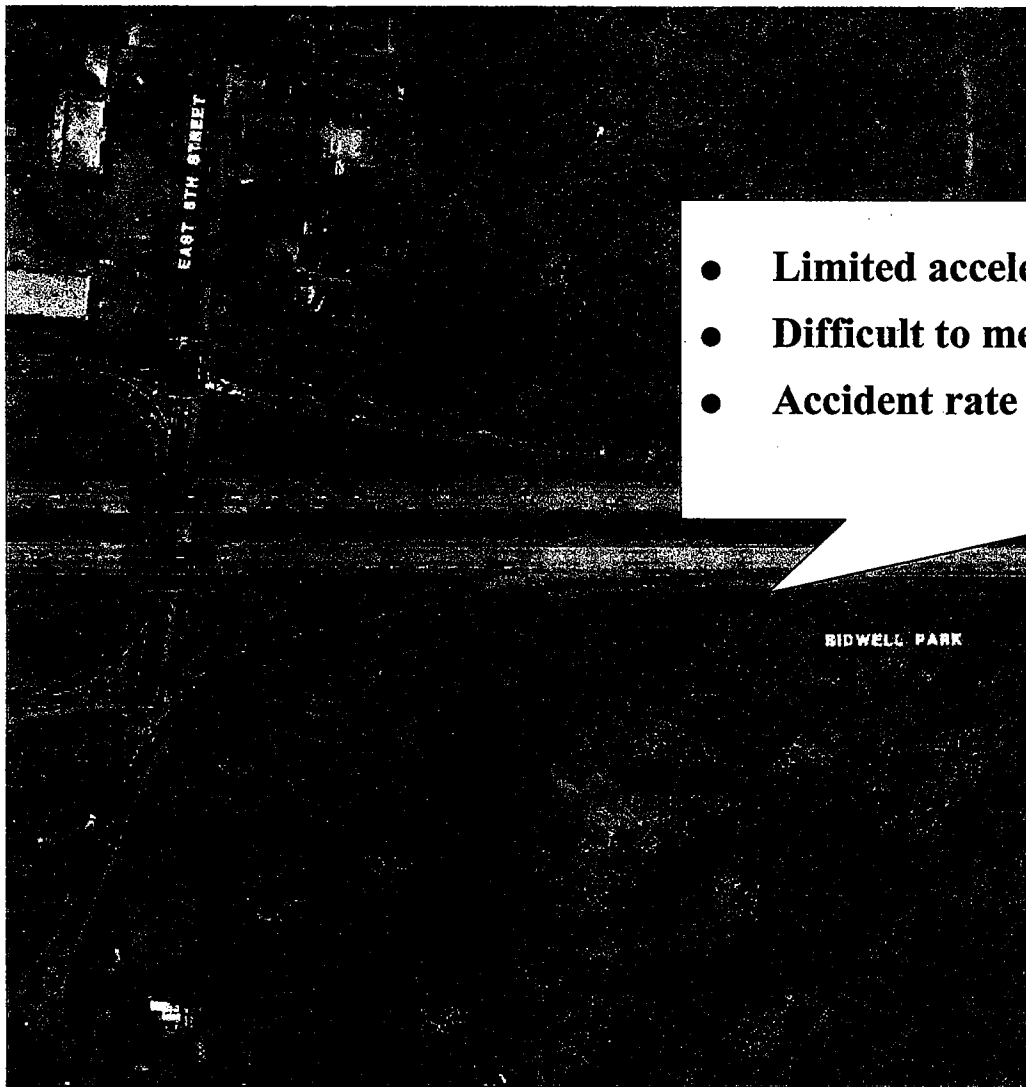


Provide Improved Access across Bidwell Park

- X Limited north-south park crossings**
- X 70% of traffic of northbound on-ramp traffic exits at East 1st Avenue**



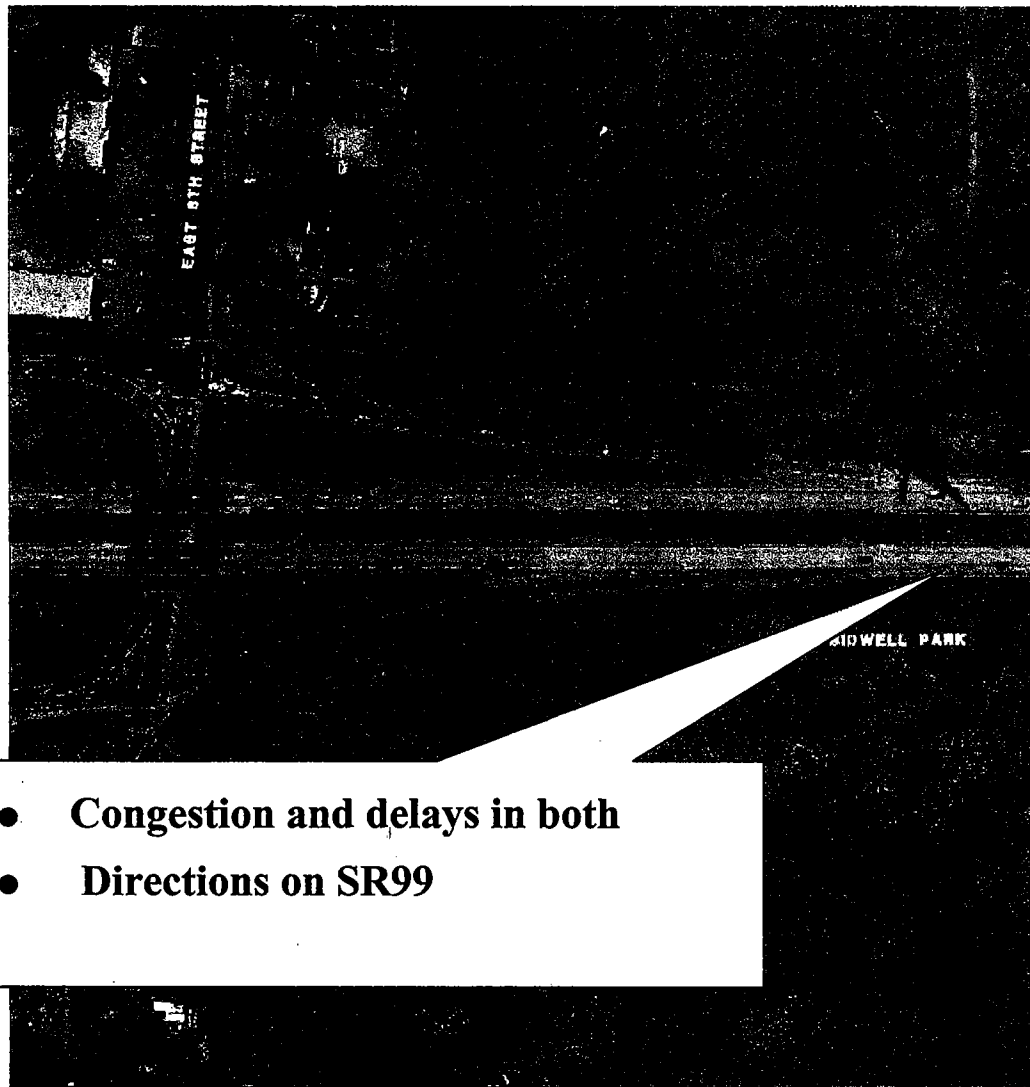
Project Purpose & Need (cont'd)



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***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Purpose & Need (cont'd)

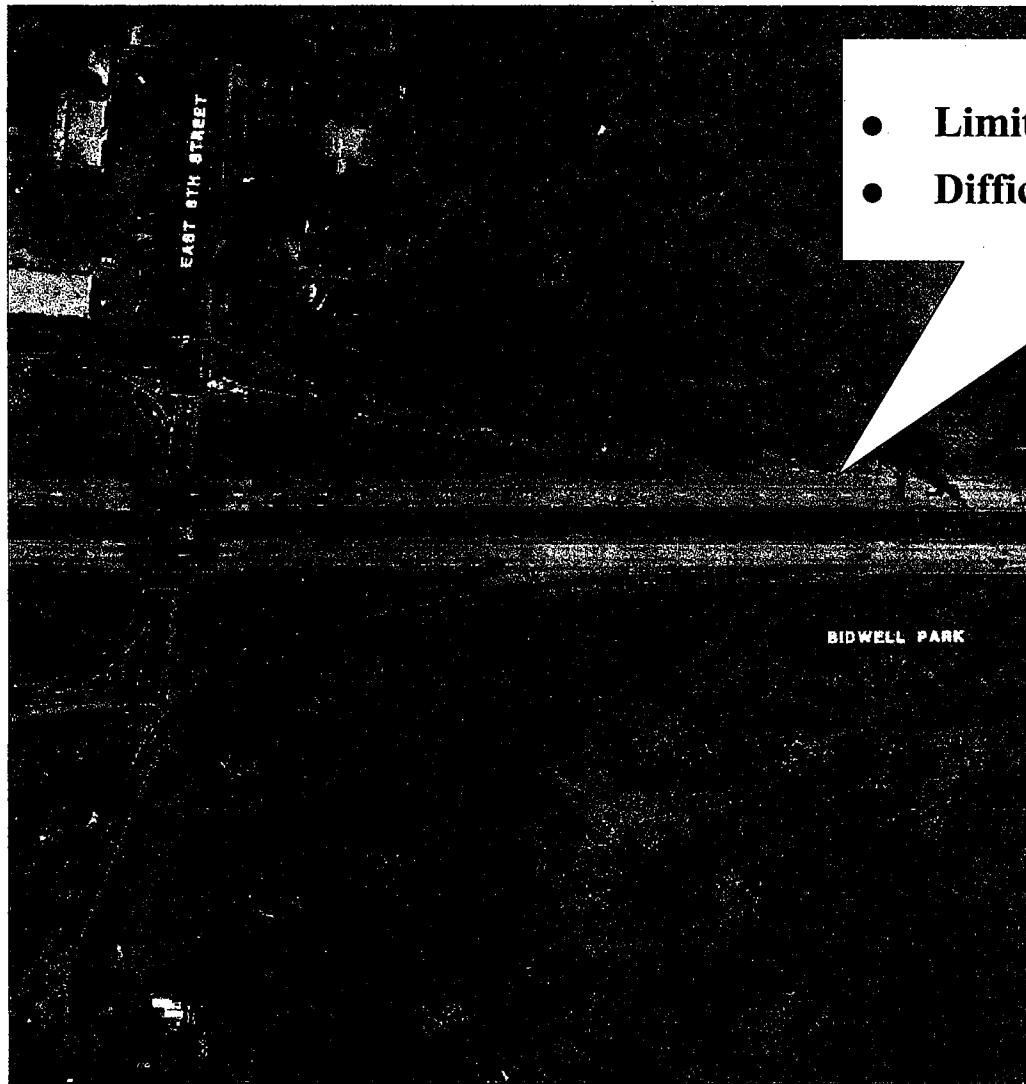


- Congestion and delays in both
- Directions on SR99

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***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Purpose & Need (cont'd)



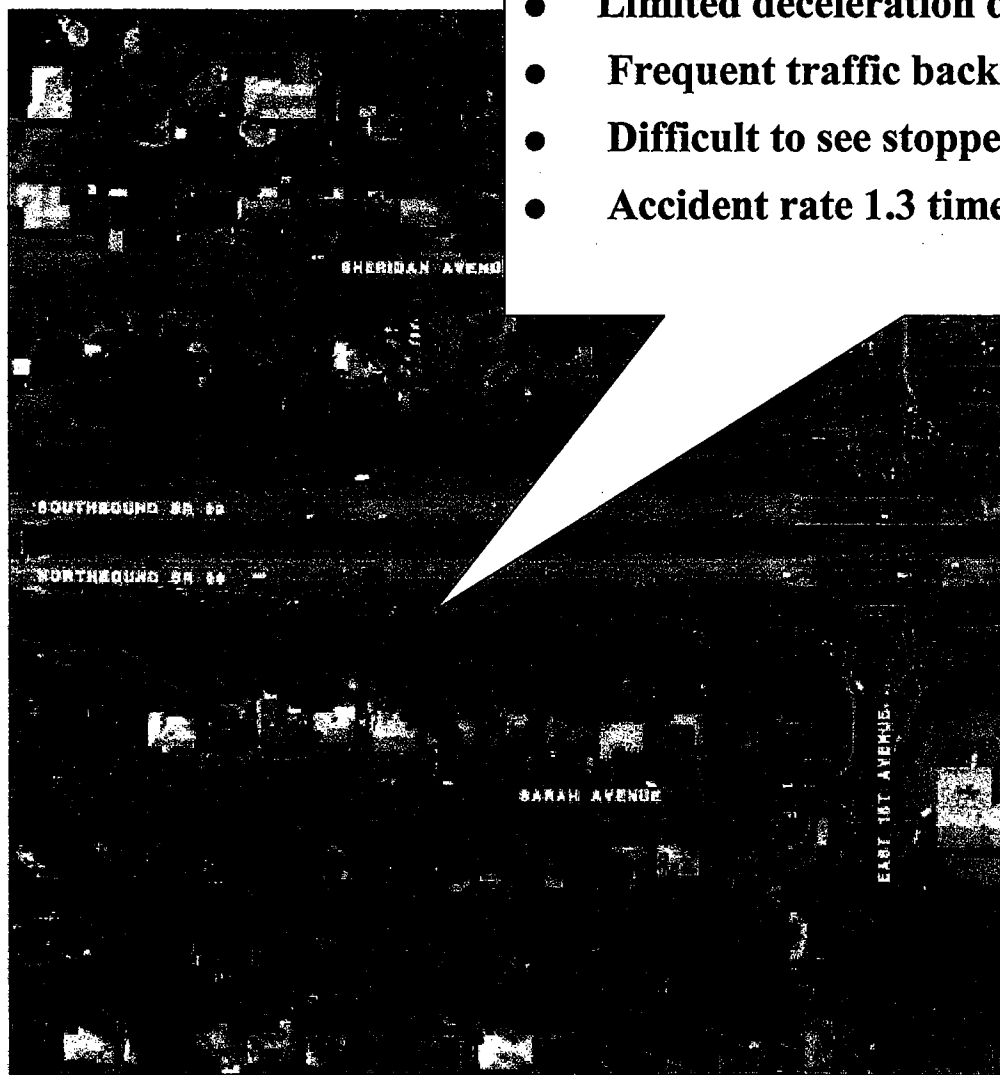
- Limited deceleration distance
- Difficult to see stopped vehicles

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*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

Project Purpose & Need (cont'd)

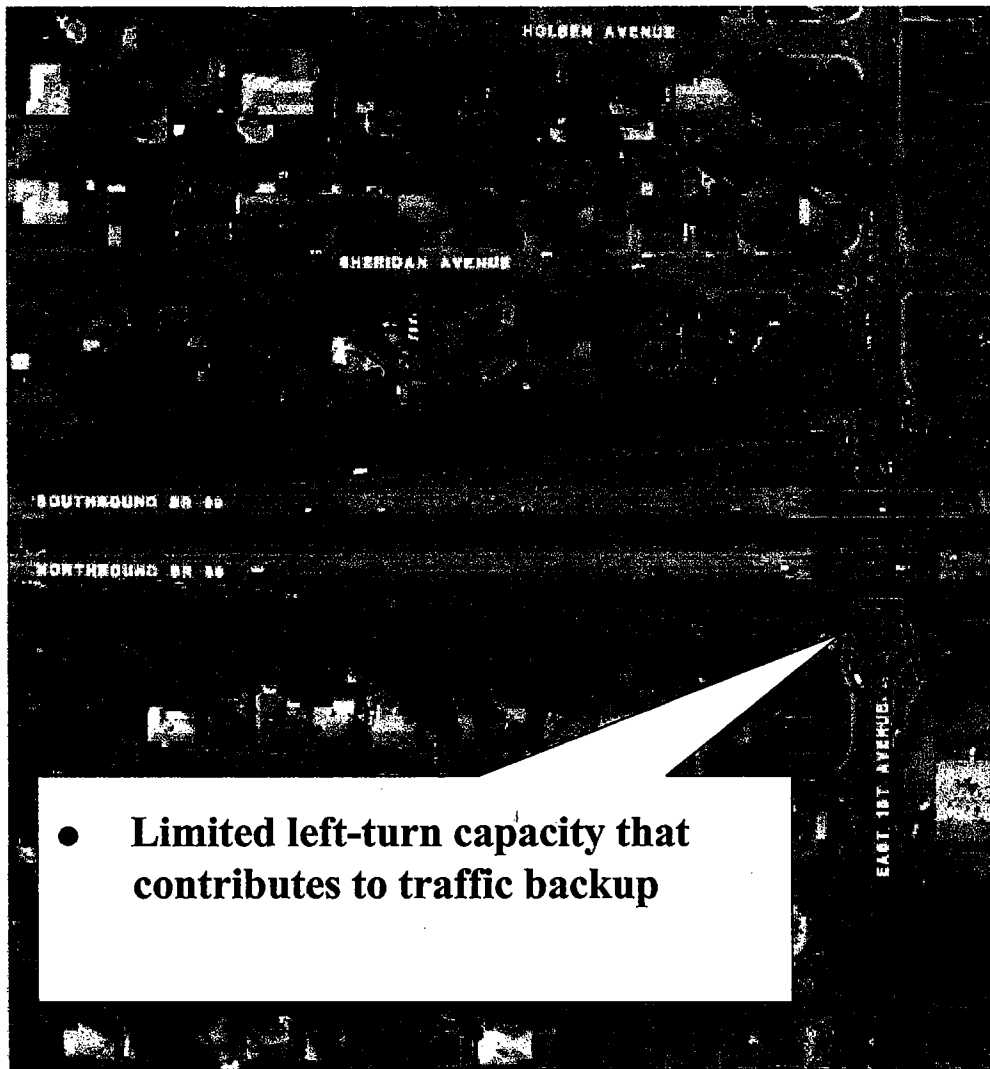
- **Limited deceleration distance**
- **Frequent traffic backups onto through-lane**
- **Difficult to see stopped vehicles**
- **Accident rate 1.3 times statewide average**



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***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

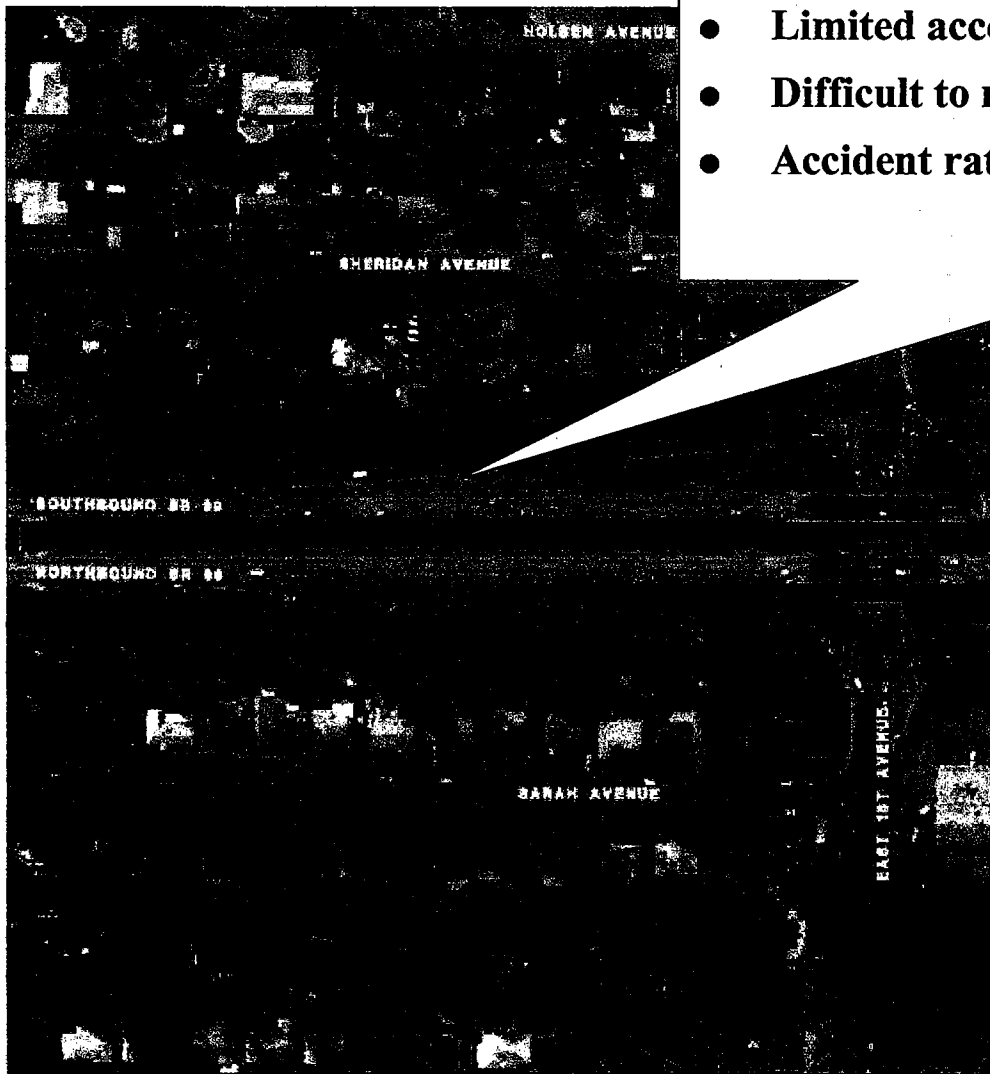
Project Purpose & Need (cont'd)



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***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Purpose & Need (cont'd)

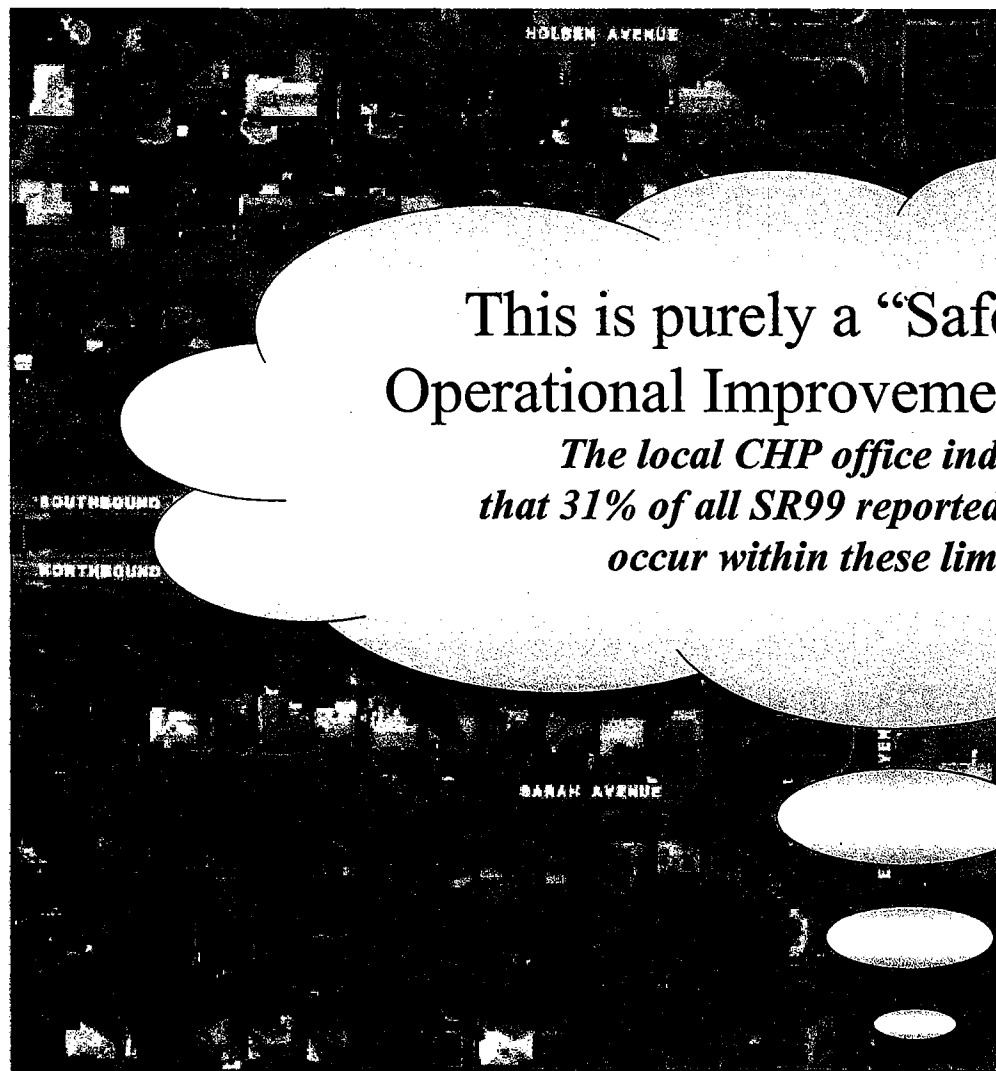


- **Limited acceleration distance**
- **Difficult to merge with higher speed traffic**
- **Accident rate 1.9 times the statewide average**

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***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Project Purpose & Need (cont'd)



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**This is purely a “Safety and
Operational Improvement” Project**

***The local CHP office indicates
that 31% of all SR99 reported accidents
occur within these limits.***

**State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue**

Project Overview

State Route 99 alternatives that are being studied:

- X Outside Widening - Widen freeway to outside with retaining walls
- X Inside Widening - Widen freeway into median and utilize existing Lane #2 as auxiliary lane
- X No Build

East 1st Avenue options that are being studied:

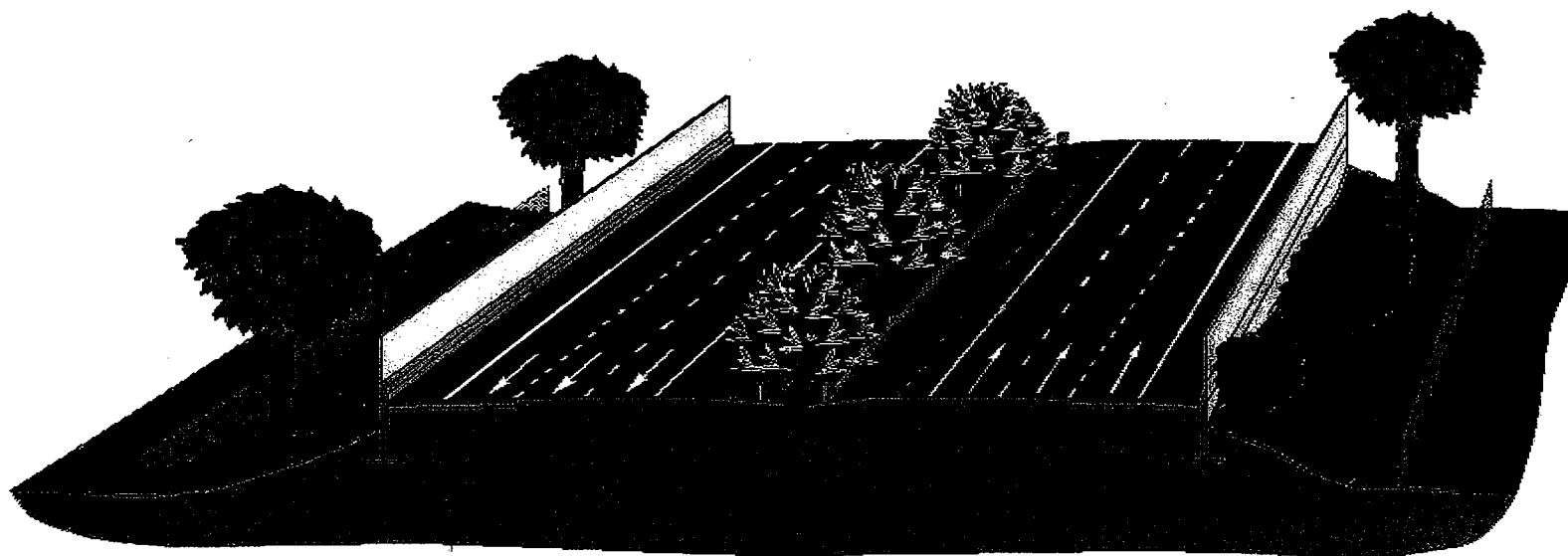
- X Signalized Ramp Intersections - Widen East 1st Avenue to provide four WB lanes and two EB lanes through interchange
- X Roundabouts - Widen East 1st Avenue and replace existing signalized intersections with two-lane roundabouts

Project Overview (cont'd)

Proposed project features:

- X Adding northbound and southbound auxiliary lanes on Route 99**
- X Widening East 1st Avenue through the interchange**
- X Widening the East 1st Avenue northbound off-ramp**
- X Widening the SR 32 southbound off-ramp to provide a two-lane exit**
- X Widening the Bidwell Park Viaduct and the Palmetto Avenue undercrossing structures, including full shoulders**

Outside Widening Alternative



OUTSIDE WIDENING ALTERNATIVE

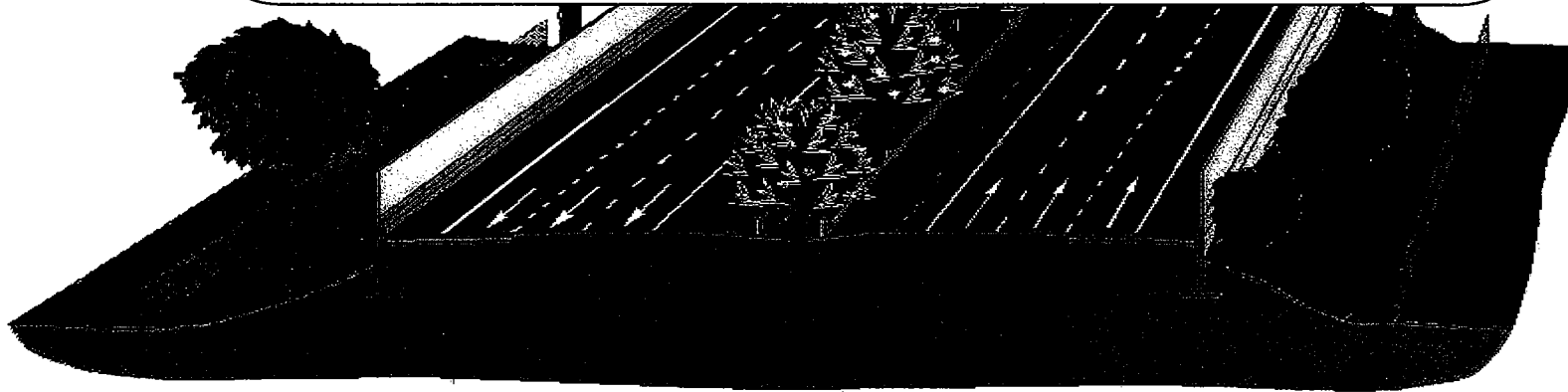
*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



Outside Widening Alternative

Advantages:

- Saves oleanders and recently constructed median barrier
- Retains median for future through-lanes
- Bridge widening to one side only
- Soundwall placed at ultimate location
- Maintains freeway alignment



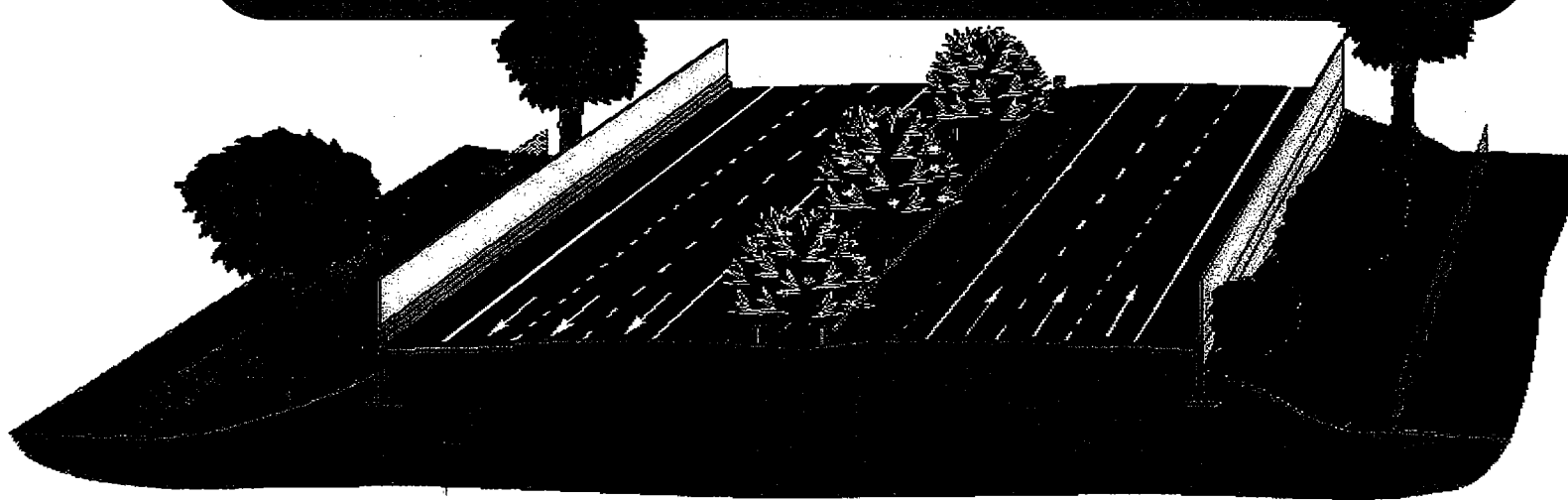
OUTSIDE WIDENING ALTERNATIVE



Outside Widening Alternative

Disadvantages:

- Requires removal of significant vegetation on outside slopes
- Requires extensive retaining walls
- Taller wall visible from adjacent properties
- Perceived as an encroachment to adjacent properties



OUTSIDE WIDENING ALTERNATIVE

Existing Freeway Section



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



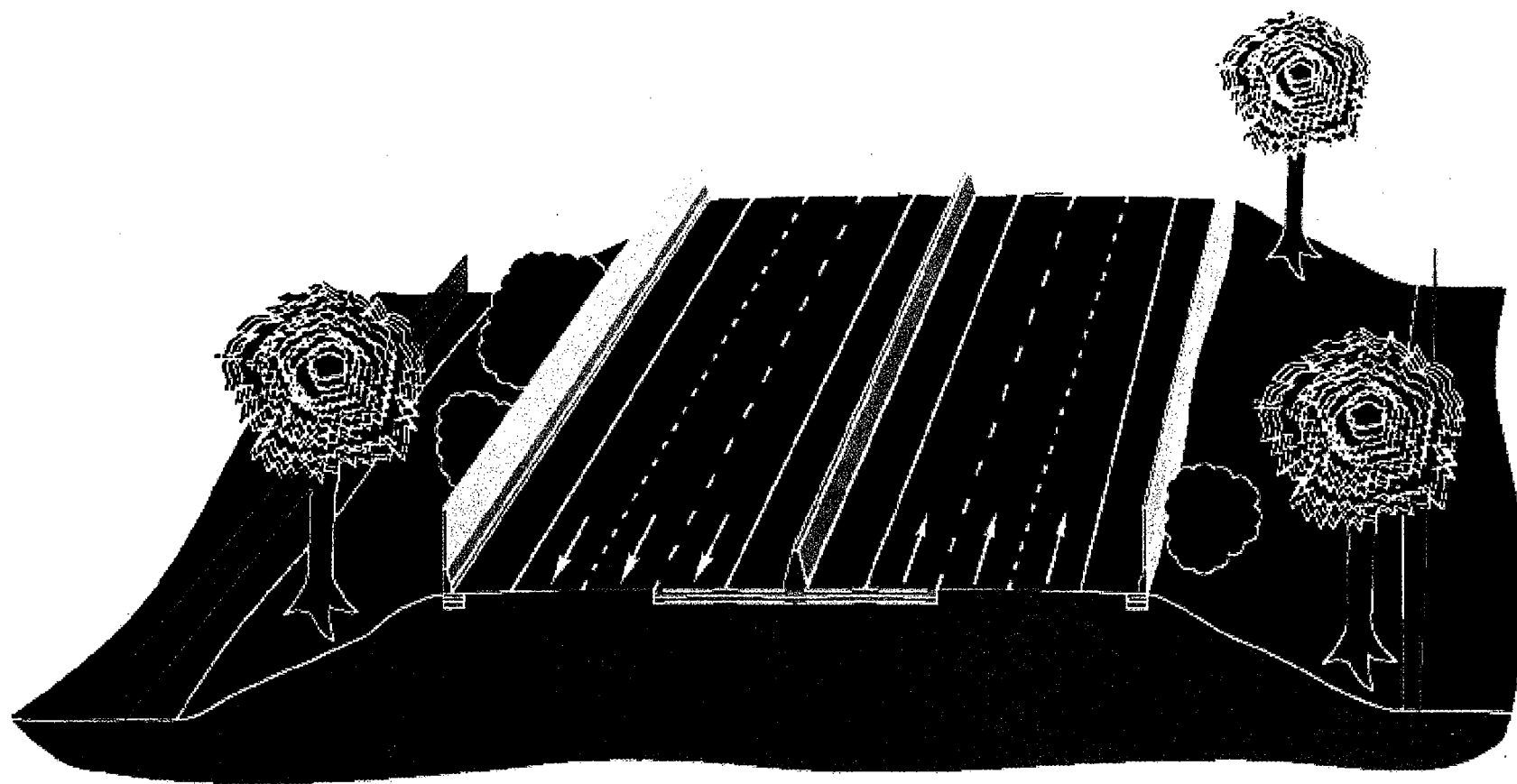
Outside Widening Alternative Rendering



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



Inside Widening Alternative

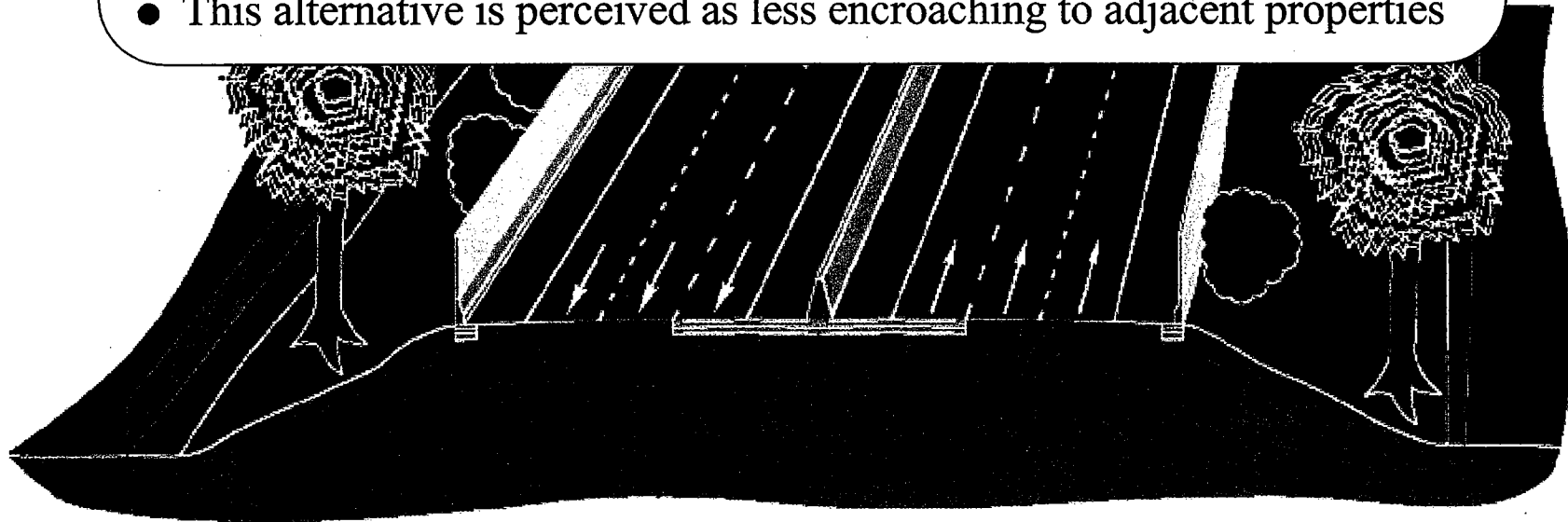


*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

Inside Widening Alternative

Advantages:

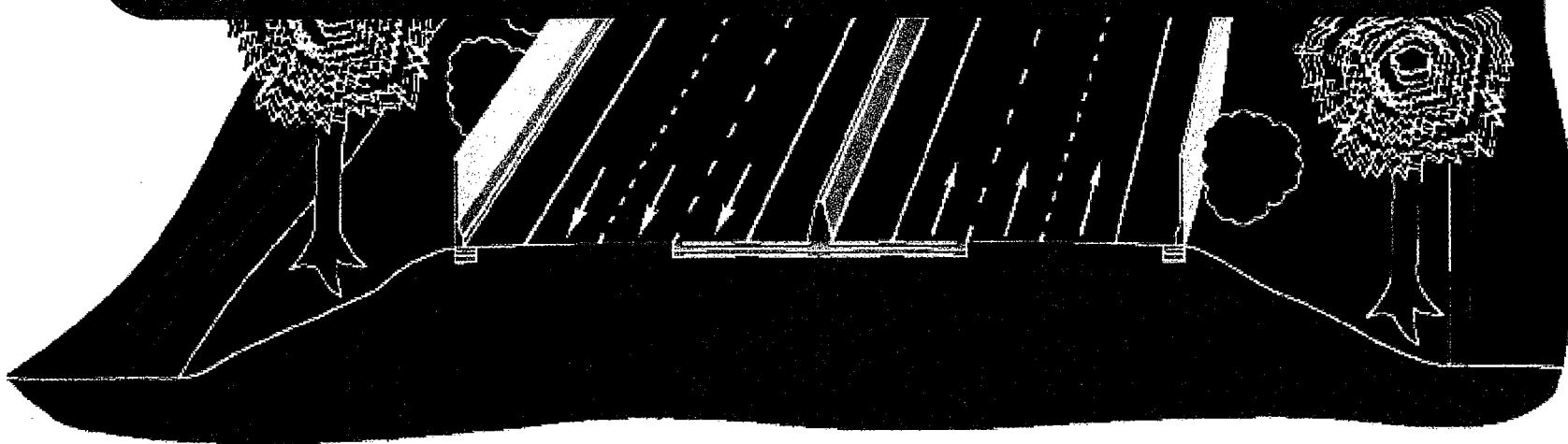
- Saves most outside vegetation
- Less retaining walls required
- Soundwalls less visible from adjacent properties
- Provides wider inside shoulder
- This alternative is perceived as less encroaching to adjacent properties



Inside Widening Alternative

Disadvantages:

- Removes oleanders and recently completed median barrier
- Requires widening bridges inside and out
- Requires lane transition on freeway
- Requires removal of sound walls in the event of future widening



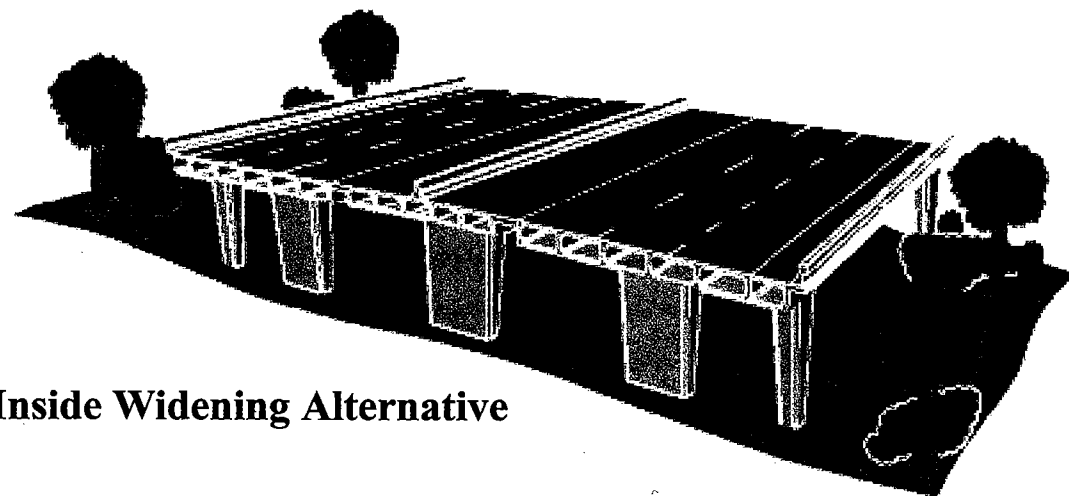
Inside Widening Alternative Rendering



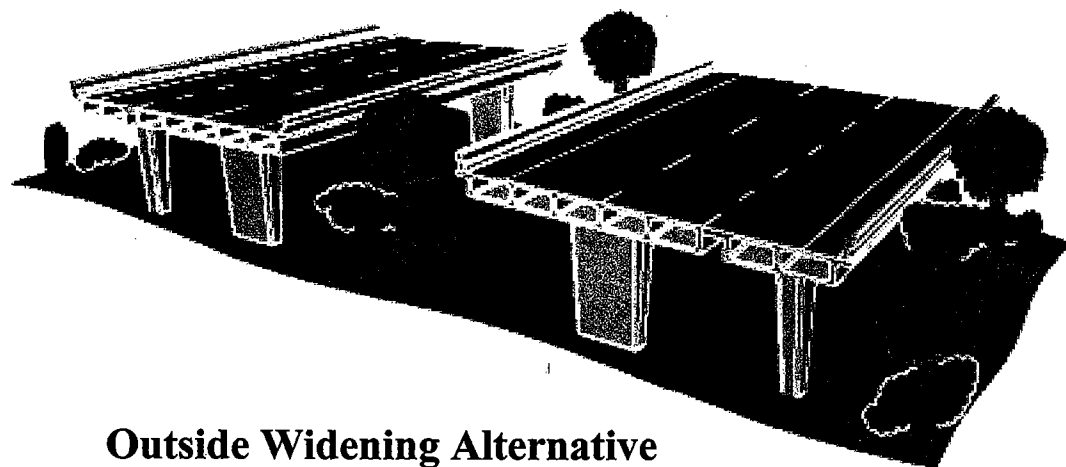
*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



Bidwell Park Viaduct Alternatives



Inside Widening Alternative



Outside Widening Alternative

*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

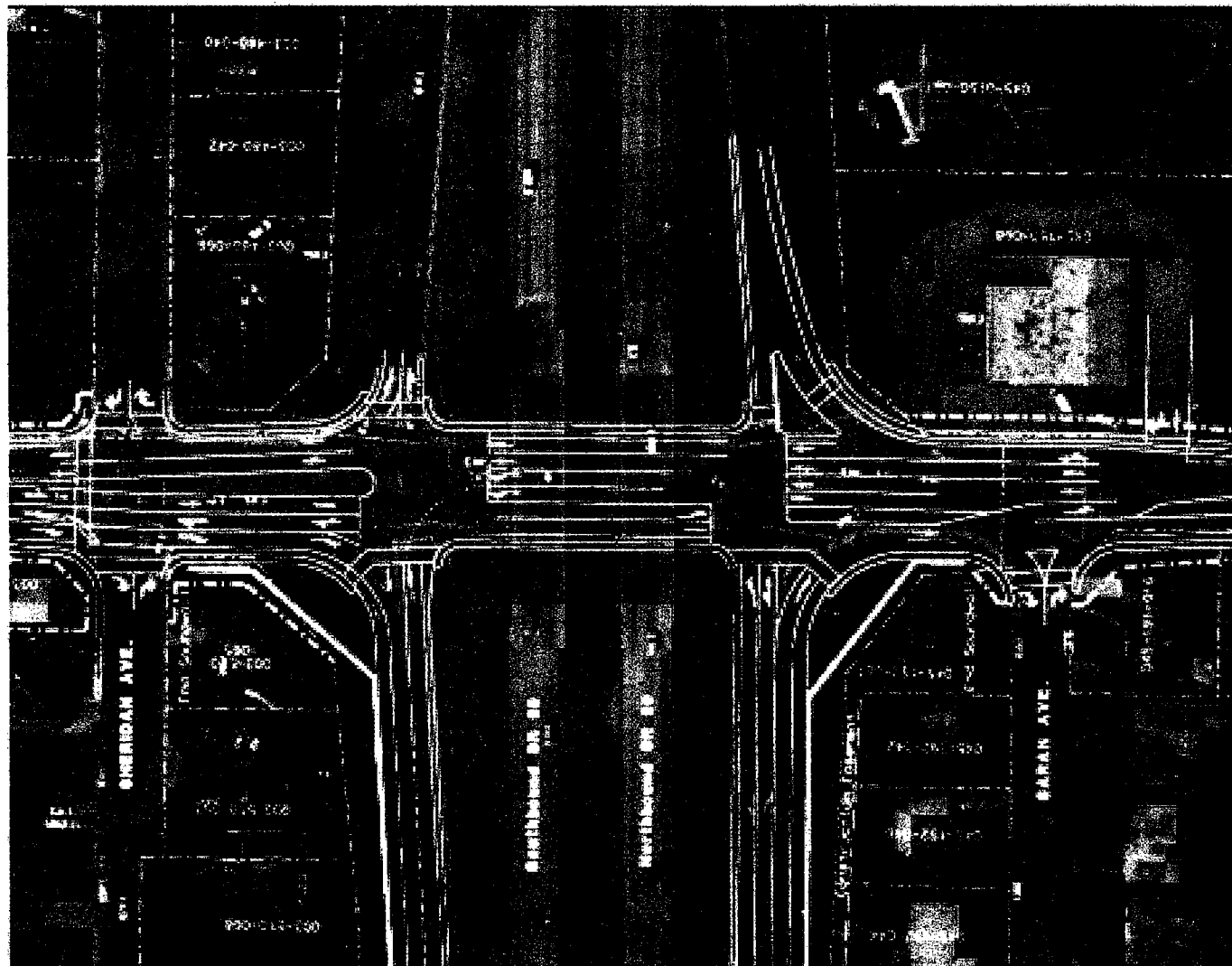


Comparison of Outside vs. Inside Widening Alternatives

Issue	Inside Widening	Outside Widening
Safety and Operations	Similar to other alternative	Similar to other alternative
Vegetation Removal	Removes oleanders Removes 5 ft.+/- on outside	Keeps oleanders Removes most vegetation from outside slopes
Bidwell Park	Removes trees and shrubs between bridges and a portion of the outside <u>within State R/W</u>	Removes most trees and shrubs on outside <u>within State R/W</u>; trees and shrubs between bridges remain
Noise	Soundwalls from Bidwell Park to East 1st Avenue.	Soundwalls from Bidwell Park to East 1st Avenue.
Cost	5% higher than other alternative due to additional paving in median and sliver widenings of bridges	5% lower cost than other alternative

**State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue**

East 1st Avenue - Signalized Intersection Option



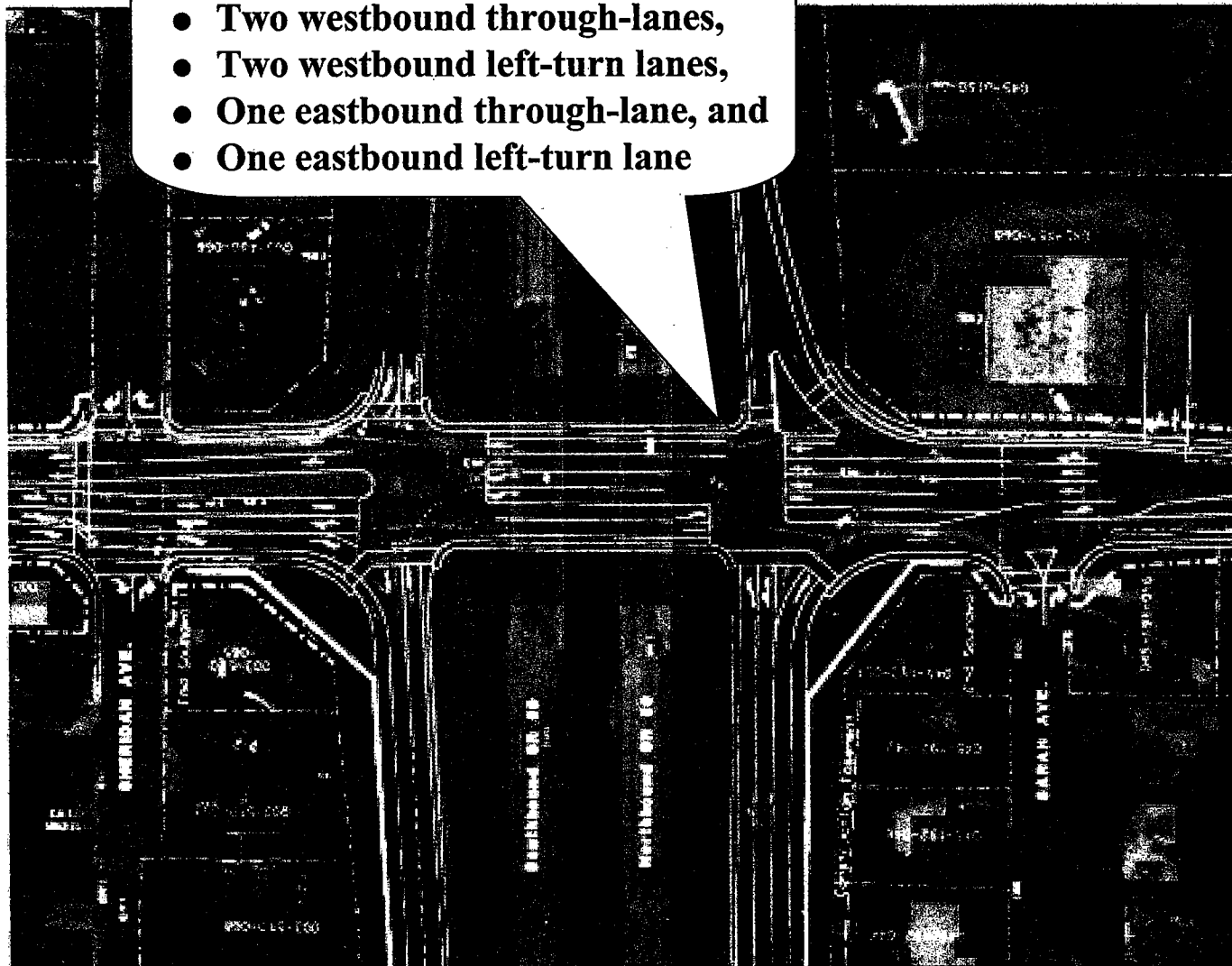
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*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

East 1st Avenue - Signalized Intersection Option

Provides:

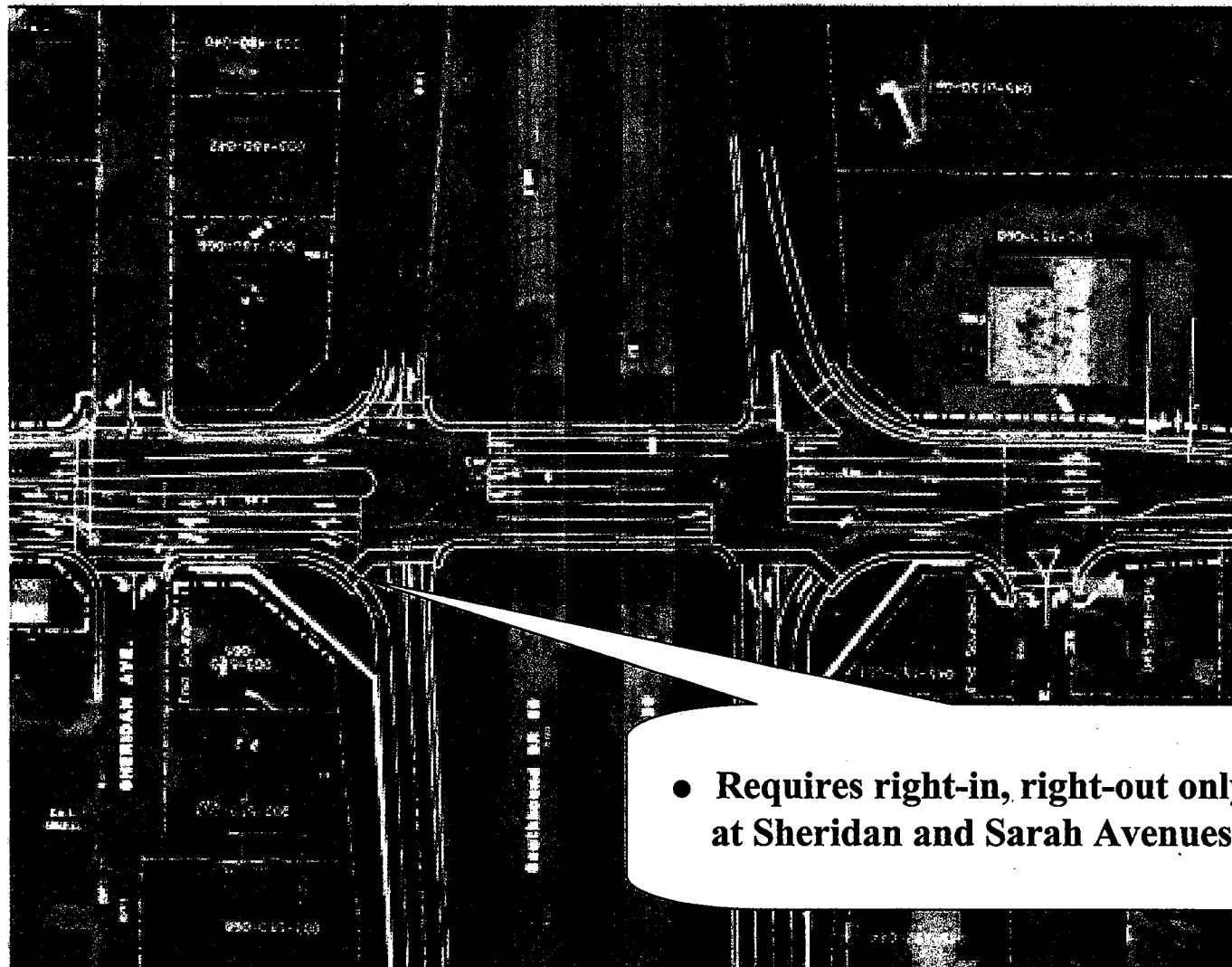
- Two westbound through-lanes,
- Two westbound left-turn lanes,
- One eastbound through-lane, and
- One eastbound left-turn lane



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*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

East 1st Avenue - Signalized Intersection Option

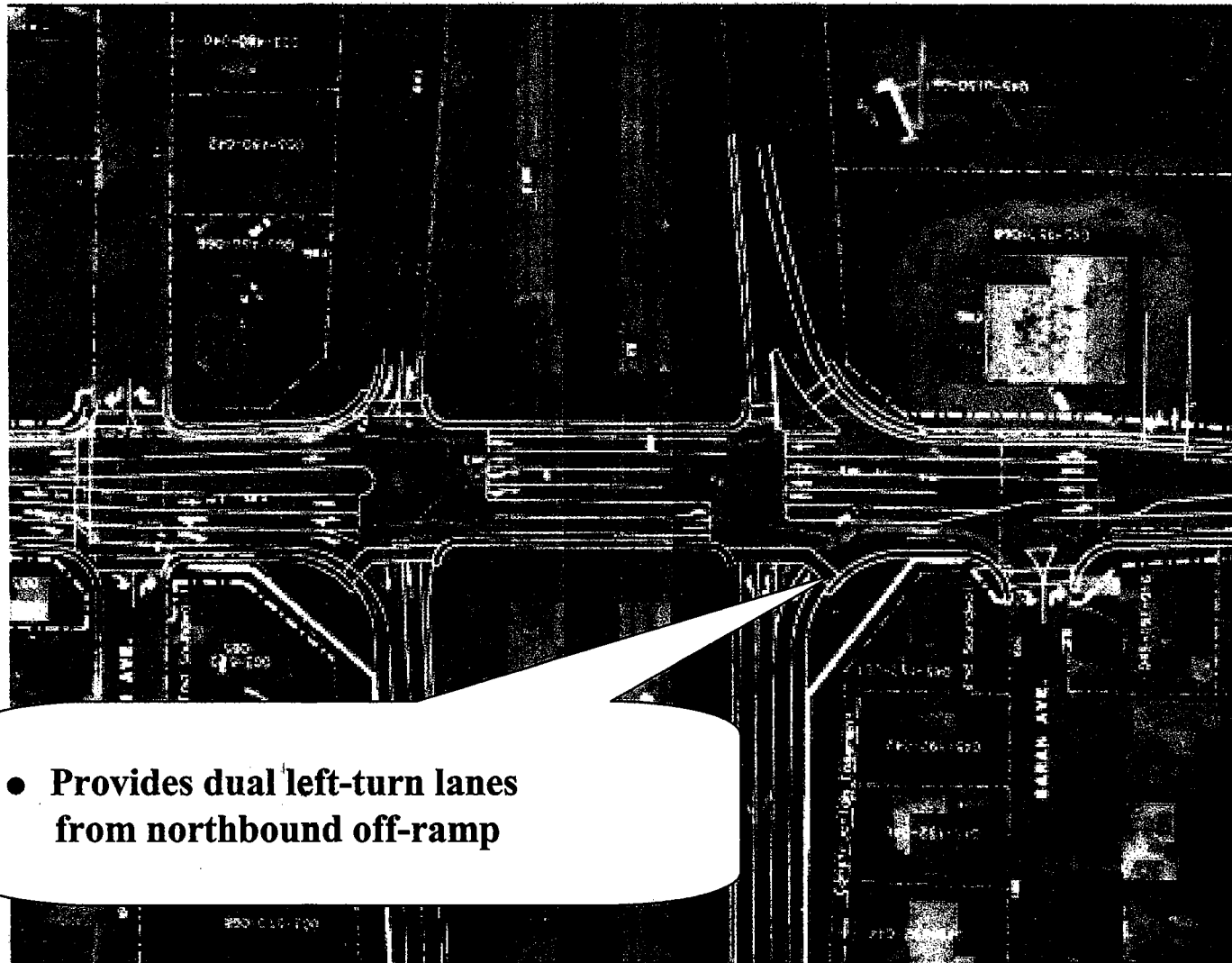


- Requires right-in, right-out only at Sheridan and Sarah Avenues

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*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

East 1st Avenue - Signalized Intersection Option

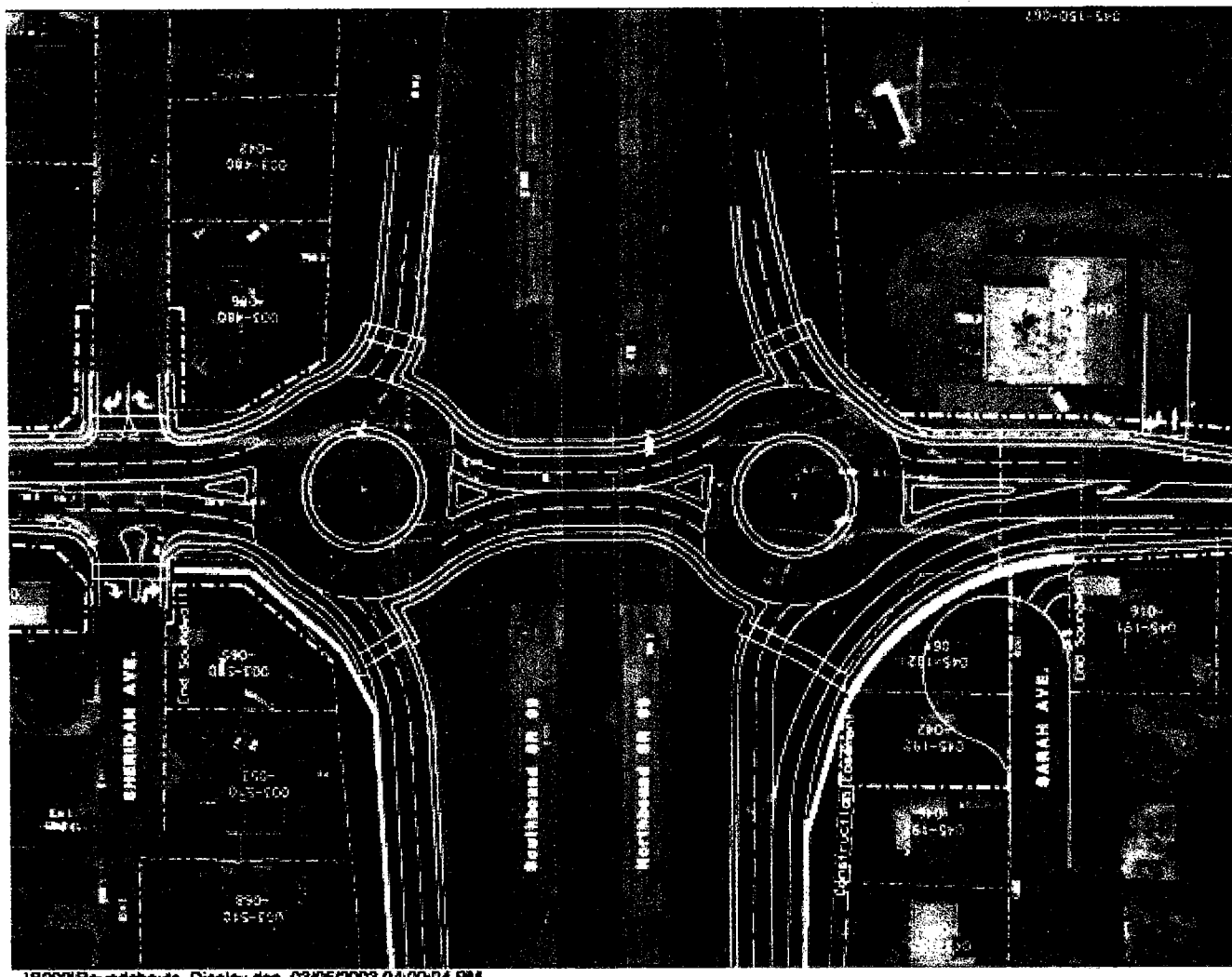


- Provides dual left-turn lanes from northbound off-ramp

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*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

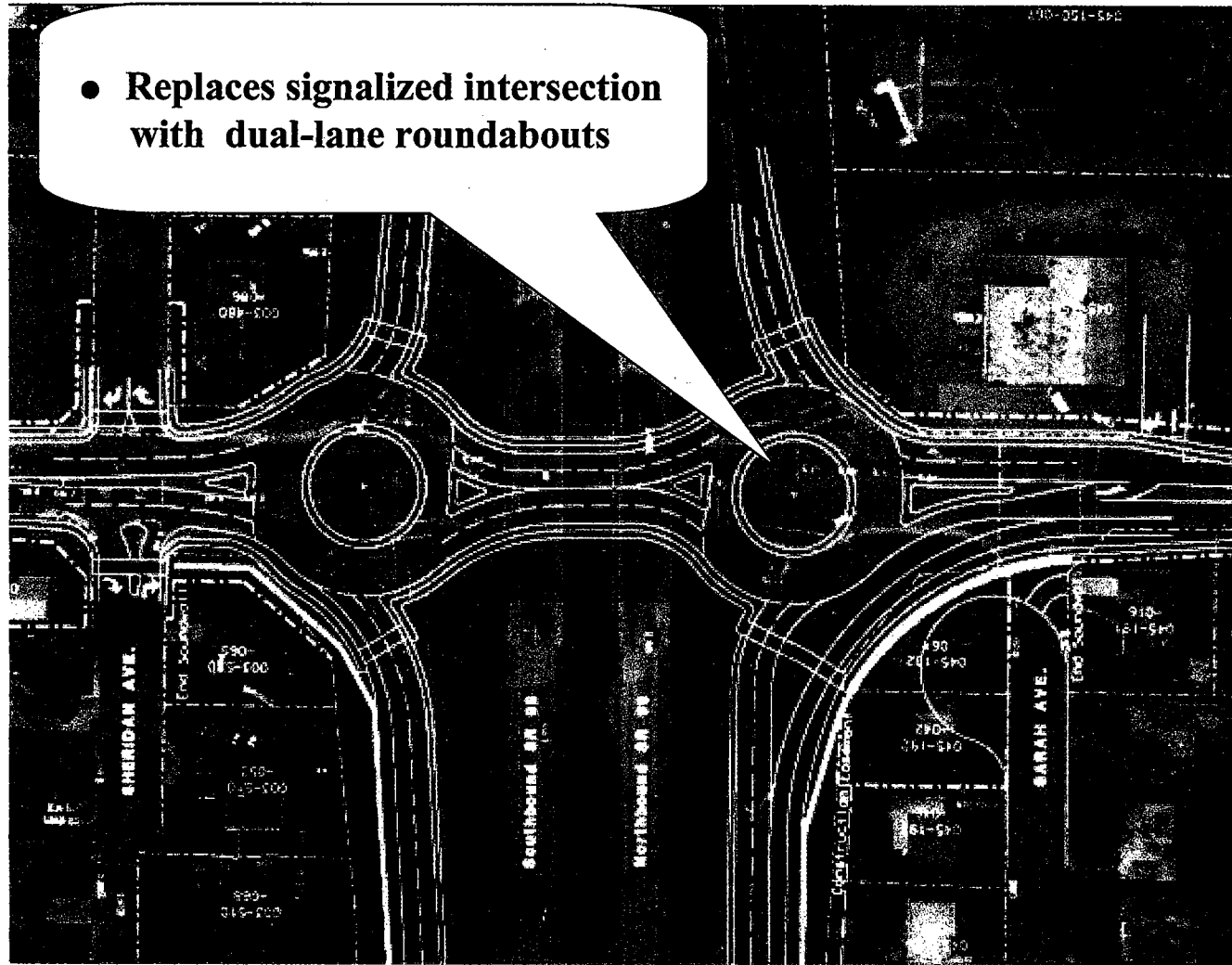
East 1st Avenue - Roundabouts Options



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

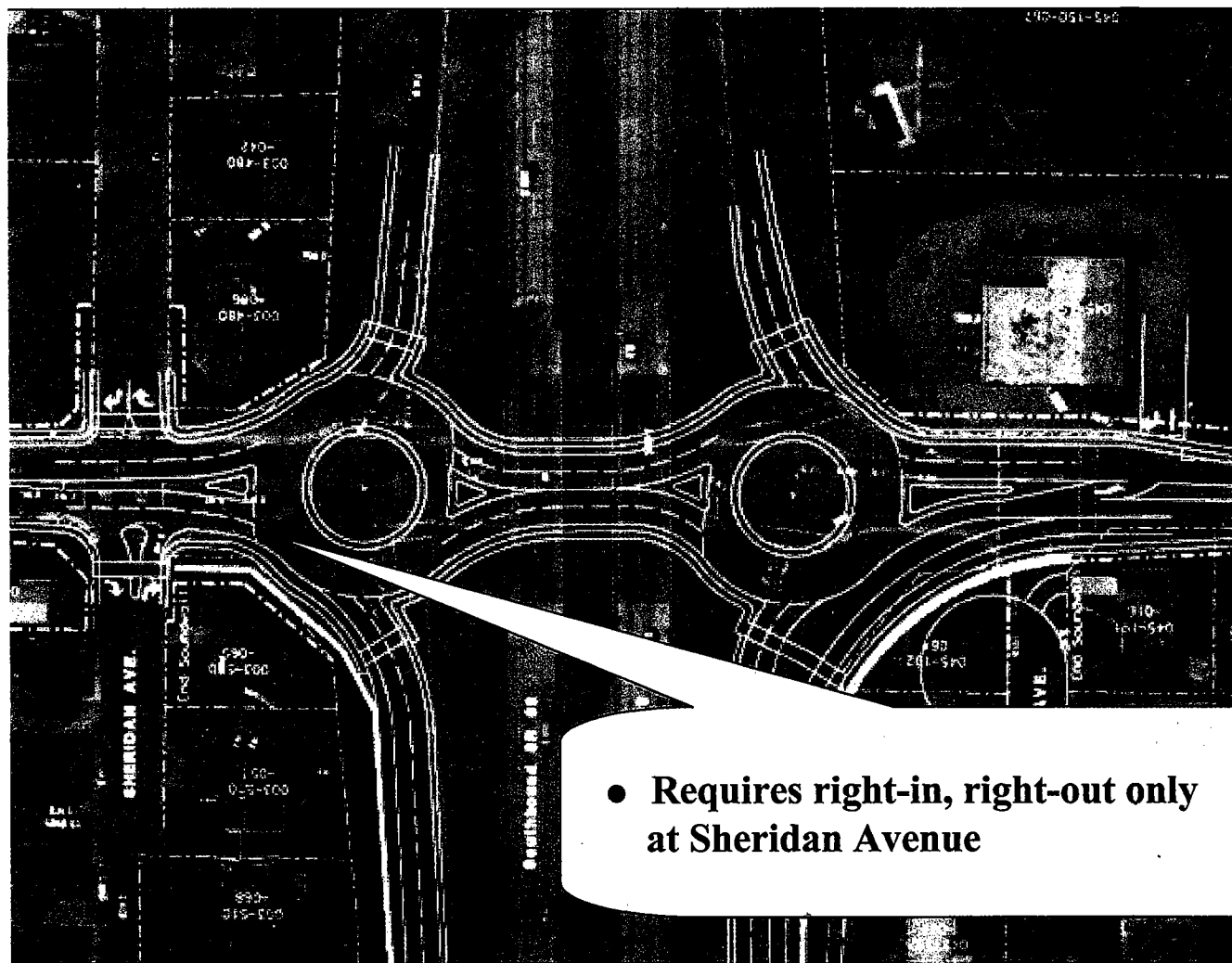
East 1st Avenue - Roundabouts Options

- Replaces signalized intersection with dual-lane roundabouts



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

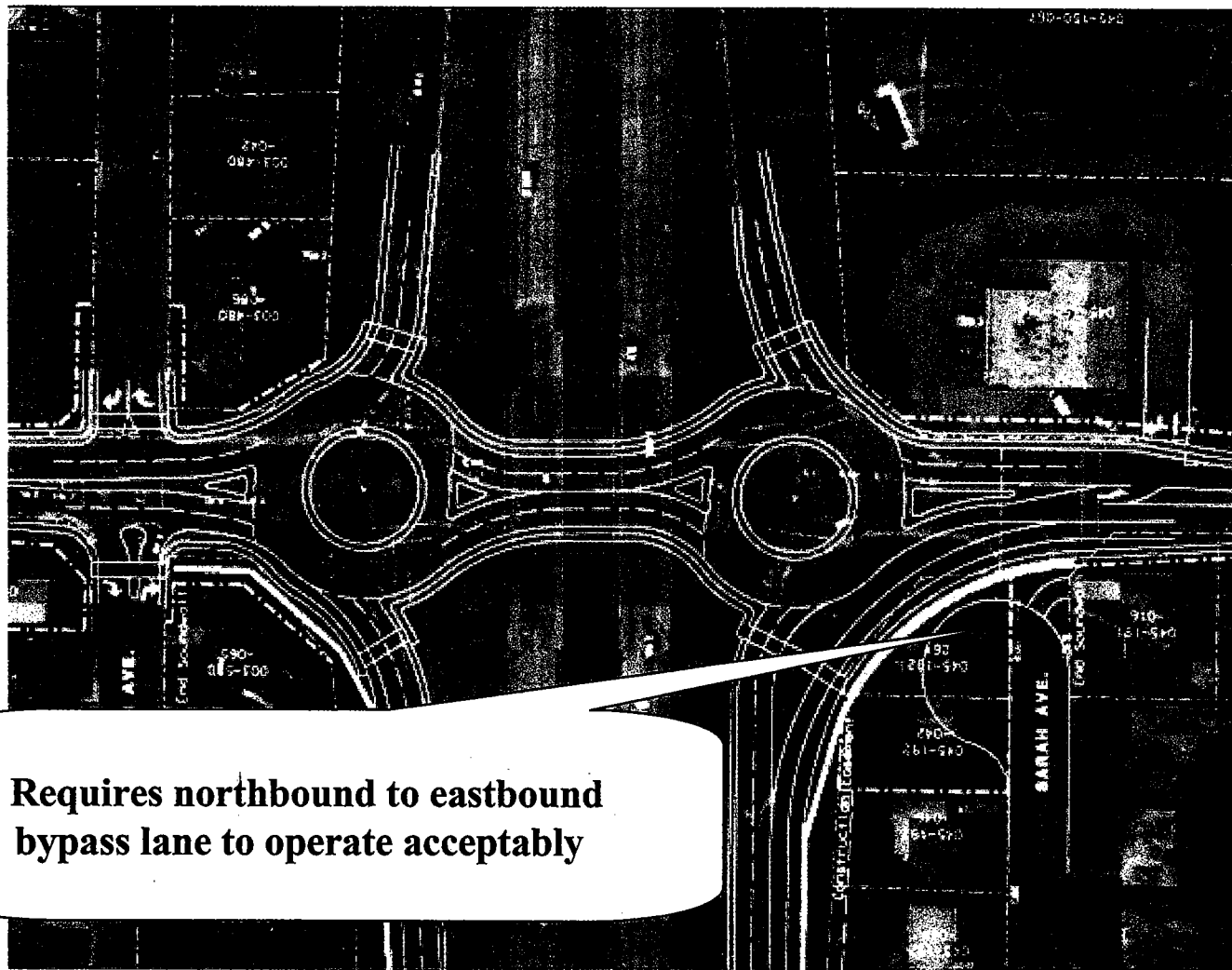
East 1st Avenue - Roundabouts Options



- Requires right-in, right-out only at Sheridan Avenue

*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

East 1st Avenue - Roundabouts Options

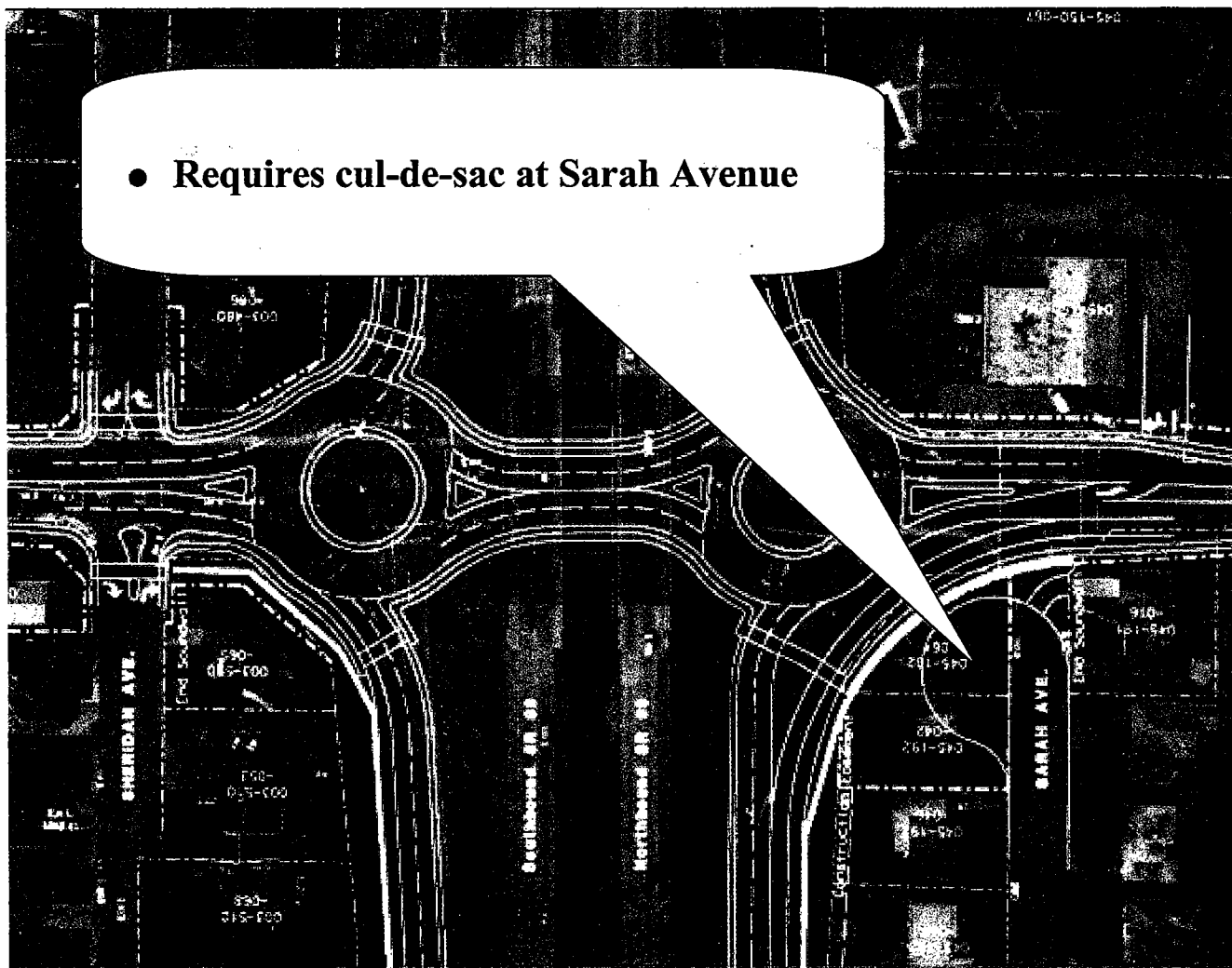


- **Requires northbound to eastbound bypass lane to operate acceptably**

**State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue**

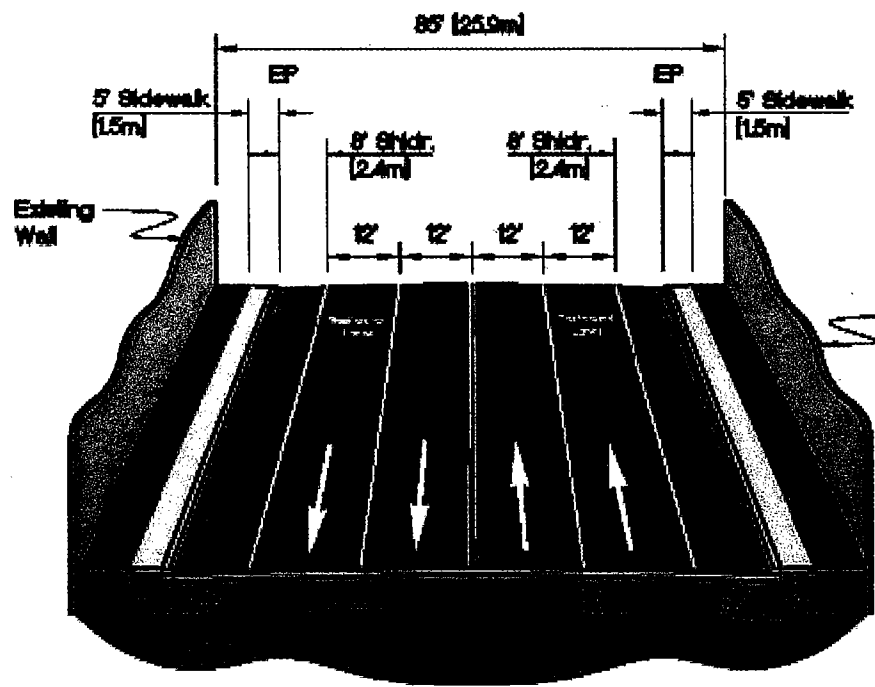
East 1st Avenue - Roundabouts Options

- Requires cul-de-sac at Sarah Avenue

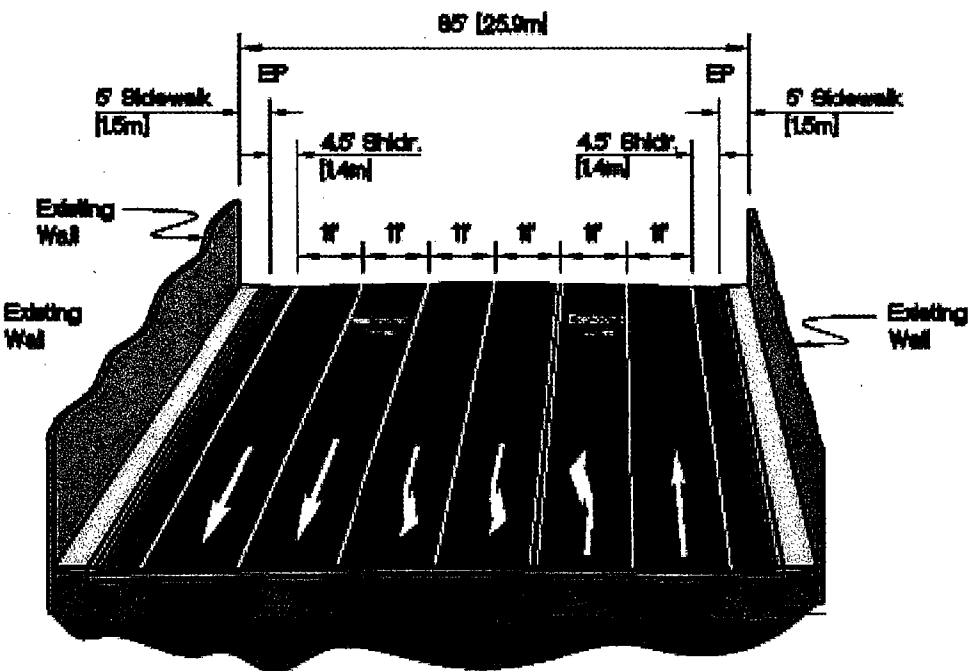


*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

East 1st Avenue - Typical Sections



Roundabout Option



Signalized Intersection Option



East 1st Avenue - Signalized Intersections Option



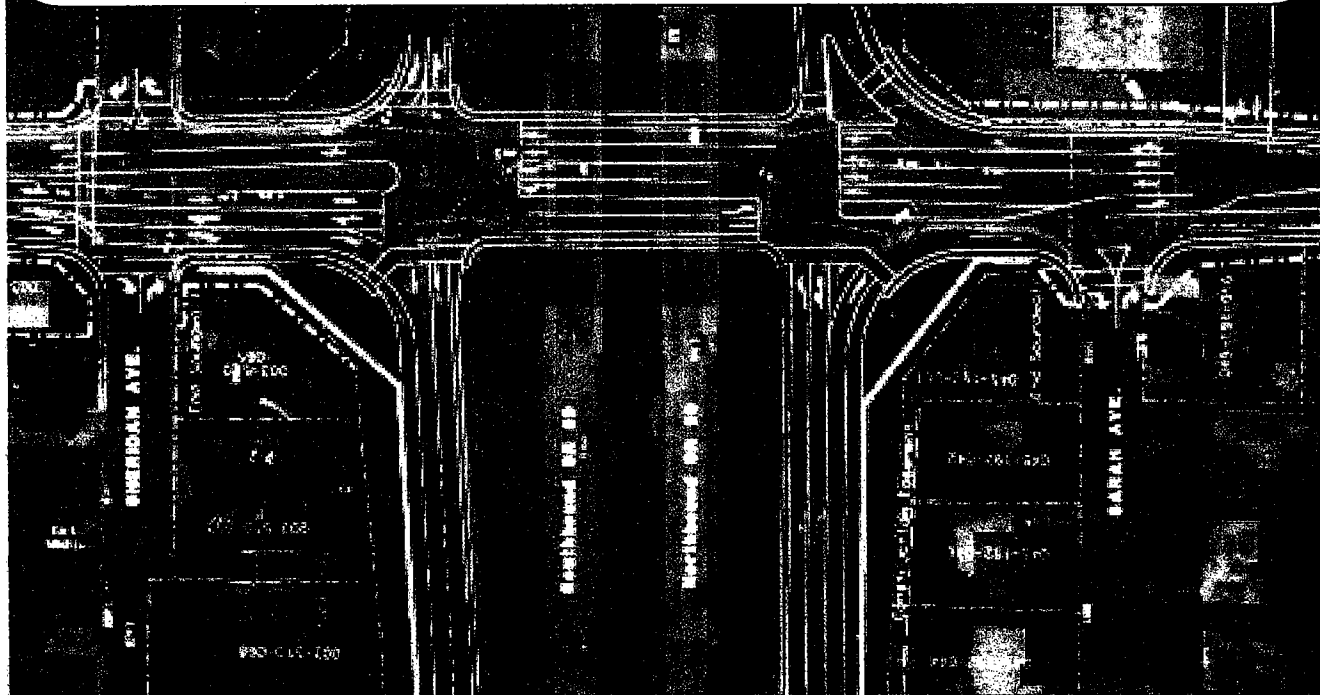
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State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

East 1st Avenue - Signalized Intersections Option

Advantages:

- More conventional solution
- Superior Level of Service
- Controlled pedestrian and bicycle movements



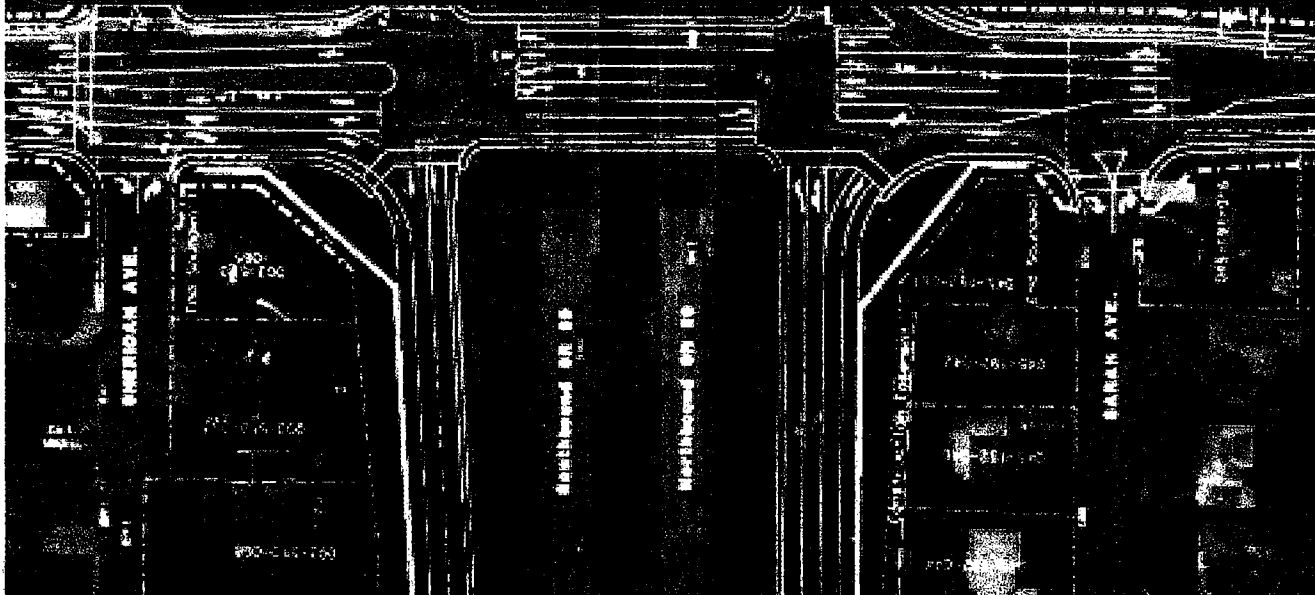
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**State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue**

East 1st Avenue - Signalized Intersections Option

Disadvantages:

- Requires reduced lane width to maintain two sidewalks
- Requires one residential acquisition
- Requires longer transitions back to existing 70' lane

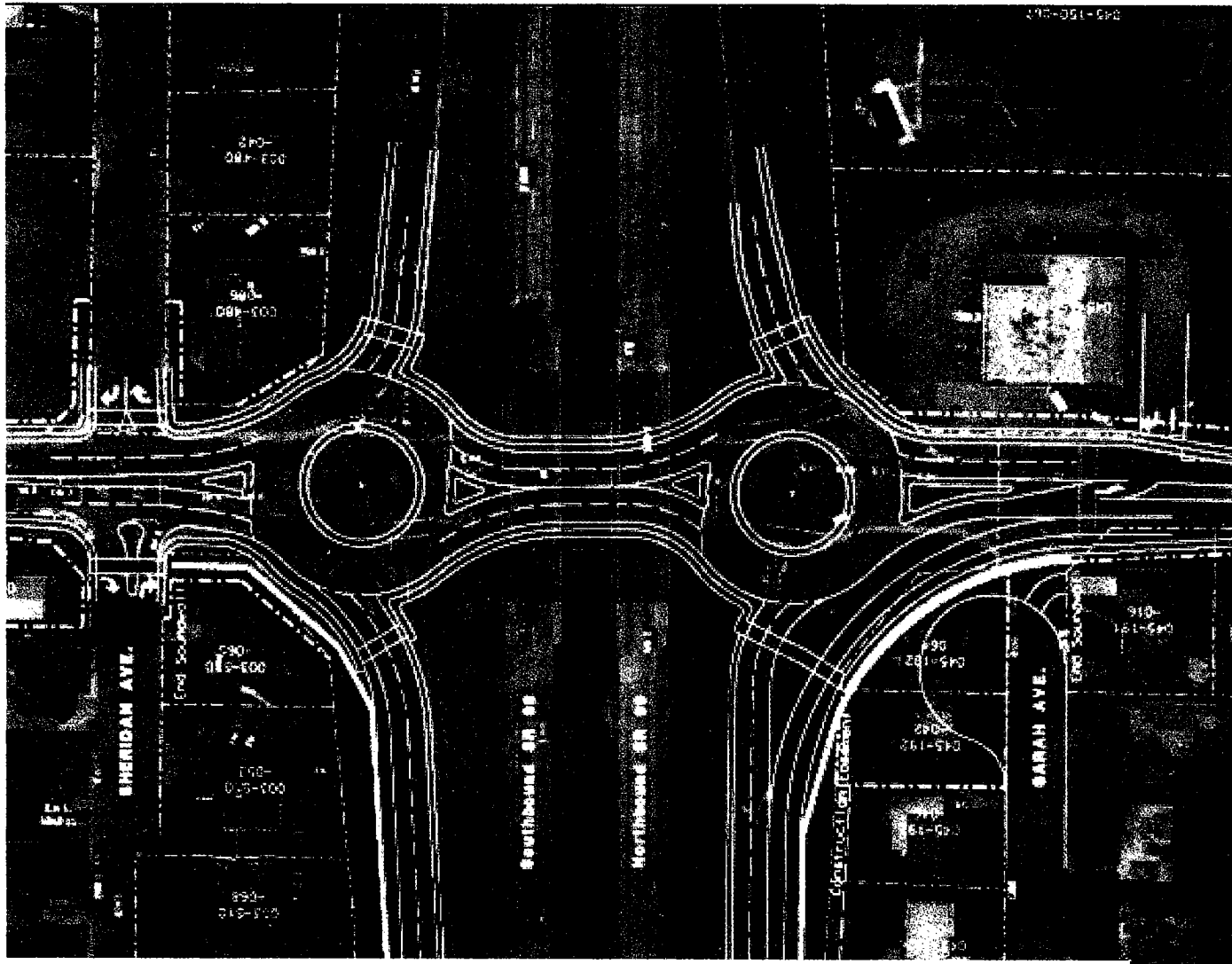


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*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



East 1st Avenue - Roundabouts Option

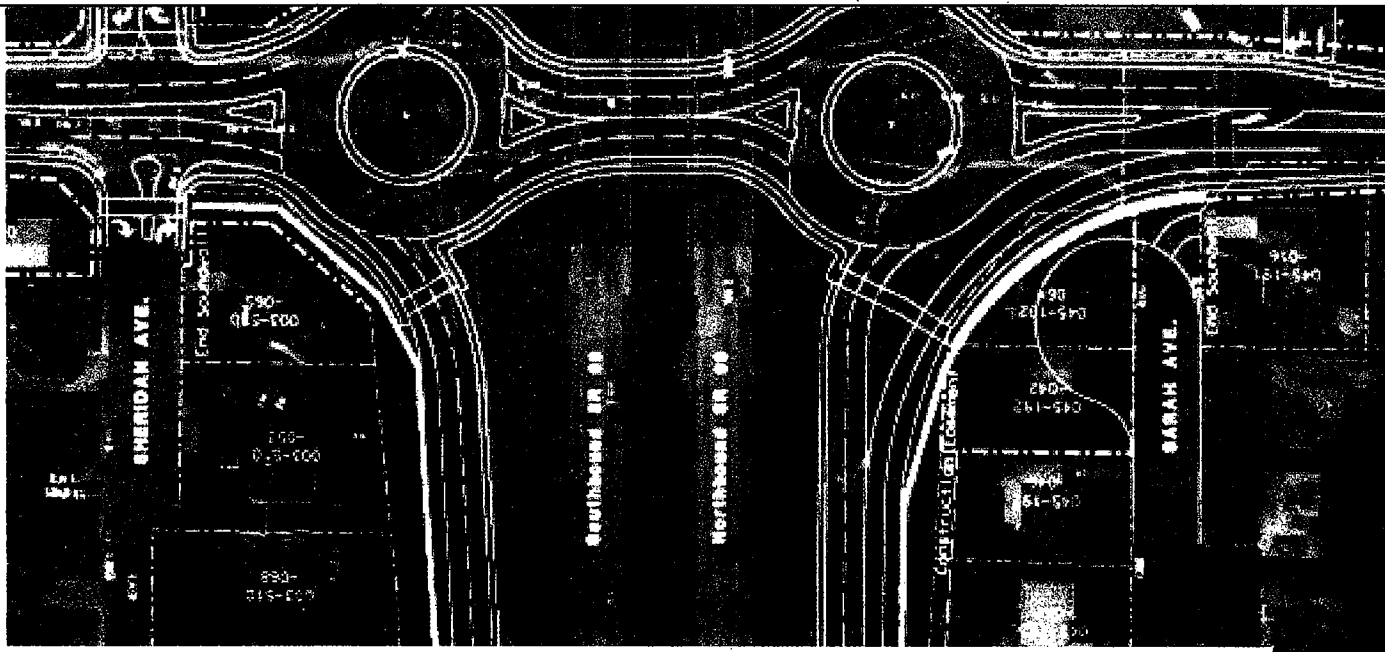


*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

East 1st Avenue - Roundabouts Option

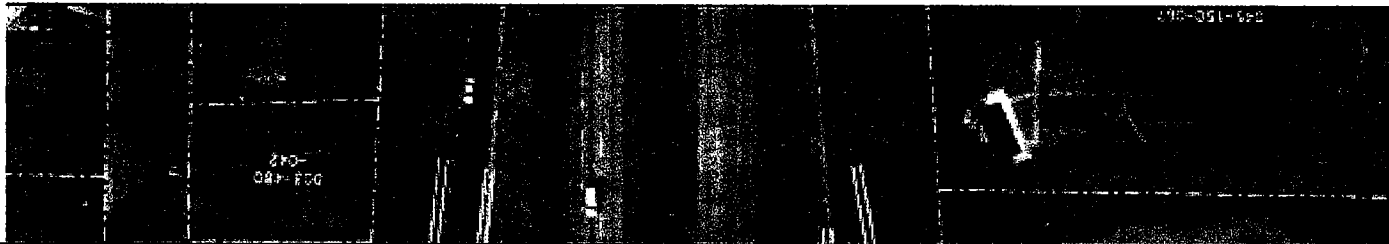
Advantages:

- Standard lane widths
- Expected reduction in vehicle accidents and severity
- Speeds reduced due to required deflections



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

East 1st Avenue - Roundabouts Option



Disadvantages:

- Non-conventional solution
- Visually impaired have more difficulty predicting traffic movements
- Requires up to three residential acquisitions
- Less experience with dual-lane roundabout
- Requires closure of Sarah Avenue



State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

Traffic Operations

Alan Telford, Fehr & Peers

Safety Statistics

TABLE ES-1
SR-99 ACCIDENT HISTORY (4/99 – 3/02)

Location	Statewide Accident Rate	Actual Accident Rate
NB SR-99 between SR-32 and East First Avenue	1.03	1.72
SB SR-99 between East First Avenue and SR-32	1.03	1.21
NB on-ramp from SR-32	0.45	1.52
NB off-ramp to East First Ave.	1.50	1.96
SB on-ramp from East First Ave.	0.80	1.55
SB off-ramp to SR-32	0.90	0.72

Note: 1. For mainline sections, the accident rate is the number of accidents per million vehicle miles.
For ramps, the accident rate is the number of accidents per million vehicles.
Source: Caltrans District 5, TACSAS Table B.

State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

Traffic Operations

Alan Telford, Fehr & Peers

● Safety Statistics

● Traffic Trends

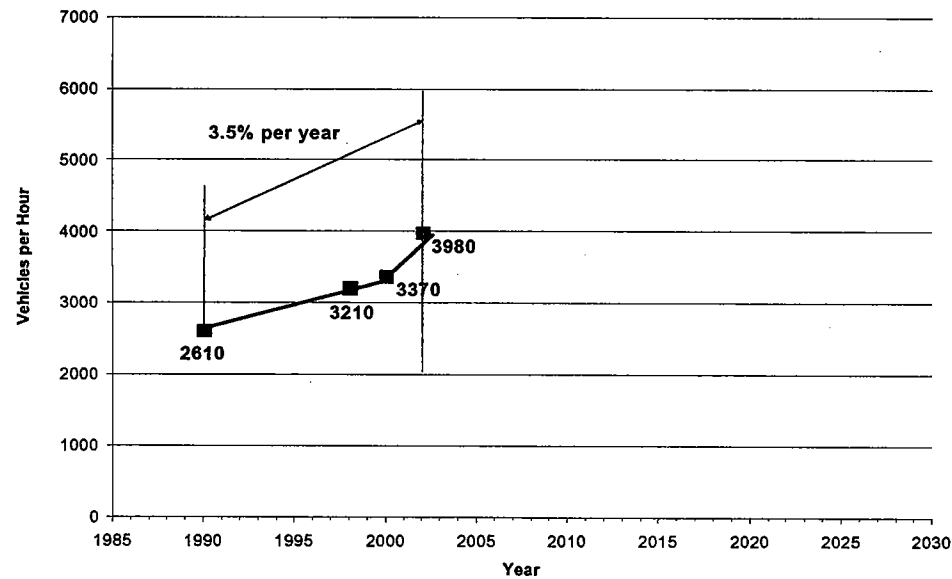


FIGURE ES-1. PM PEAK-HOUR VOLUME ON NORTHBOUND SR-99

State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

Traffic Operations

Alan Telford, Fehr & Peers

- Safety Statistics
- Traffic Trends
- Traffic Projections

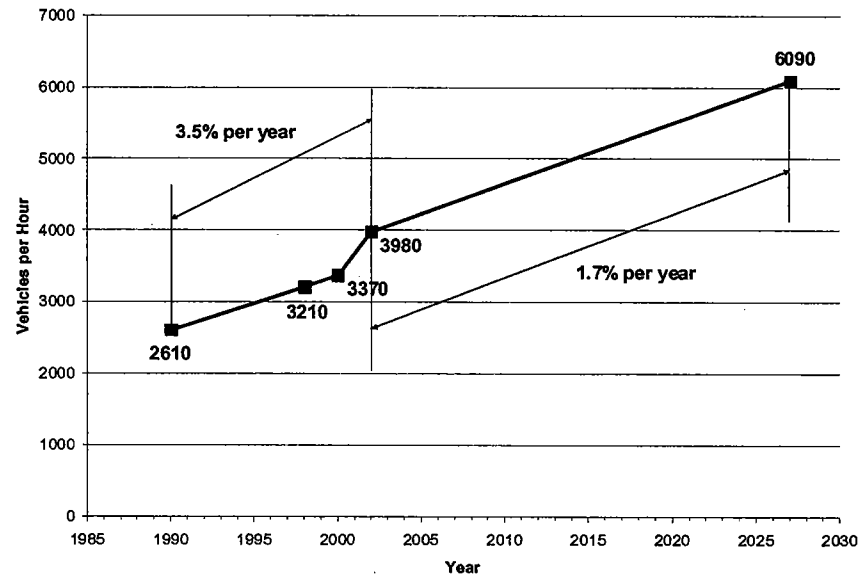


FIGURE ES-1. PM PEAK-HOUR VOLUME ON NORTHBOUND SR-99

State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

Traffic Operations

Alan Telford, Fehr & Peers

- **Safety Statistics**
- **Traffic Trends**
- **Traffic Projections**
- **Review of the Project Alternatives**

***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Traffic Operations

Alan Telford, Fehr & Peers

Summary of Design Year (2027) PM Peak Hour Intersection Operations				
Measure of Effectiveness	Existing Conditions (2002)	Future No Project	Option D-1 (Signals)	Option E-1 (Roundabouts)
Intersection Operations Level of Service (NB ramps/SB ramps)	C / D	F / F	C / C	B / F
Congested Movements	NB Off, EB Right	NB Off, EB Right, WB Left	EB Right	EB Right
Overall Operations Rating		Very Low	High	Medium High

***State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue***

Traffic Operations

Alan Telford, Fehr & Peers

- **Safety Statistics**
- **Traffic Trends**
- **Traffic Projections**
- **Review of the Project Alternatives**
- **Conclusions: Traffic Operations under Option D-1 (Signals) is slightly better than E-1 (Roundabouts)**
 - ✕ **In terms of freeway operations - both are satisfactory**
 - ✕ **Ramp intersections operate better under Option D-1**
 - ✕ **E-1 may reduce severity of vehicular accidents at intersections**
 - ✕ **D-1 may be safer for pedestrians, especially visually impaired**

*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



Noise Implications



A Noise Study has been conducted

- X Existing noise levels were measured,**
- X Future noise levels were predicted**
- X Attenuation is considered feasible and reasonable if:**
 - ✓ Noise levels approach or exceed standard**
 - ✓ Project contributes substantial noise increase**
 - ✓ Attenuation of at least 5 dBA can be achieved**
 - ✓ Cost must be "reasonable"**
- X Noise walls have been recommended for both alternatives.**

Recommended Noise Walls

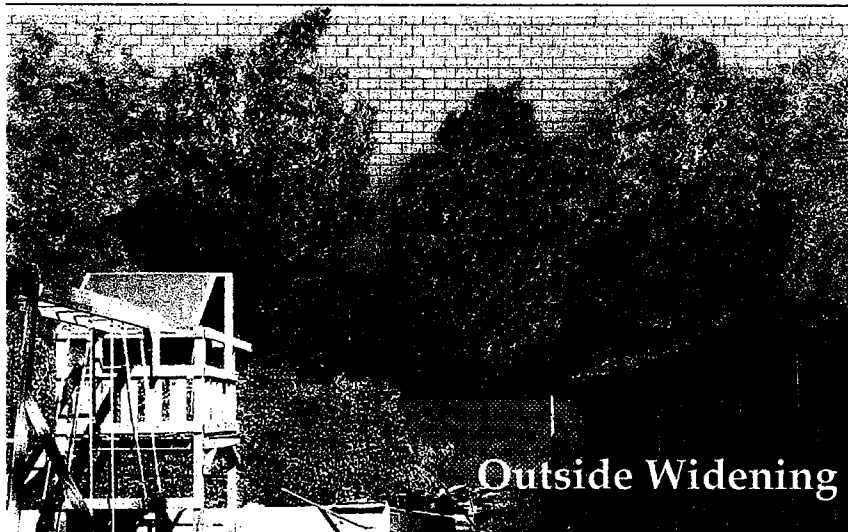
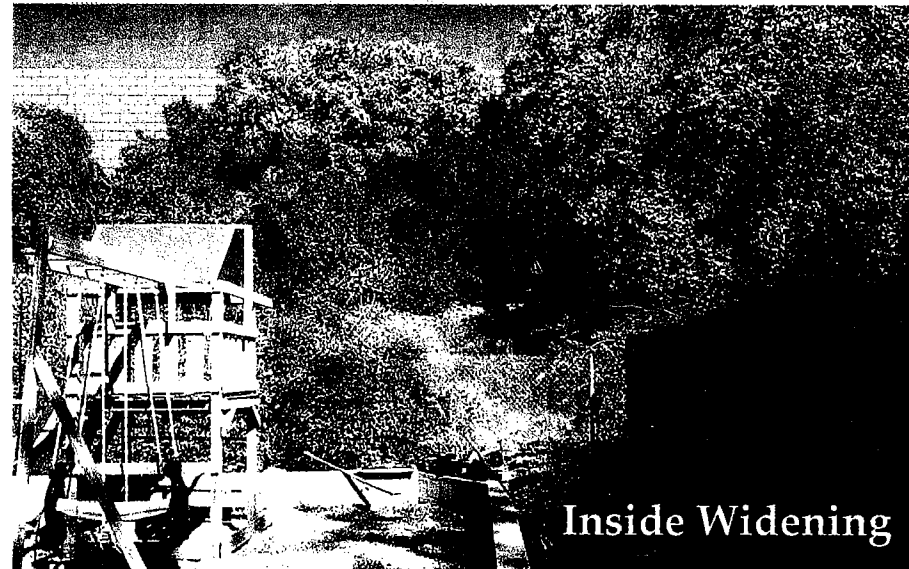
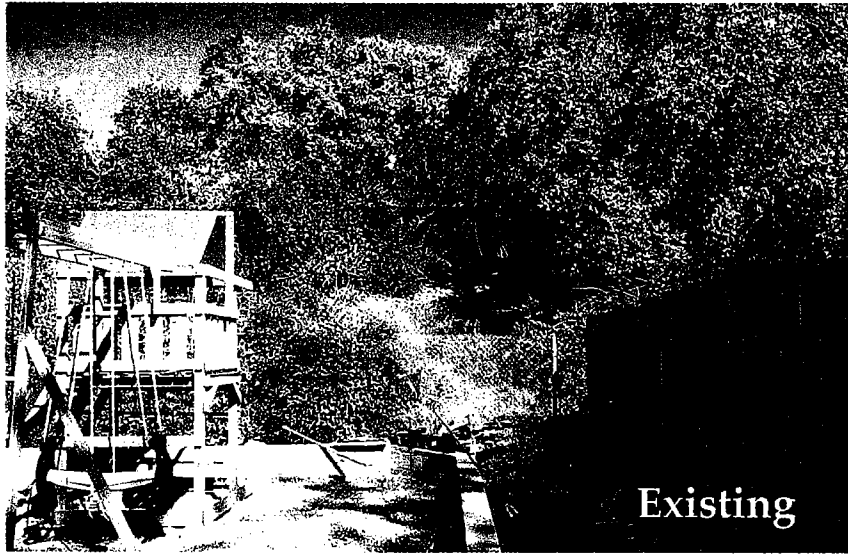
- 4.3 m (14 ft.) walls at edge of pavement
- Minimum 5 dB reduction
- Approximately 80 residences benefit



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



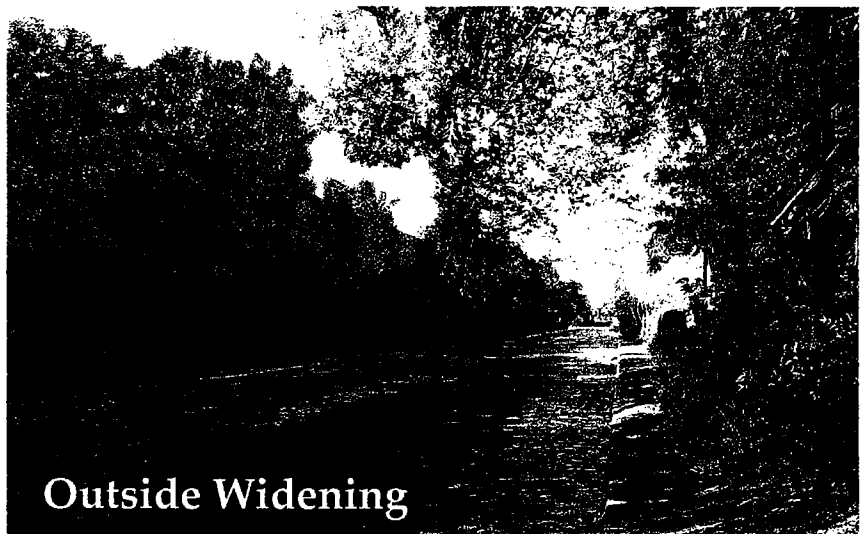
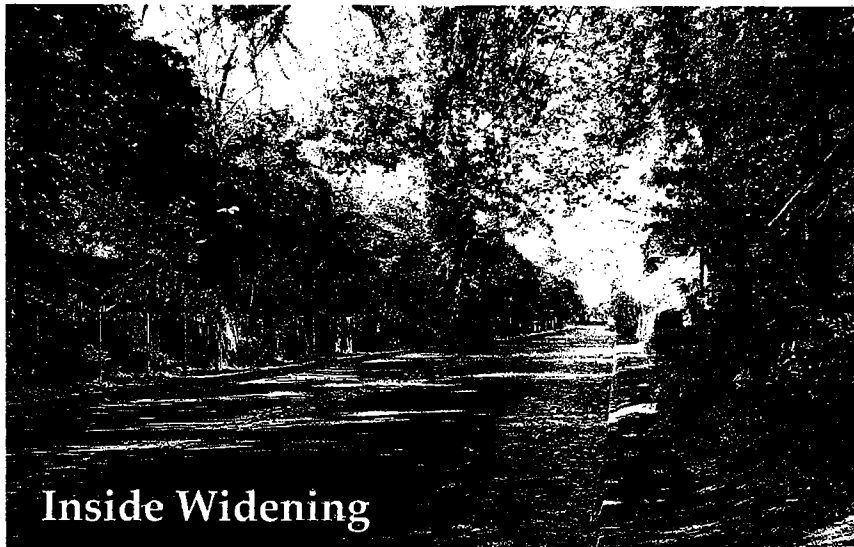
Noise Wall Renderings - Backyard



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*



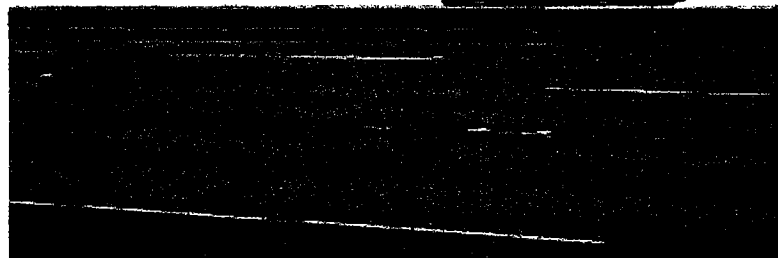
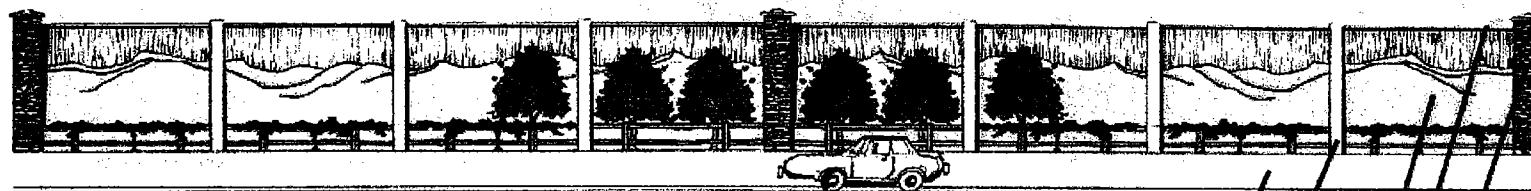
Noise Wall Renderings - Rey Way



State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue



Noise Wall Aesthetic Treatment Options



SR 99

CONCRETE BARRIER

CONCRETE PANEL COLUMN

FORMLINED TILT-UP CONCRETE WALL PANEL
WITH DIMENSIONAL RELIEF TO BE COLORED
WITH CONCRETE STAIN. EIGHT PANELS TO
BE REPEATED IN VARIOUS ARRANGEMENTS
ESTABLISH A VARIED LINEAR PATTERN.

CONCRETE WALL CAP

STONE PILASTER WITH STONE CAP

Exhibit A- Motorist's View

**State Route 99
Chico, California**

Prepared By:
State of California
Department of Transportation
Division of Design and Engineering Services
North Region Office of Landscape Architecture

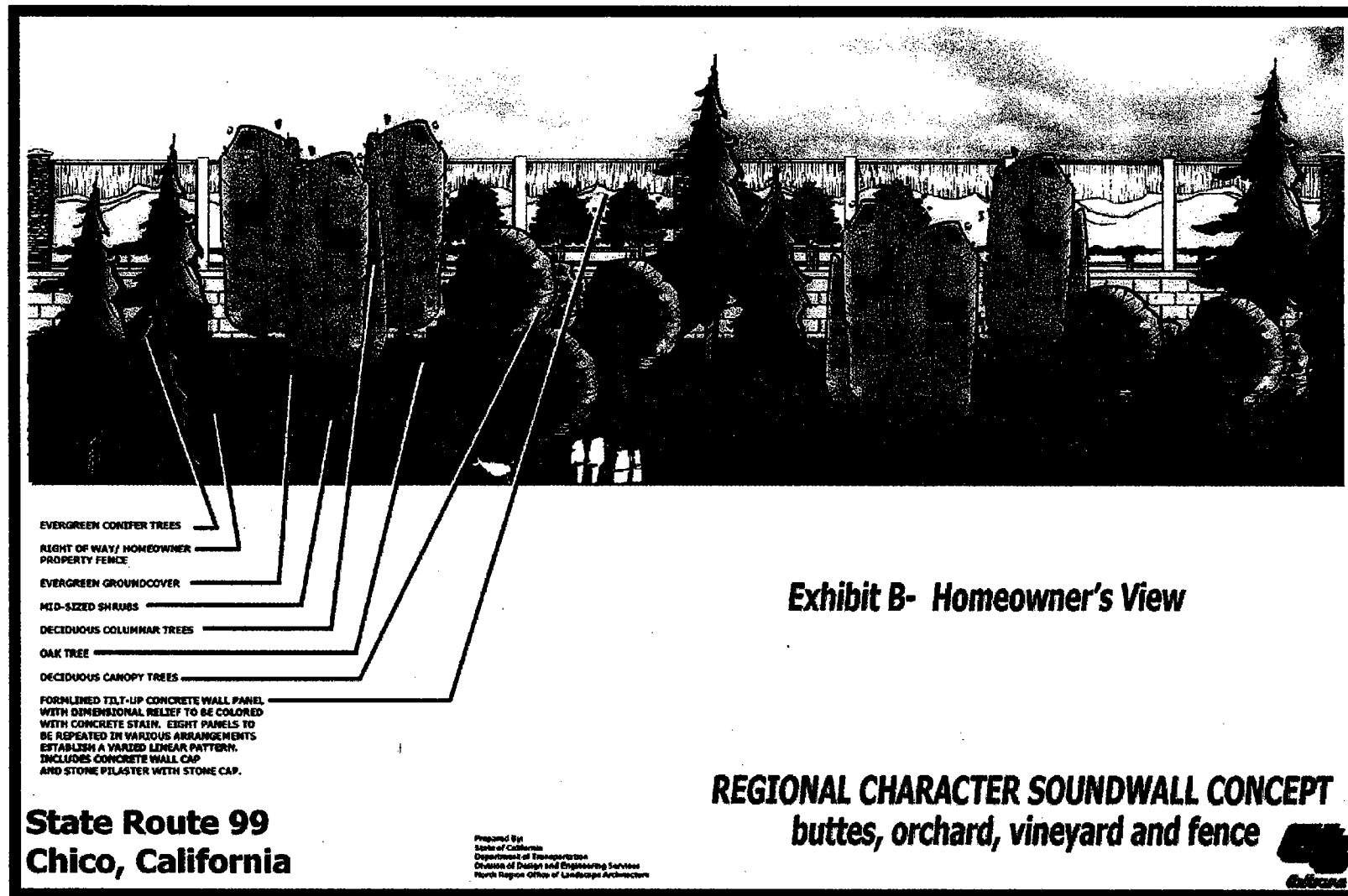
REGIONAL CHARACTER SOUNDWALL CONCEPT
buttes, orchard, vineyard and fence



State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

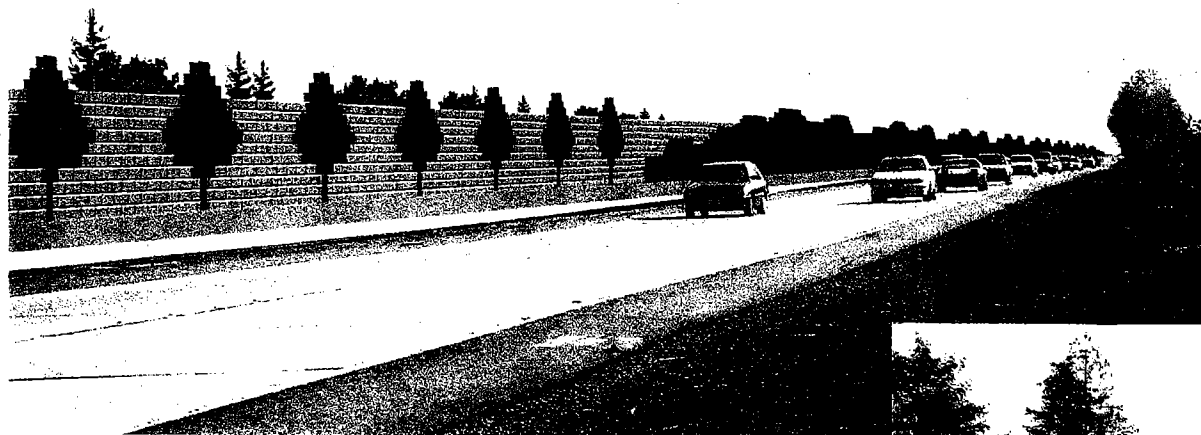


Noise Wall Aesthetic Treatment Options



State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue

Noise Wall Aesthetic Treatment Options



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

Noise Wall Aesthetic Treatment Options



*State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue*

Environmental Review Process

Debbie Loh, Jones & Stokes

● **Technical studies have been completed and are being reviewed by agencies:**

- ✕ No listed or eligible historic properties are affected
- ✕ No air quality violations have been triggered
- ✕ Other technical areas will be covered in next slides

● **Next step is to prepare draft environmental documents:**

- ✕ Environmental Impact Report for CEQA
- ✕ Categorical Exclusion for NEPA

● **Mitigation measures have been identified to reduce impacts**

Summary of Major Environmental Impacts - Land Use

Outside Widening Alternative	Inside Widening Alternative	Mitigation
One-to-three residences displaced	Same	Relocation assistance and identify comparable replacement housing
Safety improvements are needed today, not growth inducing	Same	None required

Summary of Major Environmental Impacts - Noise

Outside Widening Alternative	Inside Widening Alternative	Mitigation
1 to 3 dB increase over existing and future no- project	Same	None required
Existing/future noise levels exceed Federal thresholds	Same	Construct 4.1m (14 ft.) noise barrier
No increase at distant receivers	Same	None required



Summary of Major Environmental Impacts - Biological Resources

Outside Widening Alternative	Inside Widening Alternative	Mitigation
No vegetation removal within Park Boundaries	Same	None required
Three acres of riparian and 80 trees removed adjacent to Park	Three acres of riparian and 90 trees removed adjacent to Park	Restore/enhance riparian biological monitoring
610 trees removed on SR 99 slopes	310 trees removed on SR 99 slopes	Implement landscaping plan
Twenty elderberry shrubs transplanted	Nineteen elderberry shrubs transplanted	Establish VELB conservation area per USFWS
Construction effects on Big Chico Creek	Same	Coffer dam placed to avoid fish reproduction cycles per NOAA-Fisheries



Summary of Major Environmental Impacts - Visual Resources

Outside Widening Alternative	Inside Widening Alternative	Mitigation
Drivers View-Vegetated SR99 side slopes replaced with retaining wall and noise barrier	Drivers View-Portion of outside vegetation replaced with noise barrier, oleanders replaced with concrete barrier	Aesthetic treatment of retaining wall and noise barrier
Residences adjacent to SR99 view retaining walls and noise barrier	Minor change in existing views for most adjacent residences	Aesthetic treatment of retaining wall and noise barrier, replacement landscaping where possible
Twenty-six additional bridge columns, vegetation removal	Thirty-nine additional bridge columns, vegetation removal, tunnel effect within Park	Restore/enhance riparian, plant climbing vines around columns



Project Phasing

 **The project will likely be phased to align with funding constraints:**

X Phase 1:

- ✓ **Widen lower half of northbound off-ramp at East 1st Avenue**
- ✓ **Widen East 1st Avenue and construct revised signalize intersections or roundabouts**

X Phase 2:

- ✓ **Widen northbound on-ramp and southbound off-ramp at Route 32**
- ✓ **Complete all bridge widening**
- ✓ **Construct northbound auxiliary lane**

X Phase 3:

- ✓ **Construct southbound auxiliary lane**
- ✓ **Widen southbound on-ramp from East 1st Avenue**



Estimated Project Costs

	Construction	Right-of-Way	Total
Outside Widening	\$22.7 million	\$1.0 million	\$23.7 million
Inside Widening	\$23.8 million	\$1.0 million	\$24.8 million

**State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue**

Schedule

● Environmental Studies	Spring 2002 to Fall 2003
● Second Public Meeting	Tonight
● Circulate EIR	Fall 2003
● Third Public Meeting (Public Hearing)	Winter 2003
● BCAG to Certify EIR	Spring 2004
● FHWA to Certify CE	Late Spring 2004
● Right-of-Way Acquisition	12 months after ED Approval
● Final Design	12 months after ED Approval
● Construction*	12 months after final R/W

** To be constructed in phases to meet available funding*

Recap of First Public Meeting

May 29, 2002

Attended by approximately 75 people

51 written comments, questions from meeting also documented

Most Common Questions/Comments	
Why were trees tagged?	Tags were for surveying purposes only
Can speed limit be reduced on 99?	Speed limits are set based upon CVC and engineering study, CHP can not enforce speed limits that are set differently
Problem is on East 1st Ave, not 99 ?	While East 1st Avenue is congested, improvements are needed to address the operational and safety issues on Rte 99
Concern about limiting turns from Sheridan and Sarah.	The proximity of these streets relative to the ramp intersections creates significant safety and operational problems for turning vehicles



Recap of First Public Meeting

May 29, 2002

Most Common Questions/Comments (cont'd)	
Suggestion that Roundabouts be used rather than signals	Roundabouts have been added as a project alternative
Concern about increased noise	While the project will not appreciably increase noise levels, soundwalls are justified
Can't the ramps at East 1st Avenue be closed?	Significant local traffic uses Rte 99 to traverse across Bidwell Park, the city street system could not handle the additional traffic demand if closed
Can a "Bypass" be built around Chico and Bidwell Park	While this would be desirable, it would be too expensive to fund in the foreseeable future, also would not meet this project's "purpose and need"
Concerns about tree removal for each alternative	It is not possible to address the existing deficiencies without removing some trees, <u>aesthetic</u> treatment of walls and new landscaping is proposed

**State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue**



Public Input Opportunities

- **Fill out a comment card tonight or mail it in**
- **Sign in so that you will be on our mailing list**
- **Contact us by mail or phone - see the handout**
- **Attend future meetings**
- **Review the Draft Environmental Document in Fall 2003**

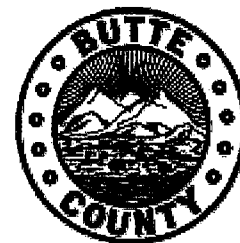
**State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue**



Questions?



U.S. Department
of Transportation
Federal Highway
Administration



State Route 99/Auxiliary Lanes Project
Route 32 to East 1st Avenue





**Butte County Association
of Governments**

State Route 99 Auxiliary Lanes Project
Public Information Meeting #2
March 12, 2003

NAME: _____
ADDRESS: _____
CITY, ZIP : _____

1. Do you support the project? Yes _____ No _____ Unsure _____

2. Please provide your comments on the freeway widening alternatives:

I prefer: _____ Outside Widening _____ Median Widening _____ No preference

3. Please provide your comments on the East First Avenue improvement alternatives:

I prefer: _____ Signalized Ramp Intersections _____ Roundabouts _____ No preference

4. Please provide your comments regarding potential soundwall locations and treatments:

5. Please provide any other comments you have related to the project:

Your comments are important.
Please drop this form into the comment box at this meeting or
mail it to the address shown on the back of this form.
You may also respond at our web site: www.bcag.org under the Planning/Programming icon

Please respond by April 4, 2003

RETURN ADDRESS

**Butte County Association of Governments
965 Fir Street
Chico, CA 95928-6301
Attention: Mr. Andy Newsum**

Appendix C Environmental Justice (Executive Order 12898)

Appendix C Environmental Justice Effects (Executive Order 12898)

The project has been developed in accordance with the Civil Rights Act of 1964, as amended; the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, as amended; and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Executive Order 12898 requires each federal agency to take the appropriate and necessary steps to identify and address disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations.

Environmental justice refers to the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The Council on Environmental Quality's *Draft Guidance for Environmental Justice* (May 24, 1996) indicates that environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on minority and low-income populations, or from related social or economic impacts (California Department of Transportation 1997).

An evaluation of data from the 2000 U.S. Census (U.S. Census Bureau 2001) indicates that the income and racial characteristics of the study area are similar to those citywide and countywide (Tables 4-1 and 4-2 in Chapter 4). Information gathered through site visits and field surveys confirms this conclusion. Only Census Tract (CT) 10 (see Figure 4-1 in Chapter 4), which includes the area west of SR 99 and south of Bidwell Park, exhibits characteristics different from those found elsewhere in the study area. As Table 4-1 shows, median household income in CT 10 is 48% lower than income in the study area as a whole and 38% lower the income levels citywide. Additionally, CT 10 has a higher percentage of Hispanics (16%) than throughout the study area (10%) or city (12%).

Project impacts in CT 10 would largely result from the construction of improvements at the SR 99/SR 32 interchange; construction-related effects would be similar to those that would occur along the length of the project corridor and would not disproportionately fall on residents near the off-ramp. Additionally, no residential or business displacements or right-of-way acquisitions would occur in CT 10, as would occur near the SR 99/East 1st Avenue interchange in CTs 7 and 8. One home could be displaced in CT 7 with conventional intersections and two additional homes could be displaced in CT 8 with roundabouts. Census data and field observations do not indicate that these impacts would fall disproportionately on low-income or minority persons. Therefore, neither the Outside or Inside Widening Alternatives, either with conventional intersections or roundabouts, is considered to potentially cause disproportionately high and adverse human health and environmental effects on minority or low-income residents.

Appendix D Summary of Relocation Benefits

Appendix D Summary of Relocation Benefits

D.1 Introduction

The following explanation of residential relocations is general in nature and is not intended to be a complete statement of federal and state relocation laws and regulations. Any questions concerning relocation should be addressed to the Caltrans' or BCAG's right-of-way staff.

Any persons to be displaced will be assigned to a relocation advisor, who will work closely with each displacee in order to see that all payments and benefits are fully utilized, and that all regulations are observed, thereby avoiding the possibility of displacees jeopardizing or forfeiting any of their benefits or payments. At the time of the first written offer to purchase, owner-occupants are given a detailed explanation of the State of California's relocation services. Tenant occupants of properties to be acquired are contacted soon after the first written offer to purchase, and also are given a detailed explanation of the relocation program. To avoid loss of possible benefits, no individual, family, business, farm, or nonprofit organization should commit to purchase or rent a replacement property without first contacting a Caltrans' or BCAG's relocation advisor.

D.2 Relocation Assistance Advisory Services

In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, Caltrans or BCAG will provide relocation advisory assistance to any person, business, farm, or nonprofit organization displaced as a result of the acquisition of real property for public use. Caltrans or BCAG will assist displacees in obtaining comparable replacement housing by providing current and continuing information on the availability and prices of both houses for sale and rental units that are "decent, safe, and sanitary." Nonresidential displacees will receive information on comparable properties for lease or purchase.

Residential replacement dwellings will be in equal or better neighborhoods at rents or prices within the financial ability of the individuals and families displaced, and will be reasonably accessible to their places of employment. Before any displacement occurs, comparable replacement dwellings that are open to all persons, regardless of race, color, religion, sex, and national origin, and which are consistent with the requirements of Title VIII of the Civil Rights Act of 1968, will be offered to displacees. This assistance will also include the supplying of information concerning federal- and state-assisted housing programs, and any other known services being offered by public and private agencies in the area.

Persons who are eligible for relocation payment(s) and who are legally occupying a property required for the project will not be asked to move without first being given at least 90 days written notice, and not unless at least one decent, safe, and sanitary replacement residence, available on the market, is offered to them by Caltrans or BCAG.

D.3 Residential Relocation Payments Program

The Relocation Payment Program will help eligible residential occupants by paying certain costs and expenses. These costs are limited to those necessary for or incidental to the purchase or rental of the replacement dwelling and actual reasonable moving expenses to a new location within 50 miles of the displacement property. Any actual moving costs in excess of the 50 miles are the responsibility of the displacee. A summary of the Residential Relocation Program follows.

D.3.1 Moving Costs

Any displaced person, who lawfully occupied the acquired property, regardless of the length of occupancy in the property acquired, will be eligible for reimbursement of moving costs. Displacees will receive either the actual reasonable cost involved in moving themselves and personal property up to a maximum of 50 miles or a fixed payment based on a fixed moving cost schedule.

D.3.2 Purchase Supplement

In addition to moving and related expense payments, fully eligible homeowners may be entitled to payments for increased costs of replacement housing.

Homeowners who have owned and occupied their property for 180 days or more prior to the date of the first written offer to purchase the property may qualify to receive a price differential payment and may qualify to receive reimbursement for certain nonrecurring costs incidental to the purchase of the replacement property. An interest differential payment is also available if the interest rate for the loan on the replacement dwelling is higher than the loan rate on the displacement dwelling, subject to certain limitations on reimbursement based upon the replacement property interest rate. The maximum combination of these three supplemental payments that the owner-occupant can receive is \$22,500. If the total entitlement (without the moving payments) is in excess of \$22,500, the Last Resort Housing Program will be used. (See the explanation of the Last Resort Housing Program below).

D.3.3 Rental Supplement

Tenants who have occupied the property to be acquired by Caltrans or BCAG for 90 days or more and owner-occupants of 90–79 days prior to the date of the first written offer to purchase may qualify to receive a rental differential payment. This payment is made if Caltrans or BCAG determines that the cost to rent a comparable “decent, safe, and sanitary” replacement dwelling will be more than the present rent of the displacement dwelling. As an alternative, the tenant may qualify for a down payment benefit designed to assist in the purchase, subject to certain limitations noted below under the “Down Payment” section. The maximum amount payable to any tenant of 90 days or more and any owner-occupant of 90–179 days, in addition to moving expenses, is \$5,250. If the total entitlement for rental supplement exceeds \$5,250, the Last Resort Housing Program will be used.

In addition to the occupancy requirements, in order to receive any relocation benefits, the displaced person must buy or rent and occupy a “decent, safe, and sanitary” replacement dwelling within 1 year from the date the department takes legal possession of the property, or from the date the displacee vacates the displacement property, whichever is later.

D.3.4 Down Payment

The down payment option has been designed to aid owner-occupants of 90-179 days and tenants with no less than 90 days of continuous occupancy prior to Caltrans’ or BCAG’s first written offer. The down payment and incidental expenses cannot exceed the maximum payment of \$5,250. The 1-year eligibility period in which to purchase and occupy a “decent, safe, and sanitary” replacement dwelling will apply.

D.3.5 Last Resort Housing

Federal regulations (49 Code Federal Regulations [CFR] 24) contain the policy and procedure for implementing the Last Resort Housing Program on federal-aid projects. Last resort housing benefits are, except for the amounts of payments and the methods in making them, the same as those benefits for standard residential relocations as explained above. Last resort housing has been designed primarily to cover situations where a displacee cannot be relocated because of lack of available comparable replacement housing, or when the anticipated replacement housing payment exceeds the \$5,250 and \$22,500 limits of the standard relocation procedure, because either the displacee lacks the financial ability or other valid circumstances. In certain exceptional situations, Last Resort Housing may also be used for tenants of less than 90 days.

After the first written offer to acquire the property has been made, Caltrans or BCAG will, within a reasonable length of time, personally contact the displacees to gather important information, including:

- preferences in area of relocation;
- number of people to be displaced and the distribution of adults and children according to age and sex;
- location of school and employment;
- specific arrangements needed to accommodate any family member(s) special needs; and
- financial ability to relocate into comparable replacement dwelling which will adequately house all members of the family.

D.4 Additional Information

D.4.1 Relocation Payments Not Income

Reimbursement for moving costs and replacement housing payments are not considered income for the purpose of the Internal Revenue Code of 1954, or resources for the purpose of determining the extent of eligibility of a displacee for assistance under the Social Security Act, local “Section 8” Housing programs, or other federal assistance programs.

D.4.2 Right to Appeal

Any person, business, farm, or nonprofit organization that has been refused a relocation payment by Caltrans' or BCAG's relocation advisor or believes that the payment(s) offered by the agency are inadequate, may appeal for a special hearing of their complaint. No legal assistance is required. Information about the appeal procedure is available from the relocation advisor.

Appendix E Proposed Landscaping Plan and Aesthetic Treatment for the Noise Barrier

ABBREVIATIONS

AMEND — amendment
B & B — balled and burlapped
DIA — diameter
EA — each
g — gram
kg — kilogram
m — meter
m² — square meter
m³ — cubic meter
MAX — maximum

MIN — minimum
mm — millimeter
No — number
PLT ESTB — plant establishment
PVT — pavement
R/W — right of way
SF — state furnished
TAB — tablet(s)
TRVD — traveled



DIST	COUNTY	ROUTE	POST KLO TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	BUT	99	RS1.9/R53.3		

LICENSED LANDSCAPE ARCHITECT

PLANS APPROVAL DATE

MERRILL + BEFU ASSOCIATES
249 Front Street
San Francisco, CA 94111

PLANT LIST AND PLANTING SPECIFICATIONS

PLANT GROUP	PLANT No	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY EACH	HOLE SIZE (mm)		BASIN TYPE	IRON SULFATE ①	SOIL AMEND ①	COMMERCIAL FERTILIZER ①		MULCH ①	STAKING	PLANTING LIMITS							REMARKS
							DIA	DEPTH				MINIMUM DISTANCE (m) FROM						ON CENTER (m)					
												TRVD WAY	PVMT			FENCE	WALL		PAVED DITCH	EARTH DITCH			
A			ACACIA REDOLENS	NCN																		SEGMENTS 1,3,4	
			ARCTOSTAPHYLOS 'EMERALD CARPET'	EMERALD CARPET MANZANITA																		SEGMENTS 1,3,4	
			LANTANA MONTEVIDENS	NCN																		SEGMENTS 1,4	
			TRACHELOSPERMUM JASMINOIDES	STAR JASMINE																		SEGMENT 3	
B		⊕	ARBUTUS UNEDO 'COMPACTA'	COMPACT STRAWBERRY TREE																		SEGMENTS 1,3,4	
		⊕	ARCTOSTAPHYLOS 'HOWARD MCINN'	HOWARD MCINN MANZANITA																		SEGMENTS 1,4	
		⊕	MAHONIA AQUIFOLIUM	OREGON GRAPE HOLLY																		SEGMENT 3	
		⊕	RHAMNUS CALIFORNICA 'EVE CASE'	EVE CASE COFFEEBERRY																		SEGMENTS 1,3,4	
		⊕	RIBES VIBURNIFOLIUM	EVERGREEN CURRANT																		SEGMENT 3	
		○	ARCTOSTAPHYLOS 'LOUIS EDMUNDS'	LOUIS EDMUNDS MANZANITA																		SEGMENT 3	
		○	FREMONTODENDRON 'CALIFORNIA GLORY'	CALIFORNIA GLORY FLANNEL BUSH																		SEGMENTS 1,3,4	
		○	GARRYA ELIPTICA	COAST SILKTASSEL																		SEGMENTS 1,4	
		○	MYRICA CALIFORNICA	CALIFORNIA WAX MYRTLE																		SEGMENTS 1,3,4	
		○	RHUS INTEGRIFOLIA	LEMONADE BERRY																		SEGMENT 3	
		⊗	CARPENTERIA CALIFORNICA	BUSH ANEMONE																		SEGMENTS 1,3,4	
		⊗	HETEROMELES ARBUTIFOLIA	CALIFORNIA HOLLY																		SEGMENTS 1,3,4	
		⊗	RIBES SANGUINEUM	PINK WINTER CURRANT																		SEGMENT 3	
		⊗	SALVIA LEUCOPHYLLA	PURPLE SAGE																		SEGMENTS 1,4	
U		⊙	CERCIS OCCIDENTALIS	WESTERN REDBUD																			
		⊙	FRAXINUS ANGUSTIFOLIA	CLARET ASH																		SEGMENTS 1,3,4	
		⊙	LIQUIDAMBAR STYRACIFLUA	SWEETGUM																		SEGMENTS 1,3,4	
		⬠	ALNUS RHOMBIFOLIA	WHITE ALDER																		SEGMENTS 1,3,4	
		⬠	PINUS HALPENSIS	ALEPPO PINE																		SEGMENT 2	
		⬠	PISTACIA CHINENSIS	CHINESE PISTACHE																		SEGMENTS 2,3,4	
		⬠	SEQUOIA SEMPERVIRENS	COAST REDWOOD																		SEGMENT 3	
		⬠	JUGLANS HINDSII	BLACK WALNUT																		SEGMENTS 3,4	
		⬠	PLATANUS RACEMOSA	WESTERN SYCAMORE																		SEGMENT 2	
		⬠	QUERCUS LOBATA	VALLEY OAK																		SEGMENTS 2,3,4	
		⬠	QUERCUS WISLIZENII	INTERIOR LIVE OAK																		SEGMENTS 2,3,4	
																					SEGMENTS 1,3,4		
			BARK MULCH																				

APPLICABLE WHEN CIRCLED:

- Quantities shown are "per plant" unless shown as m² application rates.
- Sufficient to receive root ball.
- Does not apply to mulch areas.

- As shown on plans.
- Unless otherwise shown on plans.
- See detail.
- See Special Provisions.

NOTES:

Underlined portions of botanical name indicate abbreviations used on Planting Plans.

- SEGMENT 1 - STATION POINT 170.00 TO 172.52
SEGMENT 2 - STATION POINT 172.52 TO 174.60
SEGMENT 3 - STATION POINT 174.75 TO 180.31
SEGMENT 4 - STATION POINT 180.45 TO 183.50

Concept A
Plant List

PL-1A

NOTE:

FOR COMPLETE R/W AND ACCURATE
ACCESS DATA, SEE R/W MAPS AT
DISTRICT OFFICE.



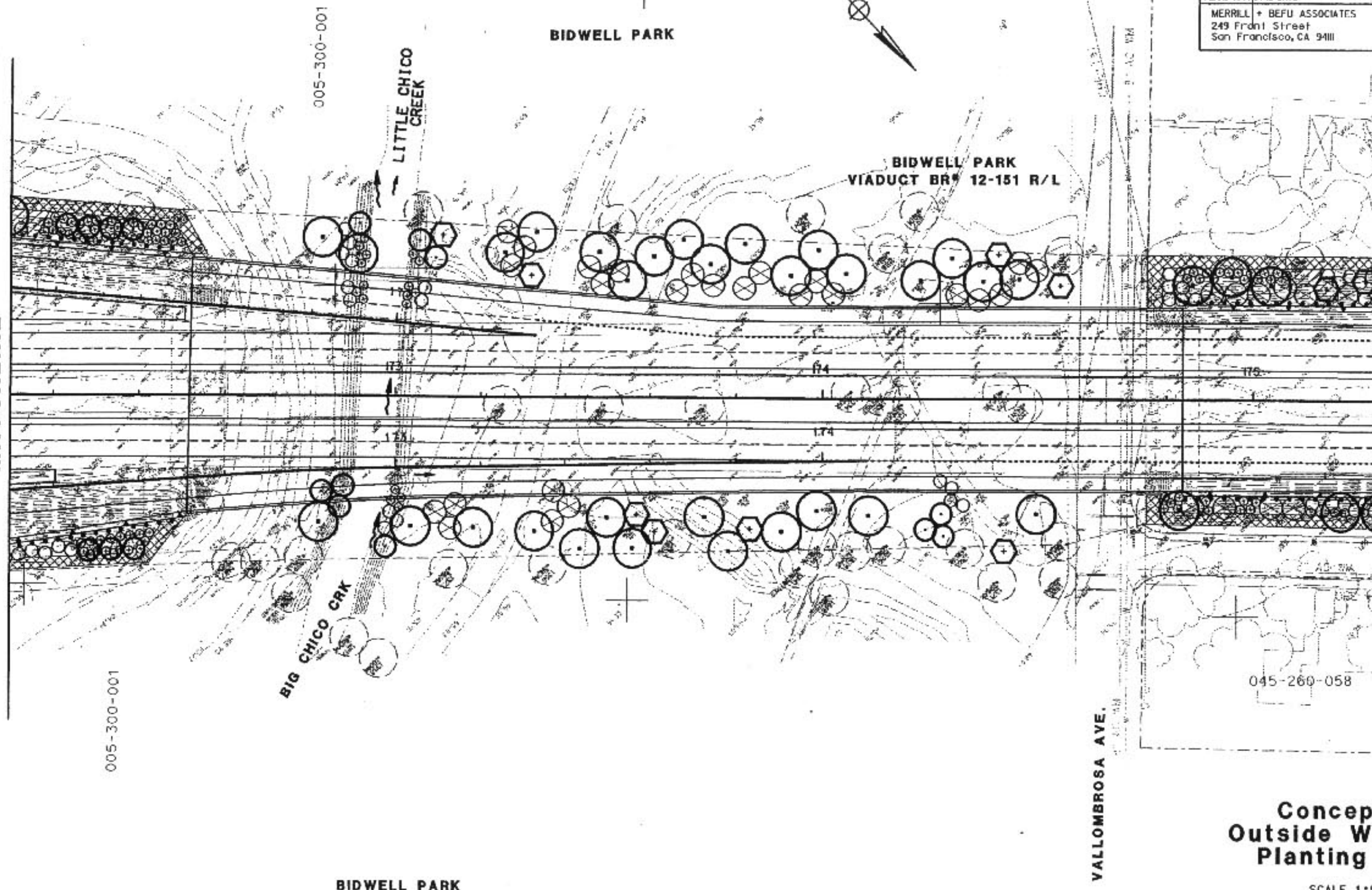
DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	BUT	99	R51.9/R53.3		

LICENSED LANDSCAPE ARCHITECT

PLANS APPROVAL DATE

MERRILL + BEFU ASSOCIATES
249 Front Street
San Francisco, CA 94111

MATCHLINE



MATCHLINE

Concept A
Outside Widening
Planting Plan

SCALE 1:500

ALL DIMENSIONS ARE IN
METERS UNLESS OTHERWISE SHOWN

P-2A

FOR REDUCED PLANS ORIGINAL
SCALE IS IN MILLIMETERS

0 20 40 60 80

01/03/00

EA 340400

DATE PLOTTED 01/03/00
TIME PLOTTED 11:11 AM

AGENCY NAME	PROJECT ENGINEER	CALCULATED/ DESIGNED BY	DATE	REVISED BY	DATE
BUTTE COUNTY ASSOCIATION OF GOVERNMENTS	Karen A. Torman	CHECKED BY		DATE REVISED	

NOTE:

FOR COMPLETE R/W AND ACCURATE
ACCESS DATA, SEE R/W MAPS AT
DISTRICT OFFICE.

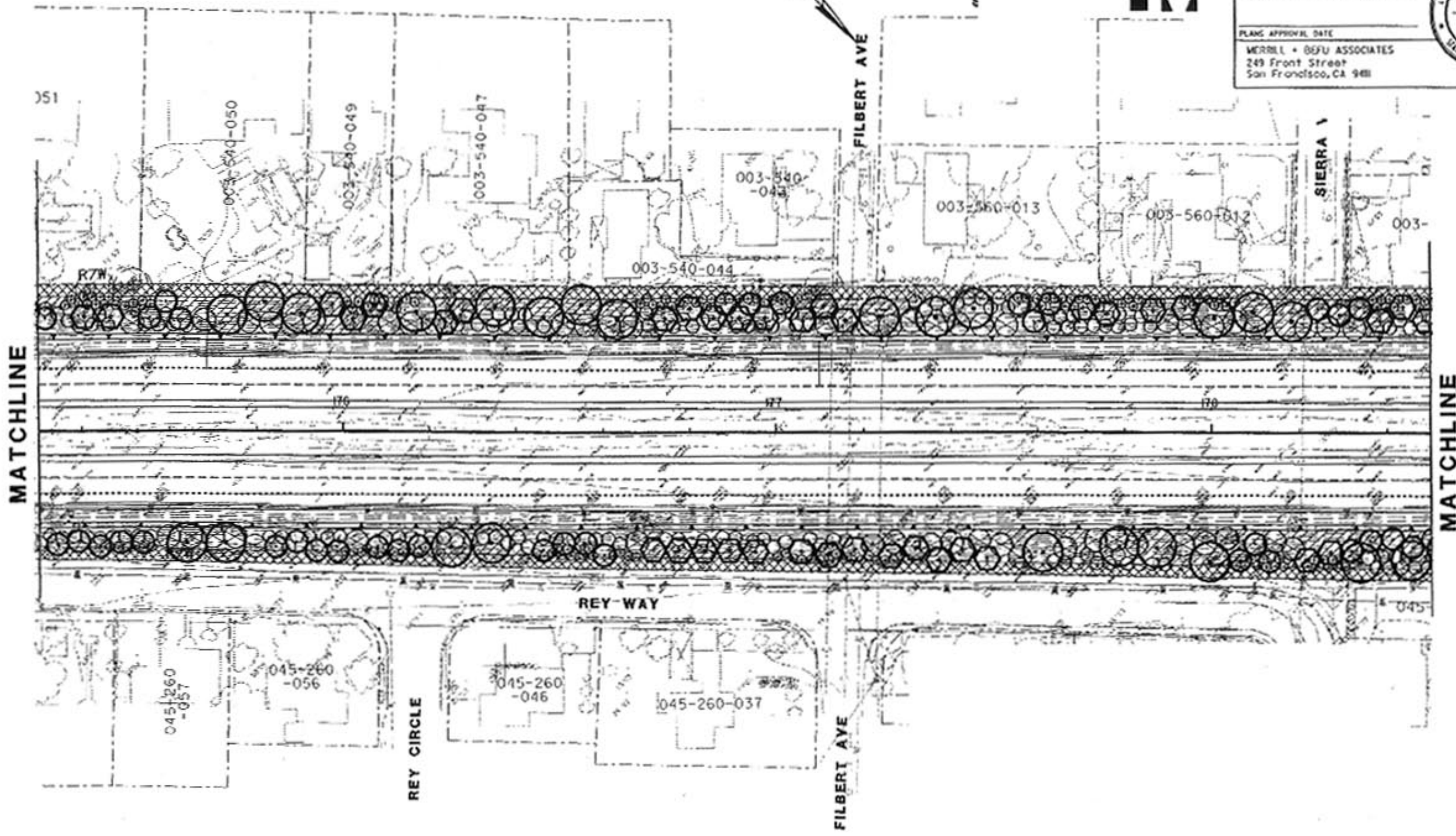


CITY	COUNTY	ROUTE	POST & TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	BUT	99	R51.9/R53.3		

LICENSED LANDSCAPE ARCHITECT

PLANS APPROVAL DATE

MERRILL + BEFU ASSOCIATES
249 Front Street
San Francisco, CA 94111



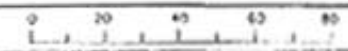
**Concept A
Outside Widening
Planting Plan**

SCALE 1:500

ALL DIMENSIONS ARE IN
METERS UNLESS OTHERWISE SHOWN

P-3A

FOR REDUCED PLANS ORIGINAL
SCALE 1:500 MILLIMETERS



DATE PLOTTED 05-04-00

BY 2/0002

EA 3A0400

DATE PLOTTED 05-04-00
BY 2/0002

AGENCY NAME	PROJECT ENGINEER	CALCULATED/DESIGNED BY	CHECKED BY	DATE	REVISION BY	DATE	REVISION BY
BUTTE COUNTY ASSOCIATION OF GOVERNMENTS	KAREN A. TATMAN						

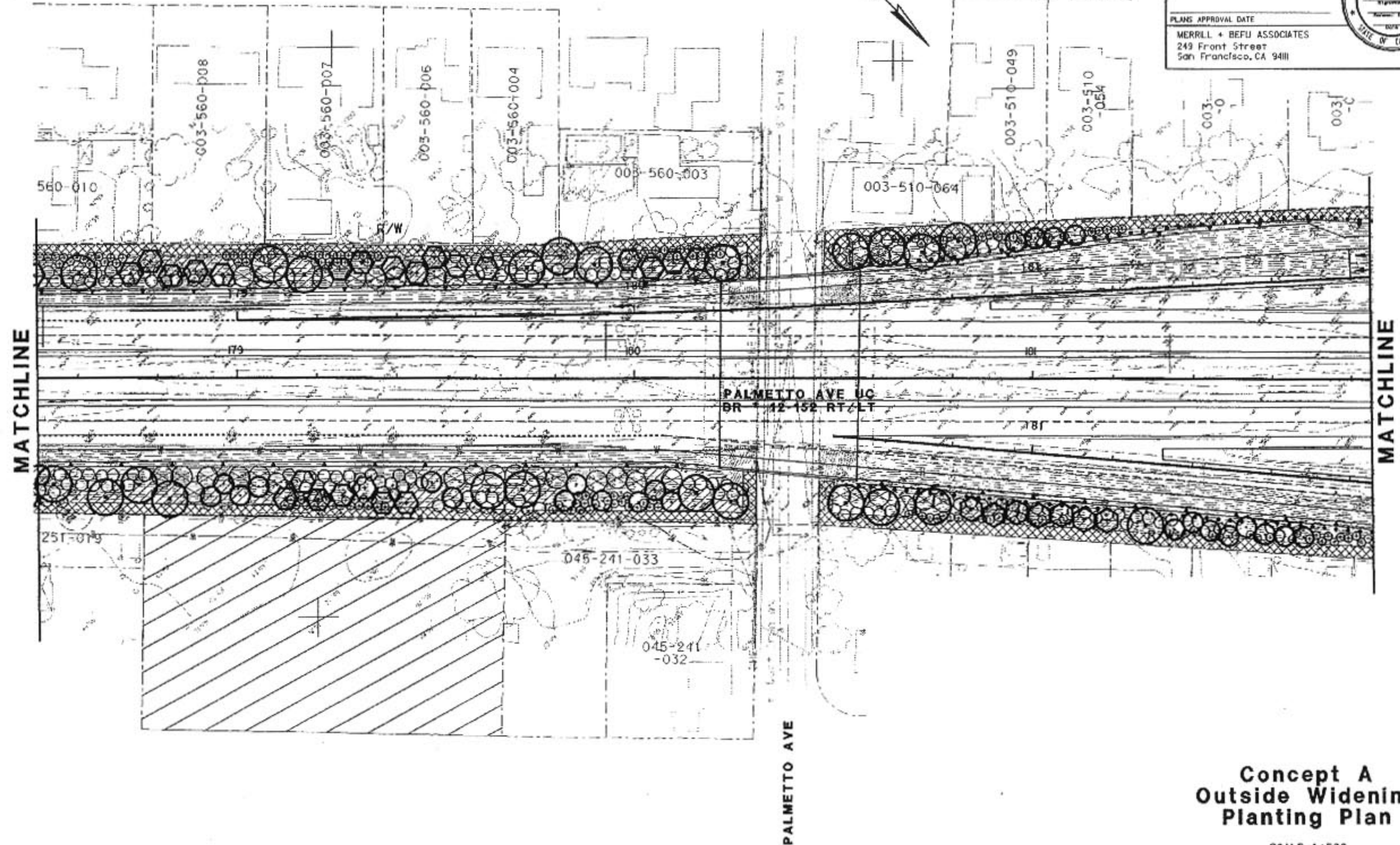
NOTE:

FOR COMPLETE R/W AND ACCURATE
ACCESS DATA, SEE R/W MAPS AT
DISTRICT OFFICE.



DIST	COUNTY	ROUTE	POST KLD TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	BUT	99	R51.9/R53.3		

LICENSED LANDSCAPE ARCHITECT	
PLANS APPROVAL DATE	
MERRILL + BEFU ASSOCIATES 249 Front Street San Francisco, CA 94111	



**Concept A
Outside Widening
Planting Plan**

SCALE 1:500

ALL DIMENSIONS ARE IN
METERS UNLESS OTHERWISE SHOWN

P-4A

AGENCY NAME	PROJECT ENGINEER	CALCULATED/ DESIGNED BY	DATE	REVISED BY	DATE
BUTTE COUNTY ASSOCIATION OF GOVERNMENTS	Karen A. Tolman	CHECKED BY			

NOTE:
FOR COMPLETE R/W AND ACCURATE
ACCESS DATA, SEE R/W MAPS AT
DISTRICT OFFICE.

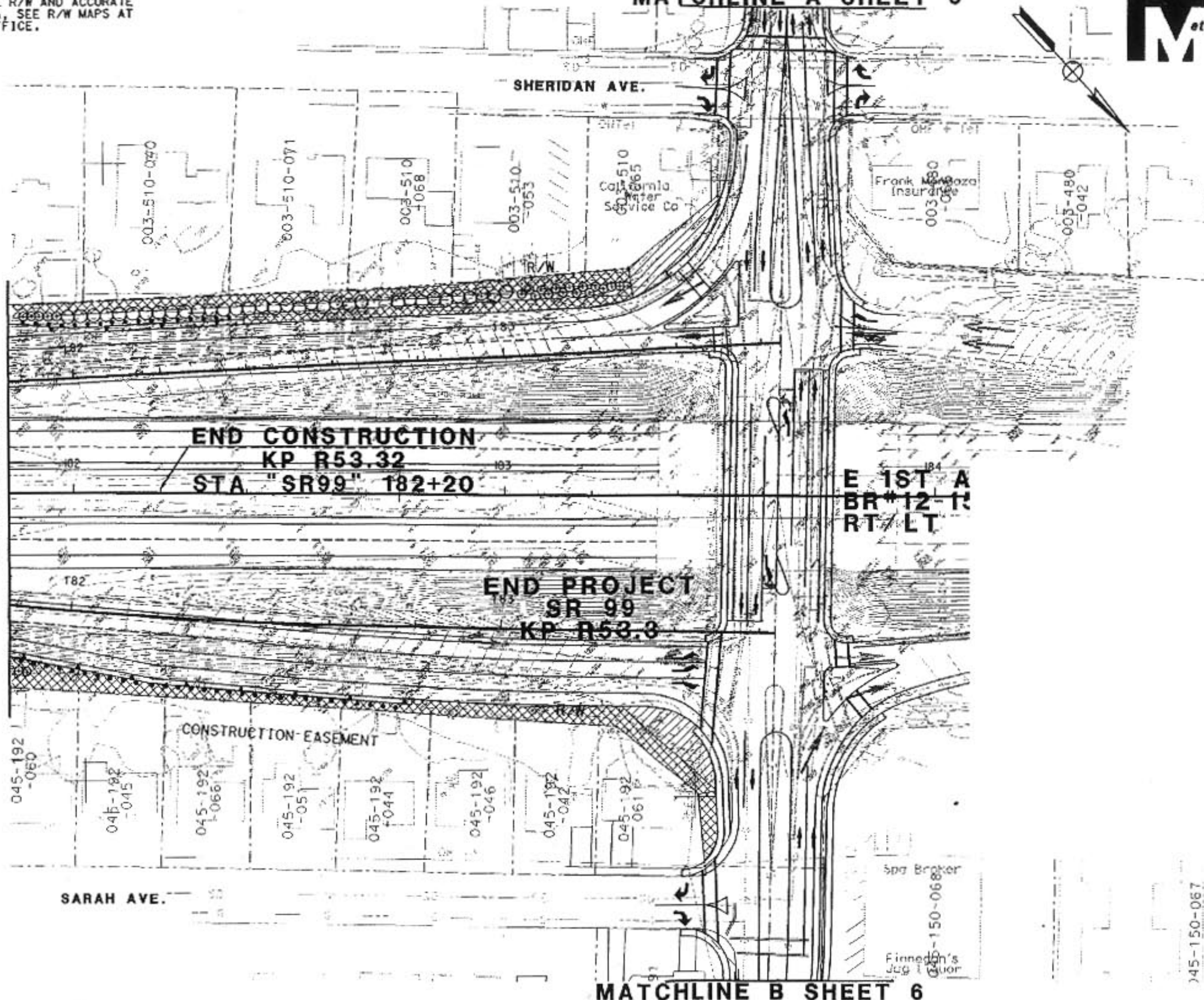
MATCHLINE A SHEET 6



DIST	COUNTY	ROUTE	POST M.I.D. TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	OUT	99	R51.9/R53.3		

LICENSED LANDSCAPE ARCHITECT	
PLANS APPROVAL DATE	
MERRILL + REFU ASSOCIATES 249 Front Street San Francisco, CA 94111	

MATCHLINE



E 1ST A
BR #12-1
RT/LT

END PROJECT
SR 99
KP R53.3

CONSTRUCTION-EASEMENT

SARAH AVE.

MATCHLINE B SHEET 6

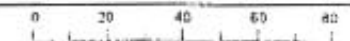
**Concept A
Outside Widening
Planting Plan**

SCALE 1:500

ALL DIMENSIONS ARE IN
METERS UNLESS OTHERWISE SHOWN

P-5A

FOR REDUCED PLANS ORIGINAL
SCALE IS IN MILLIMETERS



DATE PLOTTED: 01/01/00

DATE PLOTTED: 01/01/00

DATE PLOTTED: 01/01/00

DATE PLOTTED: 01/01/00

AGENCY NAME	PROJECT ENGINEER	CALCULATED/DESIGNED BY	CHECKED BY	DATE	REVISED BY	DATE REVISED
BUTTE COUNTY ASSOCIATION OF GOVERNMENTS	Karen A. Tatman					



SR 99: Existing



SR 99 with Aesthetic Treatment on Noise Barrier



Rey Way: Existing



Rey Way with Aesthetic Treatment on Noise Barrier under Outside Widening Alternative

Appendix F Floodplain Management (Executive Order 11988)

Appendix F Floodplain Management (Executive Order 11988)

Executive Order 11988 (Floodplain Management) applies to projects that would significantly encroach into the floodplain and requires that findings be made that ensure that the following goals are achieved:

- avoidance of incompatible floodplain development,
- consistency with the standards and criteria of the NFIP, and
- restoration and preservation of the natural and beneficial floodplain values.

Federal guidelines were developed for implementing Executive Order 11988 directives that outline an 8-step decision-making process, as follows. Both FHWA and Caltrans have developed regulations pursuant to the 8-step process for location and hydraulic design procedures of projects that significantly encroach on the floodplain.

- **Step 1:** Determine whether a proposed action would take place in the base floodplain.
- **Step 2:** Provide for public review.
- **Step 3:** Identify and evaluate practicable alternatives to locating in the base floodplain.
- **Step 4:** Identify the impact of the proposed action.
- **Step 5:** Minimize threats to life and property and to natural and beneficial floodplain values, and restore and preserve natural and beneficial floodplain values.
- **Step 6:** Reevaluate alternatives.
- **Step 7:** Issue findings and a public explanation.
- **Step 8:** Implement the action.

Under the proposed project, the Bidwell Park viaduct structure would be widened to accommodate the additional roadway and would require construction of additional piers within the Big Chico Creek floodplain. Under the Outside Widening Alternative, 26 piers would be placed within the floodplain, and under the Inside Widening Alternative, 39 piers would be placed within the floodplain. These pier placements constitute a linear encroachment of the floodplain that is subject to compliance with Executive Order 11988. However, this encroachment is not considered significant pursuant to Executive Order 11988 for several reasons. The project would contribute a relatively small amount of flow relative to existing peak flows and is considered consistent with the goals of Executive Order 11988. The Location Hydraulic Study (WRECO 2002) identifies several findings:

- The risks associated with the implementation of the proposed action are not significant because the change in water surface elevation during flooding would be negligible. There are no planned changes to flood control facilities and there will be no significant fill within the floodplain. Emergency vehicle access will not be impacted.
- The proposed project would not support incompatible floodplain development because it does not support development within the floodplain or alter existing access to the floodplain.

The proposed project would maintain local and regional access to existing commercial and industrial facilities.

- The project would not have any significant adverse impacts on natural and beneficial floodplain values because the encroachment would be minor and would cause negligible changes in water surface elevations.
- There are no special mitigation measures necessary to minimize impacts to floodplain values because the probable changes are negligible.
- The proposed project does not constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q), because the project would not alter emergency access or evacuation routes during flooding, does not pose an appreciable increased risk associated with flooding, does not adversely impact floodplain beneficial uses, and does not support base floodplain development.

Addendum to an Environmental Impact Report

Lead Agency: Butte County Association of Governments
2580 Sierra Sunrise Terrace Suite 100
Chico, CA 95928

Contact Person: Andy Newsum, Project Manager, 530-879-2468

Project Title: State Route 99 Auxiliary Lane Between State Route 32 and East 1st Avenue

Project Location: City of Chico in Butte County

Project Background and Previously Certified EIR: A Draft Environmental Impact Report (EIR) (State Clearinghouse number 2002112002) was prepared for this project in September 2003. The draft EIR was circulated for public review for 45 days between October 1, 2003 and November 20, 2003. On January 22, 2004, the Butte County Association of Governments (BCAG) Board of Directors certified the EIR and adopted the Inside Widening Alternative and conventional ramp intersections at SR 99/East 1st Avenue. Since BCAG is using federal funds from the Federal Highway Administration (FHWA) for this project, the FHWA acted as the federal lead agency for this project under the National Environmental Policy Act when the Categorical Exclusion for this project was approved on August 4, 2004. Caltrans, under its assumption of responsibility pursuant to 23 U.S.C. 327 has acted as federal lead agency for this project since July 1, 2007.

No changes to the project design (see below) have been made. Nor have any changes occurred related to the project's environmental setting or mitigation measures.

This addendum addresses global warming within the context of the California Environmental Quality Act (CEQA).

Project Description: The proposed project is located on SR 99 between the SR 32 and East 1st Avenue interchanges and on East 1st Avenue in the vicinity of the SR 99/East 1st Avenue interchange, in the City of Chico, in Butte County. The proposed project would improve the operational characteristics of SR 99 between SR 32 and East 1st Avenue by providing an auxiliary lane in each direction. Caltrans and BCAG are proposing this project to:

- Improve existing safety and traffic operations and reduce traffic delays and congestion;
- Provide improved access across Bidwell Park for local traffic from the SR 32 interchange to the East 1st Avenue interchange;

- Improve ramp merge areas that currently cause vehicles to have difficulty entering SR 99 in the northbound and southbound directions; and
- Reduce congestion on SR 99 at the northbound off-ramp to East 1st Avenue.

The project involves the following:

- widening the SR 32 southbound off-ramp and northbound on-ramp to provide for two lanes;
- with conventional ramp intersections, widening East 1st Avenue to four westbound lanes (two through lanes and two left-turn lanes) and two eastbound lanes (one through lane and one left-turn lane); with roundabouts, widening East 1st Avenue to two westbound and two eastbound lanes;
- widening the northbound East 1st Avenue off-ramp to provide two left-turn lanes and one right-turn lane;
- widening the southbound East 1st Avenue on-ramp to two lanes; and
- widening the Bidwell Park Viaduct and the Palmetto Avenue Undercrossing structures, including providing full 1.5-meter (5-foot) inside shoulders and full 3.0-meter (10-foot) outside shoulders.

The proposed improvements to East 1st Avenue are currently under construction.

As noted above, the project design of the project has not changed.

Greenhouse Gas Emissions and Global Climate Change: Impacts associated with greenhouse gas emissions (GHG) are long-term climatic changes, which are beyond the regulatory purview of the air district. GHG contaminant emissions tend to accumulate in the atmosphere because of their relatively long lifespan. As a result, their impact on the atmosphere is mostly independent of the point of emission; GHG contaminant emissions are more appropriately evaluated on a regional, state, or even national scale than at an individual project level. Because automobiles are a major source of GHG emissions and the quantity of GHG emissions from automobiles is directly correlated with the amount of vehicle miles travelled (VMT), emissions from CO₂ have been estimated for this project (see attached June 11, 2009 memorandum). It shows that CO₂ emissions associated with the project would be negligible and less than cumulatively considerable.

One of the main strategies in Caltrans' *Climate Action Program at Caltrans* to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO₂ from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 mph) and speeds over 55 mph; the most severe emissions occur from 0–25 mph (Figure 3-8). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO₂, may be reduced.

Caltrans continues to be actively involved on the Governor Arnold Schwarzenegger's Climate Action Team, just as the California Air Resources Board (ARB) works to implement the Governor's executive orders and help achieve the targets set forth in Assembly Bill (AB) 32 (Global Warming Solutions Act of 2006). Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the *California Strategic Growth Plan*, which is updated each year. The Governor's Strategic Growth Plan (SGP) 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.

The *California Strategic Growth Plan* targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The *California Strategic Growth Plan* proposes to do this while accommodating growth in the population and the economy. A suite of investment options has been created that, combined together, yield the promised reduction in congestion. The *California 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.

As part of the *Climate Action Program at Caltrans*, Caltrans is supporting efforts to reduce VMT 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 also is supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light- and heavy-duty trucks. Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative 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 U.S. Environmental Protection Agency EPA and ARB. The use of alternative fuels is also being considered. Caltrans is participating in funding for alternative fuel research at the University of California, Davis.

Conclusion: The decision to prepare an addendum is based on the fact that it has been determined that:

- The proposed project would not result in new significant impacts.
- The proposed project would not increase the severity of previously-identified significant impacts.
- No new feasible mitigation measures or alternatives are available to reduce the project's significant effects on the environment.

Therefore, the conditions under which preparation of a subsequent EIR would be required have not been triggered pursuant to Section 15162 of the State CEQA Guidelines.

Memorandum

Date: June 11, 2009

To: Debbie Loh

cc: Shannon Hill

From: Shannon Hatcher

Subject: **Air Quality Technical Memorandum for the State Route 99 Auxiliary Lane Project**

Methods

Operational Impact Assessment Methodology

The estimation of criteria pollutant, mobile source air toxic (MSAT), and carbon dioxide (CO₂) greenhouse gas (GHG) emissions and associated with the Project alternative was conducted using the California Department of Transportation's (Caltrans) CT-EMFAC emissions modeling program and vehicle activity data provided by the project traffic engineer, Fehr & Peers (Breiland pers. comm.).

CT-EMFAC Model. CT-EMFAC is a California-specific project-level analysis tool developed for the Department by the University of California, Davis to model criteria pollutant, MSAT, and CO₂ emissions from on-road mobile sources. The model uses the latest version of California Air Resources Board's California Mobile Source Emission Inventory and Emission Factors model, (EMFAC2007), to quantify running exhaust and running loss emissions using user-input traffic data, including peak-hour and off-peak-hour VMT data allocated into 5-mile per hour (mph) speed bins. Running exhaust emissions are emitted from the vehicle tailpipe while the vehicle is traveling, while running loss emissions are evaporative total organic gasses (TOG) emissions that occur when hot fuel vapors escape from the fuel system or overwhelm the carbon canister while the vehicle is operating. CT-EMFAC will estimate emission factors and project-level emissions for the following pollutants:

- **Criteria pollutants:** Ozone precursors (TOG and nitrogen oxide [NO_x]), carbon monoxide (CO), sulfur oxides, particulate matter less than or equal to 10 microns in diameter (PM₁₀), and particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}).
- **Greenhouse gases:** CO₂.
- **Mobile Source Air Toxics:** acetaldehyde, acrolein, benzene, 1,3-butadiene, diesel particulate matter (DPM), and formaldehyde.

Roadway and Traffic Conditions. Modeled traffic volumes and operating conditions were obtained from the traffic data prepared by the project traffic engineers, Fehr & Peers (Breiland pers. comm.). Emissions of ozone precursor (reactive organic gases [ROG] and NO_x), CO, PM₁₀, PM_{2.5}, and CO₂ were modeled for build year (2027) with and without project conditions. MSAT emissions of acrolein, acetaldehyde, benzene, 1, 3-butadiene, DPM, and formaldehyde, were also modeled for build year (2027) with and without project conditions. Fehr & Peers provided daily vehicle miles traveled (VMT) data aggregated into 5-mph speed bins (5 mph to 75 mph), which was input into the CT-EMFAC emission model to estimate project emissions. VMT data included vehicle activity for affected roadways in the immediate project region. The traffic data used for emissions modeling is summarized in Table 1.

Table 1. Criteria Pollutant, CO₂, and Mobile Source Air Toxics Modeling Traffic Data Inputs

CT-EMFAC Speed Bin Name	VMT Speed Bins Actual	No Project (2027)		With Project (2027)	
		Daily VMT	%	Daily VMT	%
5	0-5 mph	9,841	0.15%	9841.4861	0.15%
10	5-10 mph	26,710	0.39%	26708.275	0.39%
15	10-15 mph	11,119	0.16%	11151.365	0.16%
20	15-20 mph	64,653	0.95%	65285.917	0.96%
25	20-25 mph	746,174	11.01%	746560.47	11.00%
30	25-30 mph	262,847	3.88%	264225.69	3.89%
35	30-35 mph	1,427,188	21.05%	1424482.8	20.99%
40	35-40 mph	550,200	8.12%	552195.68	8.14%
45	40-45 mph	728,874	10.75%	726262.02	10.70%
50	45-50 mph	508,062	7.50%	452174.08	6.66%
55	50-55 mph	766,006	11.30%	766781.06	11.30%
60	55-60 mph	235,697	3.48%	238388.09	3.51%
65	60-65 mph	1,441,128	21.26%	1501557.7	22.13%
70	65-70 mph	0	0.00%	0	0.00%
>70	70+ mph	0	0.00%	0	0.00%
Total		6778499	100.00%	6785615	100.00%

Source: Breiland pers. comm..

Vehicle Emission Rates. Vehicle emission rates were determined using the CT-EMFAC model. VMT distribution by speed bin is presented in Table 1. The CT-EMFAC program assumed Butte County regional traffic data operating over an annual season. Vehicle fleet mix on SR-99 was based on traffic count data collected by Caltrans (California Department of Transportation 2008).

Summary of Project Emissions. Emissions of ROG, NO_x, CO, PM10, PM2.5, and CO₂ for 2027 with- and with-out project conditions were evaluated with the CT-EMFAC emission model and vehicle activity data provided by the project traffic engineer, Fehr & Peers (Breiland pers. Comm.). Table 2 presents the results of the criteria pollutant and CO₂ emissions modeling, while Table 3 presents the results of the MSAT emissions modeling. In addition, Tables 2 and 3 present a comparison of the build alternatives to the no project alternative. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the build alternative.

Table 2. Summary of Project-Related Criteria and CO₂ Emissions

Scenario	Yearly VMT	Pounds per Day					
		ROG	NO _x	CO	PM10	PM2.5	CO ₂
2027 No Project	2,474,152,189	0.000401	0.000896	0.004970	0.000070	0.000064	1.889582
2027 With Project	2,476,749,366	0.000401	0.000896	0.004980	0.000064	0.000064	1.893712
Alternative Differences							
Scenario	Yearly VMT	ROG	NO_x	CO	PM10	PM2.5	CO₂
2027 With Project - 2027 No Project	2,597,177	0.000000	0.000000	0.000010	-0.000006	0.000000	0.004130

Table 3. Summary of Project-Related MSAT Emissions

Scenario	Yearly VMT	Pounds per Day					
		Acrolein	Acetaldehyde	Benzene	Butadiene	Diesel PM	Formaldehyde
2027 No Project	2,474,152,189	0.000000	0.000004	0.000010	0.000002	0.000016	0.000010
2027 With Project	2,476,749,366	0.000000	0.000004	0.000010	0.000002	0.000016	0.000010
Alternative Differences							
Scenario	Yearly VMT	Acrolein	Acetaldehyde	Benzene	Butadiene	Diesel PM	Formaldehyde
2027 With Project – 2027 No Project	2,597,177	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Table 2 shows that yearly VMT would increase with implementation of the Project alternative, while effects to criteria pollutant and CO₂ emissions would be negligible. Table 3 shows that while yearly VMT is anticipated to increase with implementation of the project, MSAT emissions are not anticipated to increase with implementation of the project. This is because

MSAT emissions represent a fraction of overall mobile source emissions, and a small increase in VMT would not result in substantial increases in MSAT emissions.

References Cited

California Department of Transportation. 2008. 2007 Annual Average Daily Truck Traffic on the California State Highway System. State of California, Business, Transportation and Housing Agency. Sacramento, CA, Division of Traffic Operations Office of System Planning Management Traffic Data Branch. September.

Personal Communications

Breiland, Chris. Senior Engineer/Planner. Fehr & Peers. Roseville, CA. April 21, 2009 – email message to Jeff Clark.