Draft Environmental Impact Report

Level II Infill Correctional Facilities Project

Volume 5

Site-Specific Evaluation of Level II Infill Correctional Facilities at California Medical Facility / California State Prison, Solano

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CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION

STATE CLEARINGHOUSE NUMBER 2012122038

June 2013

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STATE CLEARINGHOUSE NUMBER 2012122038

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ACRONYMS AND ABBREVIATIONS

°F	Fahrenheit
AB	Assembly Bill
ADT	average daily traffic
ADWF	average dry weather flow
AFB	Air Force Base
AFY	acre-feet per year
ANSI	American National Standards Institute
AQAP	1991 *Air Quality Attainment Plan*
ARB	California Air Resources Board
B.P.	before present
Basin Plan	Water Quality Control Plan
bgs	below ground surface
BMPs	best management practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal OSHA	State of California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CDCR	California Department of Corrections and Rehabilitation
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHCF	California Health Care Facility
City	City of Vacaville
CMF	California Medical Facility
CMF/SOL	California Medical Facility/California State Prison, Solano
CNEL	community noise equivalent level
CO	carbon monoxide
CRHR	California Register of Historical Resources
CSMP	Corridor System Management Plan
CSP	California State Prison
CWA	Federal Clean Water Act
dB	decibel
dBA	A-weighted sound levels
DCG	Design Criteria Guidelines

DEIR	Draft Environmental Impact Report
Delta	Sacramento-San Joaquin River Delta
diesel PM	PM from diesel-fueled engines
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EDD	Employment Development Department
EDR	Environmental Data Resources
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
EMT	Early-Middle Period Transition
EPA	U.S. Environmental Protection Agency
ESA	environmental site assessment
EWWTP	Easterly Wastewater Treatment Plant
FAA	Federal Aviation Administration
FEMA's	Federal Emergency Management Agency's
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
GHG	greenhouse gas
GLO	General Land Office
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
hp	horsepower
HRA	health risk assessment
HVAC	heating, ventilation, and air conditioning
Hz	hertz
I 80	Interstate 80
ICF	Intermediate Care Facility
IPCC	Intergovernmental Panel on Climate Change
IWL	inmate ward labor
JPA	Joint Powers Agreement
KCWA	Kern County Water Agency
kV	kilovolt
kVA	kilovolt-ampere
kW	kilowatt

lb/day	pounds per day
LDL	Larson Davis Laboratories
L_{dn}	day-night average noise level
LEA	Local Enforcement Agency
LEED	Leadership in Energy and Environmental Design
L_{eq}	equivalent noise level
L_{max}	maximum noise level
L_{min}	minimum noise level
LOS	Level of Service
L_X	statistical descriptor
MCL	maximum contaminant level
MG	million gallon
mgd	million gallons per day
MLD	Most Likely Descendent
MLT	Middle/Late Transition
MPF	maximum peak flow
mph	miles per hour
MRZs	Mineral Resource Zones
MSL	mean sea level
MTP/SCS	Metropolitan Transportation Plan / Sustainable Community Strategy
MUTCD	Manual on Uniform Traffic Control Devices
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NBA	North Bay Aqueduct
NBR	North Bay Regional
NESHAP	national emissions standards for HAPs
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOP	Notice of Preparation
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OAP	1994 *Ozone Attainment Plan*
PG&E	Pacific Gas and Electric
PHF	Peak Hour Factor
$PM_{2.5}$	fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less
PM_{10}	respirable particulate matter with an aerodynamic resistance diameter of 10

	micrometers or less
ppm	parts per million
PPV	peak particle velocity
PRC	California Public Resources Code
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RMS	root-mean-square
RNVWD	Rural North Vacaville Water District
ROG	reactive organic gases
SCALUC	Solano County Airport Land Use Commission
SCEHD	Solano County Environmental Health Department
SCFCWCD	Solano County Flood Control and Water Conservation District
SCWA	Solano County Water Agency
SEL	sound exposure level
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SID	Solano Irrigation District
SLM	sound level meter
SO_2	sulfur dioxide
SOL	California State Prison, Solano
Solano Project	U.S. Bureau of Reclamation Solano Project
SR	State Route
SVAB	Sacramento Valley Air Basin
SWMP	Storm Water Management Plan
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
T-BACT	best available control technology for TACs
TMP	Traffic Management Plan
TNM	Traffic Noise Model
TPY	tons per year
TUSD	Travis Unified School District
UC Davis	University of California at Davis
USBR	U.S. Bureau of Reclamation
USTs	underground storage tanks
VdB	vibration decibels
VFD	Vacaville Fire Department
VPD	Vacaville Police Department

VUSD	Vacaville Unified School District
WDRs	Waste Discharge Requirements
WTP	water treatment plant
WWTP	Wastewater Treatment Plant
YSAQMD	Yolo-Solano Air Quality Management District

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1 INTRODUCTION

This volume (Volume 5) of the draft environmental impact report (DEIR) evaluates the potential physical environmental impacts associated with development of a single, level II infill correctional facility at existing California Department of Corrections and Rehabilitation (CDCR) property that includes California Medical Facility (CMF)/California State Prison, Solano (SOL) in Vacaville. As noted in Volume 1 of this EIR, the CMF/SOL Infill Site has been designated by CDCR as an alternative site for development of a 792-bed (single) level II infill correctional facility. This chapter provides an overview of the purpose, focus, and use of this volume of the DEIR; a summary of the public review and participation process; and a description of the terminology used herein. A detailed description of the overall project is provided in Chapter 3, "Project Description," in Volume 1 of this DEIR; site-specific project information for CMF/SOL is provided in Chapter 3, "Project Description," of this volume.

It should be noted that a Health Care Facility Improvement Program (HCFIP) project is planned for the existing CMF/SOL facilities. This project only involves improvements to meet health care treatment needs within the grounds of CMF/SOL. The HCFIP project consists of structural improvements such as new clinical and medical administrative space, storage and distribution of medications, associated building code renovations, etc. The HCFIP project results in the addition of only one staff member to the existing CMF/SOL employee base and there would be no increase in inmates. The proposed level II correctional facilities would include all necessary medical/mental health care clinical space and related special facilities to support the inmates in this new correctional complex (CDCR 2013b).

1.1 PROJECT BACKGROUND

Within Vacaville, CDCR initially began operation of CMF in 1955 in order to provide a centrally located medical/psychiatric institution for the health care needs of California's male inmate population. In 1984, CDCR opened SOL immediately to the south of CMF. CMF provides facilities for inmates with security classification Levels I through III (as defined in Chapter 2, "Introduction" of Volume 1 of this DEIR), while SOL provides facilities for Level II and III inmates. With respect to onsite inmate population, and as noted in Chapter 2 of Volume 1, CDCR correctional facilities have historically been faced with severe inmate crowding conditions. The state's adult prison institutions, including CMF/SOL, have operated for years above their operational capacity.

By the early 2000s, the housing of the inmate population throughout California had exceeded the operational capacity (the inmate capacity of a particular facility, taking into account the capacity of supporting programs rather than focusing only on available bed space) of institutions and had affected the physical facilities and operations. Beginning in October 2011, when changes to the Penal Code for certain felonies took effect, the inmate population housed at CDCR correctional facilities has gradually reduced. Table 1-1, below, identifies the historic prison population at CMF/SOL from 2004 to 2012. As shown, CMF/SOL's inmate population has decreased by 2,647 inmates, or 29.0 percent of its 2004 population, as of 2012. CDCR's long-term plan of operations, as detailed in the *Future of California Corrections* ("Blueprint"), call for further decreases in the population at CMF and SOL, with a long-term operational goal (staffed capacity) of 2,869 inmates at CMF and 3,890 inmates at SOL (CDCR 2012a). Total inmate population at CDCR property associated with CMF/SOL would be 6,759 inmates. There are no plans to increase inmate levels at the existing CMF/SOL facilities above that goal.

In evaluating currently unused land outside of the existing secure perimeter at CMF and SOL, it was determined that the existing state-owned CDCR property could accommodate a single 792-bed correctional facility. Adequate space is not considered to be available at CDCR property in Vacaville that could accommodate a potential double facility. The proposed level II infill correctional facilities would meet all CDCR correctional facility design and security requirements, including the use of lethal

electrified perimeter fencing, and would be operated by and under the authority of the CMF/SOL. Additionally, the potential level II infill correctional facility would be configured as a stand-alone prison; the existing perimeter of CMF and SOL would not be modified to connect the existing and new facilities together.

Table 1-1 CMF/SOL Prison Population (2004-2012)[1]

Year	CMF Population	SOL Population	Combined Prison Population[2]	Percentage Change Compared to Previous Year
2004	3,176	5,943	9,119	--
2005	3,197	6,013	9,210	1.0%
2006	3,022	6,070	9,092	(1.3%)
2007	3,032	6,087	9,119	0.3%
2008	2,873	5,213	8,086	(12.8%)
2009	2,873	5,082	7,955	(1.6%)
2010	2,579	4,946	7,525	(5.4%)
2011	2,540	4,454	6,994	(7.1%)
2012	2,349	4,123	6,472	(7.5%)
Percent decrease in CMF/SOL population since 2005 (peak)				(29.7%)
CDCR Blueprint target population[2]	*2,869*	*3,890*	*6,759*	*(26.6%)*

Notes: [1] Prison population statistics for each year are derived from the December monthly report of population prepared for that calendar year.
[2] Target populations reflect the intended staffed capacity of the facility(ies) per Appendix B of *The Future of California Corrections*
Sources: CDCR 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013a

1.2 PURPOSE AND INTENDED USE OF THE ENVIRONMENTAL IMPACT REPORT

For a detailed description of the purpose and intended use of this DEIR, refer to Chapter 2 in Volume 1. This volume addresses the project-level environmental impacts associated with development of a single, level II infill correctional facility at CMF/SOL. If CDCR selects the CMF/SOL Infill Site for the development of a level II infill correctional facility, this volume would serve as the environmental review document under the California Environmental Quality Act (CEQA) required for that approval.

1.3 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES AND APPLICABLE PERMITS

CDCR is the lead agency with primary authority for approval of the Level II Infill Correctional Facilities Project. The agencies listed below with potential permit authority over the project, or elements thereof, will have the opportunity to review this document during the public and agency review period, and will use this information when considering the issuance of any permits required for the project.

Public agencies with discretionary authority, known permits, other approvals, or jurisdiction by law over resources related to the project at CMF/SOL include (but may not be limited to) the agencies listed below.

1.3.1 LEAD AGENCY

- CDCR (Overall project approval, including certification of the adequacy of this EIR).

1.3.2 FEDERAL AGENCIES (POTENTIAL PERMITTING AUTHORITY)

- U.S. Army Corps of Engineers (Consideration of jurisdictional wetlands and/or water quality certification or waiver under Clean Water Act Section 404 and/or 401).
- U.S. Fish and Wildlife Service (Sensitive species review/permitting under the federal Endangered Species Act).

1.3.3 STATE RESPONSIBLE AGENCIES

- California Department of Fish and Wildlife (formerly California Department of Fish and Game) (California Endangered Species Act review/permitting).
- San Francisco Bay Regional Water Quality Control Board (National Pollutant Discharge Elimination System [NPDES] permit and wastewater treatment plant operation).
- California Department of Toxic Substances Control (Environmental site assessment).
- California Department of Transportation, District 4 (Caltrans) (Encroachment permits and potential transportation improvements within Caltrans right-of-way).
- California Department of Transportation, Division of Aeronautics (Federal Aviation Regulations, Part 77 compliance).

1.3.4 LOCAL RESPONSIBLE AGENCIES

- City of Vacaville (Coordination for potential offsite improvements such a roadway and/or infrastructure improvements, wastewater conveyance infrastructure).
- Yolo-Solano Air Quality Management District (Authority to construct).

1.4 SCOPE OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

According to Section 15143 of the State CEQA Guidelines, a lead agency should limit a DEIR's discussion of environmental effects to specific issues where significant effects on the environment may occur. CDCR used a variety of information to determine which issue areas could result in significant impacts on the environment. This information included field surveys of the CMF/SOL Infill Site; review of published studies related to the CMF/SOL Infill Site; review of proposed project characteristics; review of comments submitted during agency consultation; and review of comments received on the Notice of Preparation (NOP) and during public scoping.

An NOP was circulated to public agencies and members of the public on December 19, 2012, and the review period concluded on February 4, 2013. The NOP notified the public that a DEIR was to be prepared for the project and described briefly the basic elements of the project and the projected scope of the DEIR's environmental analysis. The NOP also requested that public agencies and members of the public provide their comments on the scope and content of the DEIR that was to be prepared. Twelve public scoping meetings were held between January 14, 2013 and January 31, 2013. Scoping meetings were held in the vicinity of each potential infill site, including CMF/SOL. The NOP and comments received on the NOP are included in Volume 1, Appendix 1A. Review of the NOP and public scoping comments and preliminary analysis indicated that a full-scope EIR is required for the Level II

Infill Correctional Facilities Project. All issue areas outlined in Appendix G of the State CEQA Guidelines are addressed in the DEIR.

1.4.1 COMMUNITY/AGENCY ISSUES AND CONCERNS

The following issues are known and/or were raised by agencies or interested parties during the NOP public review period that are specific to development of level II infill correctional facilities at CMF/SOL:

- the perceived need (or lack thereof) for level II beds;
- potential health and safety concerns associated with a new correctional facility at CMF/SOL, including visitors for the additional inmates;
- compatibility of the proposed development with the surrounding residential neighborhood and recreational users;
- impacts to public services, including emergency medical resources, as a result of additional employees;
- increased runoff as a result of additional acreage of impervious surfaces;
- water/wastewater infrastructure and capacity to support the proposed project;
- traffic impacts, including those related to parking along Peabody Road and emergency access; or
- lighting and visual impacts, including the height and shielding of the light standards to be used onsite.

Refer to Volume 1 of this DEIR for discussions of economic and social impacts and of the need for level II infill correctional facilities. Regarding public noticing, all persons requesting so will receive notice of the availability of all CEQA documents. The other issues raised above are addressed in the analysis herein.

1.5 PUBLIC REVIEW AND PARTICIPATION PROCESS

Consistent with the requirements of CEQA, efforts have been made during the preparation of this DEIR to contact affected agencies, organizations, and individuals who may have an interest in the construction of a level II infill correctional facility at CMF/SOL. As described above, these efforts included the circulation of the NOP on December 19, 2012, including posting a notice in *The Reporter* newspaper. Two public scoping meetings were then held on January 24, 2013 at the City of Vacaville Council Chambers, 650 Merchant Street, Vacaville, CA 95688.

CDCR has filed a Notice of Completion with the State Clearinghouse of the Governor's Office of Planning and Research, indicating that this DEIR has been completed and is available for review and comment by the public. The public review period will last 45 days, beginning on June 21, 2013, and ending on August 8, 2013**.**

1.5.1 DEIR PUBLIC MEETING

A total of 12 public meetings on the Level II Infill Correctional Facilities Project DEIR will be held during the public review period. In the vicinity of CMF/SOL, two meetings will be held on August 1, 2013, at 3:00 p.m. and 5:00 p.m. at the City of Vacaville Council Chambers, located at 650 Merchant Street, Vacaville, CA 95688. Additional public meetings may be scheduled in response to requests from local agencies or other parties.

A public Notice of Availability of the DEIR, which also includes the date, times, and specific location for the public meetings in the vicinity of CMF/SOL, has been published in *The Reporter* newspaper.

1.5.2 WRITTEN COMMENTS

Comments on the DEIR, including this volume (Volume 5), may be made either in writing before the end of the comment period (5:00 p.m. on August 8, 2013) or orally at the aforementioned public meetings. Written comments should be mailed or e-mailed to the address provided below. After the close of the public comment period, responses to the comments received on the DEIR will be prepared and published. These responses, together with this DEIR, will constitute the Final EIR.

Please mail, e-mail, or fax comments on the DEIR by the deadline to:

California Department of Corrections and Rehabilitation
Facility Planning, Construction and Management
Project Management Branch
Attn: Robert Sleppy
9838 Old Placerville Road, Suite B
Sacramento, CA 95827
email: CDCR_infill@ascentenvironmental.com
fax: (916) 255-1141

Copies of the DEIR can be reviewed at the locations listed below or at the website provided below. Technical studies can be reviewed at the following CDCR address or online at the website provided below.

California Department of Corrections and Rehabilitation
Facility Planning, Construction and Management
Environmental Planning Section
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1.6 ORGANIZATION OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

As noted in Volume 1, the DEIR has been divided into five volumes, of which four (Volumes 2 through 5) include site-specific evaluations of level II infill correctional facilities at R. J. Donovan Correctional Facility (Volume 2); Mule Creek State Prison (Volume 3); Folsom State Prison/California State Prison, Sacramento (Volume 4); and CMF/SOL (Volume 5). This volume of the DEIR, which presents the site-specific evaluation of CMF/SOL, is organized into chapters, as identified and described briefly below.

Chapter 1, "Introduction": Chapter 1 describes the purpose and organization of this volume, as well as known community/agency issues and concerns related to development of the CMF/SOL Infill Site.

Chapter 2, "Project Description": Chapter 2 describes the project location, background, project objectives, proposed project characteristics and construction for the CMF/SOL Infill Site.

Chapter 3, "Environmental Setting, Thresholds of Significance, Environmental Impacts, and Mitigation Measures": In a separate section for each environmental issue (e.g., Section 3.2, "Biological Resources"), this chapter describes the existing environmental conditions, regulatory background, thresholds to determine significance of impacts, and discussion of the environmental impacts associated with project construction and operation. Mitigation measures are identified for significant impacts.

Chapter 4, "Cumulative Impacts": This chapter discusses cumulative impacts that would result from the proposed project in combination with impacts from past, present, and reasonably foreseeable projects in the project area.

Chapter 5, "Other CEQA Sections": The potential for the project to foster economic or population growth, or to remove obstacles to growth, is evaluated in Chapter 5. Project-level and cumulative impacts that cannot be mitigated to a less-than-significant level are also documented in this chapter.

Chapter 6, "References": This chapter sets forth a comprehensive listing of all sources of information used in the preparation of the DEIR.

Appendices: The appendices contain various technical reports, letters, and other documentation summarized or otherwise used for preparation of this volume of the DEIR. Volume 5 appendices are identified as Appendix 5A, 5B, 5C, and so on, and are provided in electronic format on a CD.

The comparative evaluation of alternatives related to the proposed project and the equal-level alternatives, including the development of CMF/SOL with a single, level II infill correctional facility, are included as part of Chapter 5, "Alternatives," of Volume 1 of this EIR.

1.7 TERMINOLOGY USED IN THE DRAFT ENVIRONMENTAL IMPACT REPORT

This DEIR includes the following terminology to denote the significance of environmental impacts of the project:

Less-than-Significant Impact: A less-than-significant impact is one that would not result in a substantial and adverse change in the environment. This impact level does not require mitigation measures.

Significant Impact: Section 21068 of CEQA (Pub. Resources Code Section 21068) defines a significant impact as one that causes "a substantial, or potentially substantial, adverse change in the environment." Feasible mitigation measures or alternatives to the project must be considered to reduce the magnitude of significant impacts to less-than-significant levels.

Potentially Significant Impact: A potentially significant impact is one that, if it were to occur, would be considered a significant impact as described above, but for which the occurrence of the impact cannot be definitely determined. For CEQA purposes, a potentially significant impact is treated as a significant impact.

Significant and Unavoidable Impact: A significant and unavoidable impact is a substantial adverse effect on the environment that cannot be feasibly mitigated to a less-than-significant level. A project with significant unavoidable impacts can still be approved, but CDCR would be required to prepare a statement of overriding considerations, in accordance with State CEQA Guidelines Section 15093,

explaining the social, economic, or other benefits of the project that outweigh the significant environmental impacts.

Thresholds of Significance: Significance thresholds are criteria that define at what level impacts would be considered significant. A criterion is defined based on examples found in CEQA or the State CEQA Guidelines, scientific and factual data, the policy/regulatory environment of affected jurisdictions, professional judgment, and other factors.

1.8 TECHNICAL AND OTHER STUDIES CONSIDERED IN THIS DRAFT ENVIRONMENTAL IMPACT REPORT

Several studies or reports have been prepared in support of the analysis presented in this DEIR and are included in the appendices (on CD). In addition, the studies and reports that were prepared in connection with or that are applicable to the project are available for review at CDCR; Facility Planning, Construction and Management Construction Management; Environmental Planning Section; 9838 Old Placerville Road, Suite B; Sacramento, CA 95827.

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2 PROJECT DESCRIPTION

2.1 PROJECT OBJECTIVES

For a detailed description of the Level II Infill Correctional Facilities Project objectives, refer to Section 3.1 of Chapter 3, “Project Description,” in Volume 1 of this draft environmental impact report (DEIR). Those project objectives apply to construction of a level II infill correctional facility at the California Medical Facility (CMF)/California State Prison, Solano (SOL).

2.2 PROJECT LOCATION

The existing CMF, located at 1600 California Drive, Vacaville, California and the existing SOL, located at 2100 Peabody Road, Vacaville, California, are situated on approximately 474 acres. The State of California owns both properties. SOL and CMF are located in the southern portion of Vacaville in Solano County, approximately 40 miles northeast of San Francisco and approximately 30 miles southwest of Sacramento. The CDCR property at this location is bounded by Peabody Road to the east and California Drive to the north. Local access to CMF/SOL is provided by either California Drive or Peabody Road. Regional access to CMF/SOL is provided by Interstate 80 (I-80). Exhibit 2-1 shows CMF/SOL’s regional location.

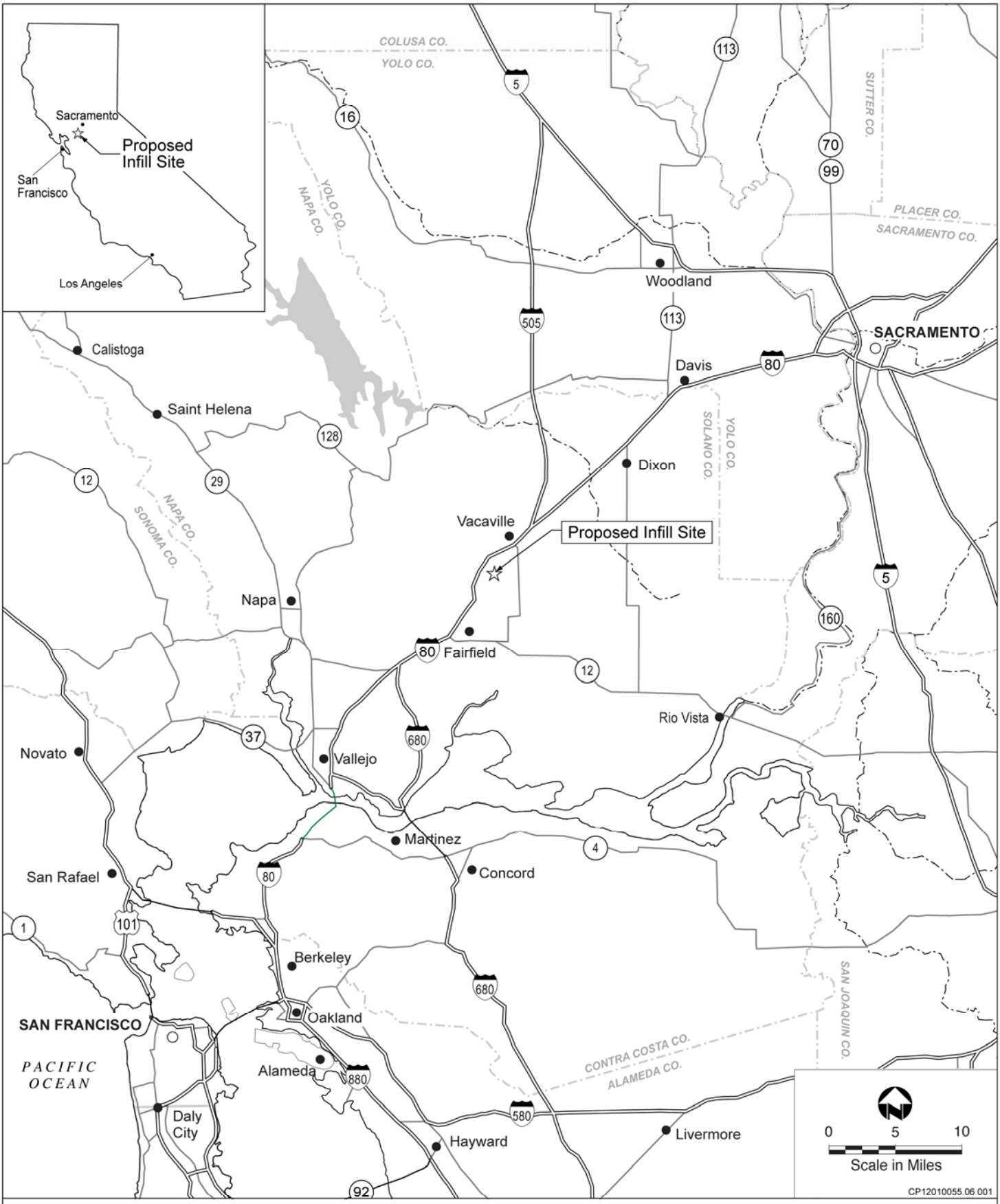
Land uses surrounding CMF/SOL include open space associated with the foothills of the Vaca Mountains and Lagoon Valley Park to the west; Keating Park, a mobile home park, self-storage facility, and single-family residence to the northwest; Al Patch Park and single-family residences to the north; and single-family residences to the east. The Vacaville-Fairfield-Solano greenbelt is located south of CMF/SOL in Solano County. Travis Air Force Base is located approximately 3 miles south of CMF/SOL, and occupies approximately 7,100 acres of land, including two 11,000-foot runways oriented along the northeast-southwest diagonal away from existing housing developments. The remainder of the land surrounding CMF/SOL to the west and south is largely open space with undeveloped terrain.

2.2.1 DESCRIPTION OF THE INFILL SITE

The CMF/SOL Infill Site is located in the eastern portion of the aforementioned State-owned property, immediately southeast of CMF and northeast of SOL (Exhibit 2-2). The majority of the CMF/SOL Infill Site is currently undeveloped, disturbed annual grasslands; however, a portion of the infill site is currently occupied by an inmate ward labor (IWL) yard and a surface parking lot that would be relocated to another location within the combined prison grounds. The boundaries of the infill site, including potential construction disturbance area and the area designated for the relocated IWL yard, would be approximately 52 acres, as shown in Exhibit 2-2. Upon completion of construction, approximately 35 acres would be permanently developed with the single, level II infill correctional facility, including parking and supporting structures, and 4.4 acres would be developed with the relocated IWL yard. The remainder of the disturbance area acreage (approximately 12.6 acres) would be returned to pre-construction conditions and/or revegetated.

2.3 DESCRIPTION OF THE PROPOSED PROJECT

As noted above, and in Chapter 3 of Volume 1, the CMF/SOL Infill Site is being considered as an alternative to development of the currently proposed project (a single, level II infill correctional facility at Richard J. Donovan Correctional Facility [RJD] and a level II infill correctional facility complex at Mule Creek State Prison [MCSP]). As noted in Volume 1, a single facility would have an operational capacity



Source: Adapted by Ascent in 2013

Exhibit 2-1

CMF/SOL Regional Location

Source: Adapted by Ascent in 2013

Exhibit 2-2 Boundary of Potential Disturbance and Existing Land Uses

of 792 beds and would be approximately 35 acres in size upon completion of construction, including Exhibit 2-3. Although the potential level II infill correctional facility would be operated by, and under the authority of, SOL, the facility would be independent/self-contained, with all necessary related support buildings and inmate programming space to meet the needs of various inmates, including, but not limited to, those with disabilities, intermediate medical needs, or mental health treatment needs. The contemplated single, level II infill correctional facility would not be physically connected with the existing CMF or SOL facilities.

Section 3.3, "Description of Proposed Project," of Chapter 3 in Volume 1, provides a detailed description of the single, level II infill correctional facilities, including the housing units, support facilities, staffing, parking, operations, lighting, security, and construction schedule. Refer to Section 3.3 of Volume 1 for a full description of these project elements, which are common to all of the potential infill sites.

The following project elements are specific to the CMF/SOL Infill Site.

2.3.1 FACILITY RELOCATIONS

Construction of the level II infill correctional facility at CMF/SOL would require the demolition and relocation of the existing IWL yard and a surface parking lot, as shown in Exhibit 2-2. These current uses would be relocated to other areas within CMF/SOL. The new IWL facilities would be constructed on approximately 5 acres west of the secure perimeter of SOL. The existing surface parking at the infill site would be relocated south of the existing SOL facility.

2.3.2 PARKING AND SERVICE ROADS

As described in Chapter 3 of Volume 1, the number of parking spaces required for the level II infill correctional facility is based on a combined estimate of the staff totals for the second and third watches (Table 3-1 in Chapter 3 of Volume 1) plus 15 percent of the inmate population for weekend visitation. Therefore, a single, level II infill correctional facility would include a total of 207 spaces.

The parking, circulation system, and service roads at the infill site are identified in Exhibit 2-3. The parking area would generally be south/southwest of the new facility. Primary access to the CMF/SOL Infill Site would be provided at one of two locations. The first option would extend an internal access road along the eastern boundary of SOL and provide access to the infill site via the existing SOL entrance as it intersects with Peabody Road. The second option would involve a separate entrance for the potential level II infill correctional facility at the intersection of Foxboro Parkway and Peabody Road.

2.3.3 UTILITIES AND SERVICE SYSTEMS

POTABLE WATER

The level II infill correctional facilities at CMF/SOL would be served by the Solano Irrigation District (SID) and the City of Vacaville (City). SID delivers untreated raw water to an onsite conventional water treatment plant (WTP) (owned and operated by CDCR) located near CMF, and the City delivers treated potable water to a water metering station located near SOL. Treated SID water and the City water is then combined and distributed to both facilities.

As noted above, a single, level II infill correctional facility at the CMF/SOL Infill Site would house 792 inmates at full buildout. CDCR assumes an average daily water demand factor of 150 gallons per inmate per day (gpid) per inmate based on the design of the facility and the use of water conservation devices throughout. (Note that, although this factor is based on the number of inmates, it encompasses potable water demand for the entire facility, including landscaping and staff demands.) Given this demand factor, the operational water requirement for a single, level II infill correctional facility is estimated to be 118,800 gpd (133 acre-feet per year [afy]).

Source: CDCR 2012; Adapted by Ascent Environmental in 2012

Exhibit 2-3

Conceptual CMF/SOL Single, Level II Infill Correctional Facility Site Plan

The potable water distribution system at CMF/SOL consists of a looped network of 8-inch and 10-inch diameter water mains that connects to the WTP and four storage tanks. A network of 10-inch diameter water mains loops around CMF and connects to an 8-inch water distribution system at SOL. This potable water distribution system connects to the City's distribution system near the intersection of Peabody Road and Foxboro Parkway. From the City's 24-inch water main on Peabody Road, a 12-inch water main extends from a 12-inch by 24-inch tee connection to the onsite water metering structure. The City's 24-inch water transmission main along Peabody Road is charged with water from the City's North Bay Regional (NBR) water treatment plant. SID raw water is extracted from the Putah South Canal with three vertical turbine pumps. Raw water is conveyed to the onsite WTP site via a 14-inch polyvinyl chloride (PVC) transmission main. At the CMF/SOL property line, the transmission main decreases to a 12-inch diameter ductile iron pipeline.

The level II infill correctional facility would connect to existing onsite infrastructure. No offsite infrastructure improvements would be required.

WASTEWATER

SOL and CMF have separate connections to the City's wastewater collection system, and the City is responsible for treating the wastewater generated at the existing CDCR facilities. Wastewater from both facilities flows to the City's Easterly Wastewater Treatment Plant (EWWTP), which is owned and operated by the City and is located approximately 4 miles northeast of CMF/SOL. The treatment capacity of this secondary treatment facility was expanded from 10 million gallons per day (mgd) to 15 mgd in 2007, and the plant currently treats approximately 9 mgd.

The collected wastewater flows from the infill site would continue to be transported from CDCR property at CMF/SOL to the EWWTP for treatment and disposal. As part of this system, flows from the CMF/SOL Infill Site would travel through a new onsite sanitary sewer line to the SOL headworks facility, which consists of gravity sewer pipelines ranging in diameter from 4 inches to 18 inches. Prior to leaving state property, wastewater is processed through a mechanical bar screen, an ultrasonic flow meter, and a pH meter. Piped wastewater flows eastward along Foxboro Parkway, and eventually reaches the trunk line along the Southern Pacific railroad tracks and would then discharge into the City's wastewater collection system near the intersection of Peabody Road and Foxboro Parkway. Given a conservative flow rate projection of 130 gpid (average flow rates are 112 and 97 gpid at CMF and SOL, respectively), the potential level II infill correctional facility would generate approximately 102,960 gallons per day. No offsite infrastructure improvements would be required.

ELECTRICITY

As described in Chapter 3 of Volume 1, the development of either a single or double level II infill correctional facility would include appropriate onsite electricity equipment, such as substation switchgear, transformers, and backup power generators, which would be located in the northern portion of the infill site. Continued coordination with the Pacific Gas and Electric Company (PG&E) during project design and implementation would be required regarding anticipated project demands. PG&E has the capacity to serve the potential infill housing development's electricity demand with existing regional infrastructure and system-wide utility capacity. No offsite infrastructure improvements would be required.

NATURAL GAS

PG&E is the natural gas service provider to CMF/SOL. Connection to the infill site would be provided at the existing CMF/SOL facility and would parallel the existing access road to the infill site. No offsite infrastructure improvements would be required.

STORMWATER DRAINAGE

The infill facility would include the construction of onsite drainage improvements (e.g., drains, gutters), including construction of detention basins, which would be designed to handle a 100-year flood event, to manage stormwater flows to and from the infill site. These facilities would be located at the infill site but the exact location has yet to be determined.

2.3.4 STAFFING

Development of a single, level II infill correctional facility at CMF/SOL would result in an increase in onsite staffing, as described in Chapter 3 of Volume 1. A single facility would employ an estimated 193 new staff (Table 3-1 in Volume 1).

2.4 CONSTRUCTION DESCRIPTION

As described in greater detail in Section 3.3.4 of Chapter 3 in Volume 1, construction of the proposed infill correctional facilities is anticipated to begin in spring 2014, with an estimated completion date of spring 2016. Construction would generally occur between 6 a.m. and 4 p.m., Monday through Friday. Noise-generating construction activities could occur between 7 a.m. and 7 p.m., Monday through Friday, but would likely end by 4 p.m., consistent with construction hours of operation. Security protocols, tool controls, and access requirements would be established and implemented to frame the operation of construction activities.

All construction staging would be provided on State-owned property, as identified on Exhibit 2-2. All construction-related traffic would access the infill site from Peabody Road.

3 ENVIRONMENTAL SETTING, THRESHOLDS OF SIGNIFICANCE, ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

Chapter 3 of this volume (Volume 5) of the Draft Environmental Impact Report (DEIR) evaluates the potential environmental impacts associated with development of a level II infill correctional facility at the California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site in the City of Vacaville. As noted in Volume 1 of this EIR, the CMF/SOL Infill Site is being considered by CDCR as an alternative site for a 792-bed (single) level II infill correctional facility. It contains a discussion of existing conditions, thresholds above which an impact is considered significant, the significance of environmental impacts, measures to mitigate significant impacts to the degree feasible, and the level of significance after mitigation. Issues evaluated in these sections consist of the full range of potential environmental topics originally identified for review in the Notice of Preparation (NOP) of the DEIR. Volume 1, Appendix 1A contains the NOP and comments received on the NOP. Each section in this chapter (Sections 3.1 through 3.13) of this DEIR is organized into the following major components:

Introduction: This subsection offers a brief introduction to the section and provides information regarding the scope and purpose of the environmental issue section.

Environmental Setting: According to Section 15125 of the State of California Environmental Quality Act (CEQA) Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project, which is normally used as the “baseline condition” against which project-related impacts are compared. The baseline condition is typically the physical condition that exists when the NOP is published. The NOP for the proposed project was published on December 19, 2012. For analytical purposes, impacts associated with implementation of the proposed project are generally derived from the existing baseline environmental setting, unless otherwise explained and substantiated.

Regulatory Considerations: This section of each chapter provides the federal, State, and local regulatory framework, plans, and policies that would apply to the proposed project and that could reduce or eliminate potentially significant impacts. The impact analyses assume compliance with these regulations.

Impacts and Mitigation Measures: This section analyzes both project-specific and cumulative environmental impacts and proposed mitigation measures. Information included in this section is described in more detail below.

- Significance Criteria: The criteria used to define significant effects on the environment are expressed as thresholds, above which the project would have a significant effect. Thresholds may be quantitative or qualitative, and may be based on agency standards, or legislative or regulatory requirements as related to the impact analysis. For this analysis, impacts are based largely on the questions contained in Appendix G of the State CEQA Guidelines. Additionally, thresholds have been derived, in some instances, from thresholds used by the City of Vacaville (City); specifically, City guidelines were referenced for traffic, air quality, and noise impacts.
- Project Impacts and Mitigation Measures: The project impact and mitigation measure subsection analyzes the environmental impacts of the project. This subsection describes the potential environmental impacts of the proposed project and, based on the identified thresholds of significance, concludes whether each environmental impact would be considered significant, potentially significant, or less than significant. Each impact is summarized in an “impact statement,”

followed by a more detailed discussion of the potential impact and the significance of each impact before mitigation.

The impact number consists of the section of the EIR in which that impact is identified, followed by the number of the impact in that section. For example, Impact 3.1-1 is the first impact identified in Section 3.1.

The analysis of environmental impacts considers both the construction and operational phases associated with implementation of the proposed project. As required by Section 15126.2(a) of the State CEQA Guidelines, direct and indirect significant effects, including short-term, long-term, onsite, and/or offsite impacts are addressed, as appropriate, for the environmental issue area being analyzed.

A “significant effect” is defined by Section 15382 of the State CEQA Guidelines as

> a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment…[but] may be considered in determining whether the physical change is significant.

This DEIR uses the terminology described in Section 1.7 of this volume to describe the level of significance of impacts identified during the course of the environmental analysis.

Mitigation measures are provided to reduce significant or potentially significant effects of the proposed project to the extent feasible. CEQA Guidelines Section 15370 defines mitigation as:

a. avoiding the impact altogether by not taking a certain action or parts of an action;

b. minimizing impacts by limiting the degree or magnitude of the action and its implementation;

c. rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

d. reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and/or

e. compensating for the impact by replacing or providing substitute resources or environments.

The mitigation measures are identified numerically, corresponding to the number of the impact being addressed. For example, Impact 4.1-1 would be mitigated with Mitigation Measure 4.1-1.

This subsection also describes the status of all significant impacts following application of mitigation measures. The impact may be reduced to a level below the significance threshold (mitigated to a less-than-significant level), or feasible mitigation may not be available or may be insufficient to reduce the impact to a less-than-significant level. In this case, the impact would be a “significant and unavoidable” effect on the environment.

3.1 AIR QUALITY

This section includes a description of existing air quality in the vicinity of the California Medical Facility (CMF)/California State Prison, Solano (SOL) Infill Site, a summary of applicable regulations, and analyses of potential short-term and long-term air quality impacts of development of a level II facility at the infill site. The methods of analysis for short-term construction, long-term regional (operational), local mobile-source, odor, and toxic air contaminant (TAC) emissions are consistent with the recommendations of the Yolo-Solano Air Quality Management District (YSAQMD). Mitigation measures are recommended as necessary to reduce significant air quality impacts. Impacts associated with greenhouse gas emissions and climate change are discussed in Chapter 4, "Cumulative Impacts of the Proposed Project," in Volume 1 of this draft environmental impact report (DEIR).

3.1.1 ENVIRONMENTAL SETTING

The infill site is located in the eastern portion of the existing CMF/SOL state-owned property in the City of Vacaville in western Solano County, less than 1 mile from the southern city limit. The infill site lies within the southwestern portion of the Sacramento Valley Air Basin (SVAB), which is under the local jurisdiction of YSAQMD. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

TOPOGRAPHY, METEOROLOGY, AND CLIMATE

The SVAB is a relatively flat area bordered by the north Coast Ranges to the west and the northern Sierra Nevada to the east. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento–San Joaquin River Delta (Delta) from the San Francisco Bay area.

The mountains surrounding the SVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution. The highest frequency of poor air movement occurs in the fall and winter, when high-pressure cells are present over the SVAB. The lack of surface wind during these periods, combined with the reduced vertical flow caused by a decline in surface heating, reduces the influx of air and leads to the concentration of air pollutants under stable metrological conditions. Surface concentrations of air pollutant emissions are highest when these conditions occur in combination with agricultural burning activities or with temperature inversions, which hamper dispersion by creating a "ceiling" of cooler air over the area and trapping air pollutants near the ground.

REGIONAL CLIMATE

The Mediterranean climate type of the SVAB is characterized by hot, dry summers and cool, rainy winters. During the summer, daily temperatures range from 50°F to more than 100°F. The inland location and surrounding mountains shelter the area from most of the ocean breezes that keep the coastal regions moderate in temperature. Most precipitation in the area results from air masses that move in from the Pacific Ocean, usually from the west or northwest, during the winter months. More than half the total annual precipitation falls during the winter rainy season (November through February); the average winter temperature is a moderate 49°F. Also characteristic of SVAB winters are periods of dense and persistent low-level fog, which are most prevalent between storms. The prevailing

winds are moderate in speed and vary from moisture-laden breezes from the south to dry land flows from the north.

May through October is ozone season in the SVAB. This period is characterized by poor air movement in the mornings, with the arrival of the Delta sea breeze from the southwest in the afternoons. In addition, longer daylight hours provide a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO_X), which result in ozone formation. Typically, the Delta breeze transports air pollutants northward out of the SVAB; however, a phenomenon known as the Schultz Eddy prevents this from occurring during approximately half of the time from July to September. The Schultz Eddy phenomenon causes the wind to shift southward and blow air pollutants back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the area and contributes to the area violating the ambient-air quality standards.

LOCAL MICROCLIMATE

The local meteorology of the infill site and surrounding area is represented by measurements recorded at the Vacaville station. The mean annual precipitation is approximately 25 inches. January temperatures range from a minimum of 37°F to a maximum of 55°F. July temperatures range from a minimum of 56°F to a maximum of 95°F (WRCC 2012). The predominant wind direction and speed is from the south-southwest at 7.8 miles per hour (mph) (WRCC 2013a, 2013b).

EXISTING AIR QUALITY – CRITERIA AIR POLLUTANTS

Concentrations of the following air pollutants are used as indicators of ambient air quality conditions: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health, and because there is extensive documentation available on health effect criteria for these pollutants, they are commonly referred to as “criteria air pollutants.”

A brief description of each criteria air pollutant, including source types, health effects, and future trends, is provided below, along with current attainment area designations and monitoring data for the infill site and vicinity.

OZONE

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight. Ozone is the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of ROG and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while ROG and NO_X levels are high to sustain the ozone formation process. Once the precursors have been depleted, ozone levels decline rapidly. Because these reactions occur on a regional (rather than site-specific or local) scale, ozone is considered a regional pollutant.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm

temperatures and clear skies provide the optimum conditions for ozone formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as people with asthma and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 part per million (ppm) for 1–2 hours has been found to substantially alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes (the amount of air inhaled and exhaled), and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses such as throat dryness, chest tightness, headache, and nausea. In addition to these adverse health effects, evidence also exists that ozone exposure is related to an increase in permeability of respiratory epithelia; such increased permeability leads to an increased response of the respiratory system to challenges, and a decrease in the immune system's ability to defend against infection (Godish 2004).

Ozone precursor emissions of ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. However, peak ozone values in the SVAB have not declined as quickly over the last several years as they have in other urban areas. Since 1990, the peak 8-hour level has decreased slightly, and the overall decline for the 20-year period between 1988 and 2008 is almost 12 percent. The number of 8-hour exceedance days has declined by nearly 37 percent since 1988 (ARB 2009).

CARBON MONOXIDE

CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85–95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO indoors. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air (EPA 2012).

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2012).

The highest concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to problems caused by ozone, which tends to be a regional pollutant, CO problems tend to be localized.

NITROGEN DIOXIDE

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2012). The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with ozone, the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity in the human body is in the lower respiratory tract. The severity of adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion to prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions (EPA 2012).

SULFUR DIOXIDE

SO_2 is produced by such stationary sources as combustion of coal and oil, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant, and constriction of the bronchioles occurs with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

PARTICULATE MATTER

Respirable particulate matter, or PM_{10}, consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2012). Fine particulate matter ($PM_{2.5}$) is a subgroup of PM_{10}, consisting of smaller particles (ARB 2009).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulate matter (referred to as the “piggybacking effect”), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2012). $PM_{2.5}$ poses an increased health risk because the particles can be deposited deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of PM_{10} increased in the SVAB between 1975 and 2005 and are projected to continue increasing through 2020. Emissions are dominated by contributions from area-wide sources, primarily fugitive dust from paved and unpaved roads, dust from farming operations, fugitive dust from construction and demolition, and particulates from residential fuel combustion (including wood). Emissions of directly emitted PM_{10} from mobile sources and stationary sources in the SVAB have

remained relatively steady. The annual average PM_{10} concentrations in the SVAB have shown a fairly steady decline from 1989 to 2007, with some variability over the last several years. The 3-year average of annual averages shows a decrease of 29 percent from 1991 to 2007. The 3-year average of calculated days over the State 24-hour standard decreased by 49 percent from 1991 to 2007. Because many of the sources that contribute to ozone also contribute to PM_{10}, future ozone emission controls are expected to improve PM_{10} air quality (ARB 2009).

LEAD

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. Environmental Protection Agency (EPA) set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2012).

As a result of EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95 percent between 1980 and 1999), and levels of lead in the air decreased by 94 percent between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13 percent of lead emissions. A National Health and Nutrition Examination Survey reported a 78 percent decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (EPA 2012).

The decrease in lead emissions and ambient lead concentrations over the past 25 years is California's most dramatic success story with regard to air quality management. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. Since the phase-out began during the 1970s, subsequent California Air Resources Board (ARB) regulations have virtually eliminated all lead from gasoline now sold in California. Only the South Coast Air Basin portion of Los Angeles County is currently designated as a nonattainment area for the federal and state lead standards. Although the ambient lead standards are no longer violated in the SVAB, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, ARB identified lead as a TAC.

MONITORING STATION DATA AND ATTAINMENT AREA DESIGNATIONS

Criteria air pollutant concentrations are measured at several monitoring stations throughout California. The closest station to the CMF/SOL Infill Site is the Vacaville – Ulatis Drive station, approximately 2 miles northeast of the infill site. This station monitors ozone levels only. Data for NO_2 and $PM_{2.5}$ are reported from the Davis – UCD Campus station, located approximately 18 miles northeast of the infill site. Table 3.1-1 summarizes the air quality data from this station for the most recent 3 years, 2009–2011.

Table 3.1-1 Summary of Annual Ambient Air Quality Data (2009–2011)

	2009	2010	2011
Ozone[a]			
Maximum concentration (1-hour/8-hour, ppm)[b]	0.106/0.085	0.105/0.079	0.088/0.073
Number of days State standard exceeded (1-hour/8-hour)	3/2	2/3	0/3
Number of days national standard exceeded (1-hour/8-hour)	0/2	0/1	0/0
Nitrogen Dioxide (NO_2)[c]			
Maximum concentration (1-hour, ppm)	0.040	0.037	0.043
Annual average (ppm)	0.007	0.006	0.007
Number of days state standard exceeded (1-hour)	0	0	0
Fine Particulate Matter ($PM_{2.5}$)[c]			
Maximum concentration (μg/m^3)[b]	36.4	38.6	43.3
Number of days national standard exceeded (measured/estimated)[d]	*/*	*/*	*/*
National/California annual average (μg/m^3)[b]	*/9.1	*/*	*/12.6

Notes: μg/m^3 = micrograms per cubic meter; ppm = parts per million; * = data not available

[a] Measurements were recorded at the Vacaville – Ulatis Drive monitoring station.

[b] California and national statistics may differ for the following reasons: California statistics are based on California-approved samplers, whereas national statistics are based on samplers using national reference or equivalent methods. State and national statistics may therefore be based on different samplers. California statistics are based on local conditions and national statistics are based on standard conditions. California criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[c] Measurements were recorded at the Davis – UCD Campus monitoring station.

[d] Measured days are those days that an actual measurement exceeded the respective standard. Measurements are typically collected every 6 days. Estimated days are the mathematically derived number of days on which a measurement would have been greater than the applicable standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Sources: ARB 2013a

Both ARB and EPA use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. The “unclassified” designation is used in areas that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation called “nonattainment-transitional.” This designation is given to nonattainment areas that are progressing and nearing attainment. The most current attainment designations for the SVAB are shown in Table 3.1-2 for each criteria air pollutant.

EXISTING EMISSIONS

With respect to the SVAB, mobile sources are the largest contributor to the estimated annual average air pollutant levels of ROG, CO, and NO_X. Mobile sources account for approximately 48 percent, 67 percent, and 81 percent, respectively, of the total emissions. Areawide sources account for approximately 88 percent and 74 percent of the SVAB’s PM_{10} and $PM_{2.5}$ emissions, respectively (ARB 2013b).

EXISTING AIR QUALITY — TOXIC AIR CONTAMINANTS

Concentrations of TACs, or (in federal parlance), hazardous air pollutants (HAPs), are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

Table 3.1-2 Ambient Air Quality Standards and Designations for Sacramento Valley Air Basin

Pollutant	Averaging Time	California [a]		National Standards [b]		
		Standards[c]	Attainment Status[i]	Primary[c,d]	Secondary[c,e]	Attainment Status[j]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	N (Serious)	–	Same as Primary Standard	N (Severe)
	8-hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	N	150 µg/m^3	Same as Primary Standard	N (Moderate)
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter ($PM_{2.5}$)	24-hour	–	N	35 µg/m^3	Same as Primary Standard	N
	Annual Arithmetic Mean	12 µg/m^3		12 µg/m^3		
Carbon Monoxide (CO)	8-hour	9 ppm (10 mg/m^3)	A	9 ppm (10 mg/m^3)	–	U/A
	1-hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	A	0.053 ppm (100 µg/m^3)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (339 µg/m^3)		0.100 ppm [f]	–	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	A	0.030 ppm (for certain areas) [g]	–	U
	24-hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas) [g]	–	
	3-hour	–		–	0.5 ppm (1300 µg/m^3) [g]	
	1-hour	0.25 ppm (655 µg/m^3)		0.075 ppm (196 µg/m^3) [g]	–	

Table 3.1-2 Ambient Air Quality Standards and Designations for Sacramento Valley Air Basin

Pollutant	Averaging Time	California [a]		National Standards [b]		
		Standards[c]	Attainment Status[i]	Primary[c,d]	Secondary[c,e]	Attainment Status[j]
Lead [h]	30-day Average	1.5 µg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m^3	Same as Primary Standard	A
	Rolling 3-Month Average	–	–	0.15 µg/m^3		A
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more	U	No National Standards		
Sulfates	24-hour	25 µg/m^3	A			
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	U			
Vinyl Chloride [h]	24-hour	0.01 ppm (26 µg/m^3)	U/A			

Notes: µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppm = parts per million

[a] California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration is expressed first in the units in which it was promulgated (i.e., parts per million [ppm] or micrograms per cubic meter [µg/m^3]). Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

[g] On June 2, 2010, EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. EPA also revoked both the existing 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030 ppm, effective August 23, 2010. The secondary SO_2 standard was not revised at that time; however, the secondary standard is undergoing a separate review by EPA. Note that the new standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is equal to 0.075 ppm.

[h] ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[i] California attainment status:
Unclassified (U): The data are incomplete and do not support a designation of attainment or nonattainment.
Attainment (A): The state standard for that pollutant was not violated at any site in the area during a 3-year period.
Nonattainment (N): There was a least one violation of a state standard for that pollutant in the area.

[j] Federal attainment status:
Nonattainment (N): Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
Attainment (A): Any area that meets the national primary or secondary ambient air quality standard for the pollutant.
Unclassifiable (U): Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Sources: ARB 2012a; ARB 2012b, SMAQMD 2010

According to the *California Almanac of Emissions and Air Quality* (ARB 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, with the most important of these being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, data are available for several other TACs that pose a high existing ambient risk in California: benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs. Diesel PM poses the greatest health risk among these 10 TACs. Based on receptor modeling techniques, ARB estimated the diesel PM health risk in the SVAB in 2000 to be 360 excess cancer cases per million people. Since 1990, the health risk of diesel PM in the SVAB has been reduced by 52 percent (ARB 2009).

According to ARB's Community Health Air Pollution Information System, no major existing stationary sources of TACs are located within 2 miles of the CMF/SOL Infill Site. Two minor permitted sources of air emissions are located just over 1 mile from the infill site: a Calpine Natural Gas facility and the Vacaville Fruit Company (ARB 2013c). Facility data available from ARB and YSAQMD do not include estimates of cancer and noncancer risks. Vehicles on Interstate 80, Alamo Drive, Peabody Drive, and Davis Street are sources of diesel PM and other TACs associated with vehicle exhaust.

EXISTING AIR QUALITY — ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor, after which recognition occurs only with an alteration in intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as "flowery" or "sweet," then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

No existing concentrated sources of objectionable odors are located within 1 mile of the infill site. No major agriculture-related odor sources (e.g., livestock operations) are located within 2 miles. An inactive landfill is located approximately 1,000 feet west of the infill site and southwest of CMF that operated from the 1950s to 1982. The landfill was used for waste generated by CMF, including incinerator ash, kitchen and household waste, and discarded metal.

3.1.2 REGULATORY CONSIDERATIONS

Air quality at the CMF/SOL Infill Site is regulated by EPA, ARB, and YSAQMD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent. A list of the applicable federal, state and local plans, policies, regulations, laws, and ordinances is provided below. Complete summaries of the federal and state regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

CRITERIA AIR POLLUTANTS

- Clean Air Act – The Clean Air Act (CAA) required EPA to establish National Ambient Air Quality Standards (NAAQS) (Table 3.1-2) for the protection of public health and welfare.

TOXIC AIR CONTAMINANTS

- Federal Hazardous Air Pollutant Programs – Amendments to the CAA directed EPA to identify and regulate HAPs through the promulgation of national emissions standards for HAPs (NESHAP). Separate standards apply to stationary and mobile sources.

STATE PLANS, POLICIES, REGULATIONS AND LAWS

CRITERIA AIR POLLUTANTS

- California Clean Air Act – The California Clean Air Act (CCAA) required ARB to establish California Ambient Air Quality Standards (CAAQS) (Table 3.1-2) for the protection of public health and welfare. These standards are generally more stringent than the NAAQS. The CCAA specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources, and provides air districts with the authority to regulate indirect sources.
- California Health and Safety Code: Chapters 3 (Emission Limitations) and 4 (Enforcement) include the provisions of the air emissions control and permit system established in the State. The following specific sections are relevant to the project:
  - Section 41700: A person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property.
  - Section 41701: No person shall discharge into the atmosphere from any source whatsoever any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three minutes in any one hour which is:
    (a) As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
    (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subdivision (a).

- Section 42301 establishes the requirements for the air quality permit system established pursuant to Section 42300 of the California Health and Safety Code. This section forms the basis for permit requirements for local air districts.

TOXIC AIR CONTAMINANTS

- Tanner Air Toxics Act – The Tanner Air Toxics Act sets forth a formal procedure for ARB to designate substances as TACs. Once a TAC is identified, ARB is then responsible for the adoption of an Airborne Toxics Control Measure for sources that emit that particular TAC.
- Air Toxics Hot Spots Information and Assessment Act of 1987 – This act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

LOCAL PLANS, POLICIES, AND ORDINANCES

As a state agency, the California Department of Corrections and Rehabilitation (CDCR) is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CRITERIA AIR POLLUTANTS

Yolo-Solano Air Quality Management District

YSAQMD attains and maintains air quality conditions in the northeastern portion of Solano County through comprehensive programs of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean-air strategy of YSAQMD involves the preparation of plans and programs for the attainment of ambient-air-quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The district also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA, CAAA, and CCAA.

In 2007, YSAQMD released a revision to the previously adopted guidelines document for assessment and mitigation of air quality impacts under CEQA. This revised handbook (YSAQMD 2007) is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The guide contains the following applicable components:

- criteria and thresholds for determining whether a project may have a significant adverse impact on air quality,
- specific procedures and modeling protocols for quantifying and analyzing impacts on air quality,
- methods available to mitigate impacts on air quality, and
- information for use in air quality assessments that will be updated more frequently, such as air quality data, regulatory setting, climate, and topography.

Air Quality Plans

YSAQMD, in coordination with the air quality management districts and air pollution control districts of El Dorado, Placer, Sacramento, and Sutter Counties prepared and submitted the 1991 *Air Quality Attainment Plan* (AQAP) in compliance with the requirements set forth in the CCAA, which specifically addressed the nonattainment status for ozone and, to a lesser extent, CO and PM_{10}. The CCAA also

requires a triennial assessment of the extent of air quality improvements and emissions reductions achieved through the use of control measures. As part of the assessment, the AQAP must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections.

The requirement of the CCAA for a first triennial (every 3 years) progress report and revision of the 1991 AQAP was fulfilled with the preparation and adoption of the 1994 *Ozone Attainment Plan* (OAP). The OAP stresses attainment of ozone standards and focuses on strategies for reducing emissions of the ozone precursors ROG and NO_X. It promotes active public involvement, enforcement of compliance with YSAQMD rules and regulations, public education in both the public and private sectors, development and promotion of transportation and land use programs designed to reduce vehicle miles traveled (VMT) within the region, and implementation of control measures for stationary and mobile sources. The OAP became part of the SIP in accordance with the requirements of the CAAA and amended the 1991 AQAP. However, at that time, the region could not show that the national ozone (1-hour) standard would be met by 1999. In exchange for moving the deadline to 2005, the region accepted a designation of "severe nonattainment" coupled with additional emissions requirements for stationary sources. Additional triennial reports that act as incremental updates were also prepared in 1997, 2000, and 2003 in compliance with the CCAA.

As a nonattainment area, the region is also required to submit rate-of-progress milestone evaluations in accordance with the CAAA. Milestone reports were prepared for 1996, 1999, 2002, and 2006. These milestone reports include compliance demonstrations that the requirements have been met for the Sacramento nonattainment area. The AQAPs and reports present comprehensive strategies to reduce ROG, NO_X, and PM_{10} emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of CEQA participation; implementation of a new and modified indirect-source review program; adoption of local air quality plans; and control measures for stationary, mobile, and indirect sources.

In July 1997, EPA promulgated a new 8-hour ozone standard. This change lowered the standard for ambient ozone from 0.12 ppm averaged over 1 hour to 0.08 ppm averaged over 8 hours. In general, the 8-hour standard is more protective of public health and more stringent than the 1-hour standard. The promulgation of this standard prompted new designations and nonattainment classifications in June 2004 and resulted in the revocation of the 1-hour standard in June 2005. The region has been designated as a nonattainment (serious) area for the national (8-hour) ozone standard with an attainment deadline of June 2013.

In March 2008, EPA further strengthened its 8-hour ozone standard. This change lowered the standard for ambient ozone from 0.08 ppm averaged over 8 hours to 0.075 ppm averaged over 8 hours. On May 21, 2012, EPA published two rules: (1) the final implementation rule of the 2008 NAAQS for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines, and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes and (2) Air Quality Designations for the 2008 Ozone NAAQS. The implementation rule establishes classifications and associated attainment deadlines and revoked the 1997 ozone standards for transportation conformity purposes. The designation rule finalized the nonattainment area boundaries for areas that do not meet the 0.075 ppm standard. Sacramento ozone nonattainment area boundaries, which include the portion of Solano County where the CMF/SOL Infill Site is located, match the boundaries for the 1997 ozone standards and remains classified as a severe ozone nonattainment area with an attainment deadline of 2027 (SMAQMD 2012).

Rules and Regulations

As mentioned above, YSAQMD adopts rules and regulations. All projects are subject to YSAQMD's rules and regulations in effect at the time of construction. Specific rules applicable to the development of the infill site may include, but are not limited to:

- Rule 2-5: Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property.
- Rule 2-9: Open Burning. No person shall use open outdoor fires for the purpose of disposal of petroleum waste, demolition debris, construction debris, tires or other rubber materials, materials containing tar, or for metal salvage or burning of vehicle bodies.
- Rule 2-11: Particulate Matter. A person shall not release or discharge into the atmosphere from any single source operation, dust, fumes, or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.
- Rule 2-14: Architectural Coatings. No person shall: (i) manufacture, blend, or repackage for sale within the District; (ii) supply, sell, or offer for sale within the District; or (iii) solicit for application or apply within the District, any architectural coating with a VOC content in excess of the corresponding limit specified in the Rule after specific effective dates.
- Rule 2.37: Natural Gas-Fired Water Heaters and Small Boilers. No person shall manufacture, offer for sale, sell, or install any natural gas fired water heater with oxides of nitrogen (NO_X) emissions in excess of the limits set forth in the compliance schedule indicated in the Rule.
- Rule 3-1: General Permit Requirements. 301.1 No person shall build, erect, alter, or replace any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants, without first obtaining an authorization to construct and permit to operate from the Air Pollution Control Officer as specified in Section 401 of the Rule.
- Rule 9-9: Asbestos. Any owner or operator of a demolition or renovation subject to this Rule shall use the procedures outlined in the Rule to prevent emissions of particulate asbestos material to outside air.

TOXIC AIR CONTAMINANTS

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under YSAQMD Rule 3-1 (“General Permit Requirements”; summarized above), Rule 3-4 (“New Source Review”), and Rule 3-8 (“Federal Operating Permit”), all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review (NSR) standards and air toxics control measures. YSAQMD limits emissions and public exposure to TACs through a number of programs. YSAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. Sensitive receptors are people, or facilities that generally house people (e.g., schools, hospitals, residences), that may experience adverse effects from unhealthful concentrations of air pollutants.

Sources that require a permit are analyzed by YSAQMD (e.g., health risk assessment [HRA]) on the basis of their potential to emit toxics. If it is determined that a particular development would emit toxics in excess of YSAQMD’s threshold of significance for TACs, sources must implement the best available control technology for TACs (T-BACT) to reduce emissions. If a source cannot reduce the risk below the threshold of significance, even after T-BACT has been implemented, YSAQMD will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing sources by requiring them to apply new technology with respect to TACs when retrofitting. It is important to note that YSAQMD’s air quality permitting process applies to stationary sources; properties that are exposed to elevated levels of non-stationary-type sources of TACs, and the non-stationary-type sources themselves (e.g., on-road vehicles), are not subject to air quality permits. Further, for reasons of feasibility and practicality, mobile sources (e.g., cars and trucks) are not required to implement T-

BACT, even if they do have the potential to expose adjacent properties to elevated levels of TACs. Rather, emission controls on such sources (e.g., vehicles) are subject to regulations implemented at the federal and State levels.

ODORS

YSAQMD has identified some common types of facilities that have been known to produce odors: wastewater treatment facilities, chemical manufacturing plants, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Because offensive odors rarely cause physical harm and no requirements for their control are included in federal or state air quality regulations, YSAQMD does not have rules or standards related to odor emissions other than Rule 2-5: Nuisance. Any actions related to odors are based on citizen complaints to local governments and YSAQMD.

Two situations can increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing sources of odor. In the first situation, YSAQMD recommends operational changes, add-on controls, process changes, or buffer zones where feasible to address odor complaints. In the second situation, the potential conflict is considered significant if the site is at least as close as any other site that has already experienced significant odor problems related to the odor source. For projects locating near a source of odors where there is no nearby development that may have filed complaints, and for odor sources locating near existing sensitive receptors, YSAMQD recommends that the determination of potential conflict be based on the distance and frequency at which odor complaints from the public have occurred in the vicinity of a similar facility (YSAQMD 2007).

YSAQMD's nuisance rule (Rule 2-5) states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public; that endanger the comfort, repose, health, or safety of any such persons, or the public; or that cause or have a natural tendency to cause injury or damage to business or property.

3.1.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with the State CEQA Guidelines (Appendix G) and YSAQMD thresholds of significance, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant air quality impact if it would result in any of the following:

- Short-term construction-related emissions of criteria air pollutants or precursors would violate an air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations, as described below:
  - *PM_{10}*—Emissions would exceed the YSAQMD-recommended threshold of 80 pounds per day (lbs/day);
  - *ROG and NO_X*—Emissions would exceed the YSAQMD-recommended threshold of 10 tons per year (TPY);
- Long-term operational (regional) emissions of criteria air pollutants or precursors would violate an air quality standard or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan:
  - *PM_{10}*—Emissions would exceed the YSAQMD-recommended threshold of 80 lb./day;
  - *ROG and NO_X*—Emissions would exceed the YSAQMD-recommended threshold of 10 TPY;

- Long-term operational (local) emissions of criteria air pollutants or precursors violate any air quality standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations (i.e., for CO, if emissions exceed the 20 ppm [1-hour] or 9 ppm [8-hour] standards);
- Short-term construction-related or long-term operational emissions of TACs would expose sensitive receptors to substantial pollutant concentrations (i.e., exposure to a TAC identified by ARB and/or EPA would exceed 10 in one million for excess cancer risk or one hazard index for noncancer risk at the maximally exposed individual); or
- Short-term construction or long-term operations would create objectionable odors affecting a substantial number or people. Specifically, project implementation would locate receptors near an existing odor source where there has been either one confirmed or three unconfirmed complaints per year, averaged over 3 years, from existing receptors as close as the project to the odor source; or from existing receptors near of a similar facility considering distance, frequency, and odor control, where there is currently no nearby development and for proposed odor sources near existing receptors.

The State CEQA Guidelines (Section 15064.5) define a “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

Sensitive receptors near the infill site include the existing employees and inmates at CMF and SOL. The nearest sensitive receptors outside the CMF/SOL Infill Site are existing residences east of Peabody Road approximately 400 feet from the limits of the infill site. The infill site would be accessed on Peabody Drive, and sensitive receptors on the access route include residences located along the roadway.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.1-1: Short-Term Construction-Related Emissions of Criteria Air Pollutants and Precursors

Construction-related emissions are described as “short term” or temporary in duration but have the potential to represent a significant impact with respect to air quality. Construction-related activities would result in emissions of criteria air pollutants (e.g., PM_{10} and $PM_{2.5}$) and precursors (e.g., ROG and NO_X). Construction-related emissions anticipated from development of the level II infill correctional facility were modeled using the CalEEMod (Version 2011.1.1) computer program as recommended by YSAQMD. CalEEMod is designed to model construction emissions for land use development projects using emission factors developed and published by ARB, and allows for the input of development-specific information.

Construction of the level II infill correctional facility is expected to commence in spring 2014and take approximately 26 months to complete. Overall, construction of the single, level II infill correctional facility is estimated to be completed by spring 2016. Construction would be phased as follows:

- demolition/site preparation: approximately 2 months,
- grading: approximately 3 months (1 month would be concurrent with demolition),
- utilities: approximately 8 months (1 month would be concurrent with grading), and
- building construction: approximately 23 months (6 months would be concurrent with utilities).

In addition, it was assumed that architectural coating and paving would occur during the last 6 months, concurrent with building construction. The estimated peak number of construction workers onsite at any given time would be 355. Anticipated monthly variation in construction workers present onsite during construction is reported in Table 3-3 in Chapter 3, “Project Description,” in Volume 1 of the DEIR.

Earth-moving equipment, including graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks, would be used during excavation for utilities and building foundations. Concrete trucks and pumpers would be onsite during concrete pours for foundations and slabs; forklifts would be used during erection of walls and delivery of materials from storage yards; and cranes would be operated for installation of precast panels, structural steel framing members, and metal decking. Fill required for site grading and construction of the building pads and berm for the observation post would be obtained onsite.

Emissions of NO_X would be primarily associated with off-road (e.g., gas and diesel) construction equipment exhaust; secondary sources would include on-road trucks for import and export of materials and worker vehicles for commuting. Worker commute trips in gasoline-fueled vehicles, off-gassing from asphalt application and application of architectural coatings would be the principal sources of ROG, with additional ROG coming from off- and on-road construction equipment.

Emissions of fugitive PM or dust (PM_{10} and $PM_{2.5}$) are associated primarily with ground-disturbance activities during site preparation, demolition, and grading, and may vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT onsite and offsite. Exhaust emissions from diesel equipment and worker commute trips also contribute to short-term increases in PM_{10} and $PM_{2.5}$ emissions, but to a much lesser extent.

Table 3.1-3 summarizes the modeled construction-related emissions of criteria air pollutants and ozone precursors for the infill correctional facility. The significance of construction-related air quality impacts was determined by comparing these modeling results with applicable significance thresholds. Refer to Appendix 5A in this volume for detailed modeling input parameters and results.

Table 3.1-3 Summary of Modeled Emissions of Criteria Air Pollutants and Precursors from Construction of the Single, Level II Infill Correctional Facility

Year	Emissions			
	ROG[1] (TPY)	NO_X[1] (TPY)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Daily Unmitigated Emissions—2014	1.2	7.6	70.8	13.6
Daily Unmitigated Emissions—2015	1.5	7.4	18.7	4.2
Daily Unmitigated Emissions—2016	4.1	5.4	18.0	4.6
Threshold of Significance	*10 TPY*	*10 TPY*	*80 lbs/day*	*–*[2]

Notes: lbs/day = pounds per day; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; TPY = tons per year
1 ROG and NO_X are precursors to ozone.
2 YSAQMD has not set a mass emissions significance threshold for $PM_{2.5}$
Refer to Appendix 5A in this volume for detailed assumptions and modeling output files.
Source: Data modeled by Ascent Environmental in 2013.

As shown in Table 3.1-3, unmitigated emissions of ROG, NO_X and PM_{10} would be below the applicable YSAQMD thresholds of significance in 2014, 2015, and 2016. Furthermore, construction activities would be required to comply with YSAQMD rules and regulations (e.g., Rules 2-5 and 2-11) that would reduce PM_{10} emissions below the levels reported in Table 3.1-3. Thus, construction-related emissions of criteria pollutants and ozone precursors associated with the single, level II infill correctional facility would not violate a standard or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, including the nonattainment status of the SVAB. As a result, this impact would be less than significant.

Emissions of criteria pollutants and ozone precursors in 2014, 2015, and 2016 would be below YSAQMD's applicable thresholds of significance. Thus, ROG, NO_X and PM_{10} emissions from construction of the single, level II infill correctional facility at the CMF/SOL Infill Site would not violate a standard or contribute substantially to an existing or projected air quality violation, and/or expose

sensitive receptors to substantial pollutant concentrations, including SVAB's nonattainment status for ozone and PM_{10}. As a result, this impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.1-2: Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Precursors

Regional area- and mobile-source emissions of nonattainment pollutants and precursors (i.e., ROG, NO_X, PM_{10}, and $PM_{2.5}$) generated by development of the level II infill correctional facility were also modeled using CalEEMod. CalEEMod allows land use selections that include development location specifics and trip generation rates. CalEEMod calculates area-source emissions from the usage of natural gas, landscape maintenance equipment, and consumer products and calculates mobile-source emissions associated with vehicle trip generation.

Regional area- and mobile-source emissions were modeled based on contemplated land use types and sizes as described in Chapter 3, "Project Description," of Volume 1 of this DEIR, trip generation data presented in the traffic analysis prepared for the contemplated development (Section 3.11 and Appendix 5D in this volume), and default CalEEMod settings to estimate reasonable maximum emission conditions. CalEEMod does not contain a land use type corresponding to an infill correctional facility; therefore, a hospital was used as a close approximation of facility operational characteristics. This is considered appropriate as both land use types are associated with 24-hour facilities with a greater level daytime versus nighttime operations. CalEEMod input parameters were adjusted with development-specific information, where available.

The total estimated floor area for the infill facility would be 257,916 gross square feet (gsf), of which an estimated 90,000 gsf would be program space. As reported in Section 3.11, "Transportation," the single, level II infill correctional facility is projected to generate a total of 396 daily trips. Refer to Appendix 5A in this volume for detailed modeling input parameters and results.

Table 3.1-4 summarizes the modeled operation-related emissions of criteria air pollutants and ozone precursors under buildout conditions in 2017, the earliest possible full year of operation of the single, level II infill correctional facility. As shown in Table 3.1-4, area- and mobile-source emissions resulting from operation of the infill facility would be below YSAQMD's applicable significance thresholds for ROG, NO_X, and PM_{10} and would not be expected to contribute to concentrations that exceed the NAAQS or CAAQS. In addition, emission rates of vehicles in California are anticipated to improve each year as older vehicles are retired and newer, lower emission vehicles are added. For this reason, emission levels associated with operation of the single, level II infill correctional facility are expected to decrease over time.

It should be noted that operation of the infill facility could also result in the generation of criteria air pollutant and precursor emissions from the long-term operation of onsite stationary sources (*e.g.*, emergency generators). These types of sources would be subject to YSAQMD Rule 3-1: "General Permit Requirements," under which any construction, alteration, replacement, or operation of a source that will emit or may emit pollutants must obtain an Authority to Construct (ATC) and/or a Permit to Operate (PTO). Emergency generators would be used only in the event of a power outage, although they would also be turned on occasionally to ensure their reliability.

Table 3.1-4 Summary of Modeled Emissions of Criteria Air Pollutants and Precursors from Operation of the Single, Level II Infill Correctional Facility

Source	Emissions			
	ROG[1] (TPY)	NO_X[1] (TPY)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Area Sources	1.5	1.4	0.6	0.6
Mobile Sources	0.4	1.5	4.9	0.4
Total Unmitigated Emissions	1.9	2.9	5.4	0.9
Threshold of Significance	*10 TPY*	*10 TPY*	*80 lbs/day*	*–*[2]

Notes: lbs/day = pounds per day; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; TPY = tons per year
[1] ROG and NO_X are precursors to ozone.
[2] YSAQMD has not set a mass emissions significance threshold for $PM_{2.5}$
Numbers may not sum exactly to totals due to rounding.
Refer to Appendix 5A in this volume for detailed assumptions and modeling output files.
Source: Data modeled by Ascent Environmental in 2013.

More specifically, the use of any stationary source that may cause emissions is required by law to first obtain an ATC from the Air Pollution Control Officer (APCO). Before the PTO of any new source is granted, a written permit is also required from the APCO. No PTO will be granted by either the APCO or the Hearing Board for the operation of any source constructed or installed without these authorizations until the information required is presented to the APCO and conforms to the standards set forth in Rule 3-1.

According to Rule 3-1, the construction and operation of any source must comply with Rule 3-4: "New Source Review" and Rule 8-1: "New Source Performance Standards," as well as obtaining the ATC and PTO. The APCO will deny any ATC or PTO if the construction and operation of the source is not shown to be designed, controlled, or equipped with such an air pollution control article, machine, equipment, or other contrivance, in a manner not to cause emissions in violation of Section 41700, 41701, or 42301 of the California Health and Safety Code, and the other YSAQMD-applicable rules mentioned above (e.g., compliance with NSR standards).

According to YSAQMD, new permitted sources emitting more than 10 lbs/day of ROG and NO_X or 80 lbs/day of PM_{10} or SO_X must provide BACT, and all sources emitting more than the NSR thresholds must offset all emissions in excess of the thresholds. Emissions for these sources would not be allowed to exceed the numeric thresholds of significance for ozone precursors. Generally, stationary sources of air pollutant emissions that comply with applicable regulations pertaining to BACT and offset requirements are not considered to have significant air quality impacts.

Operation of the single, level II infill correctional facility at the CMF/SOL infill site would result in area- and mobile-source emissions that would not exceed YSAQMD's applicable operational significance thresholds. Although development-generated stationary-source emissions would be additive, such would be controlled and limited through YSAQMD's permit process. Thus, operation-related regional emissions of criteria air pollutants and precursors would not violate a standard or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations. YSAQMD's significance thresholds represent levels of emissions that individual projects would need to meet to avoid a conflict with air quality planning efforts by the air district. Since operational emissions are substantially below YSAQMD's thresholds, emissions from the infill facility would not conflict with air quality planning efforts. As a result, this impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.1-3: Long-Term Operation-Related (Local) Mobile-Source Emissions of Carbon Monoxide

CO concentration is a direct function of meteorological conditions and motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. As a result, it is recommended that CO be analyzed at the local level. The SVAB is designated as an attainment area for the CAAQS and NAAQS for CO. As of 2003, CO levels recorded in the SVAB have been more than 50 percent below the federal 8-hour standard (ARB 2004). The SVAB has not had any exceedances of CO standards in over 20 years.

Several air districts in California recently adopted screening criteria for analyzing local CO impacts, including the Sacramento Air Quality Management District (SMAQMD) and Bay Area Air Quality Management District (BAAQMD). YSAQMD has not adopted screening criteria for local CO impacts; therefore, guidance from these other air districts is used. Screening criteria for SMAQMD and BAAQMD were developed based on a conservative analysis of local intersections and are considered appropriate for a preliminary screening analysis. If the criteria are exceeded for the contemplated infill facility, a detailed dispersion modeling analysis would need to be performed based on local data. Criteria applicable to the development of level II infill correctional facility are listed separately below. These screening criteria have been developed in a manner such that, if they are met, development-generated, long-term operation-related local mobile-source emissions of CO would not violate a standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations.

According to BAAQMD, a proposed project would result in a less-than-significant CO impact if the following criterion is met (BAAQMD 2010):

- Project traffic would not increase volumes at affected intersections to more than 44,000 vehicles per hour.

According to SMAQMD, a proposed project would result in a less-than-significant CO impact if the following criterion is met (SMAQMD 2011):

- The project would not result in an affected intersection experiencing more than 31,600 vehicles per hour.

According to the traffic analysis (attached as Appendix 5D in this volume and discussed in Section 3.11, “Transportation”), none of the maximum peak-hour traffic volumes resulting from development of the single, level II infill correctional facility at the CMF/SOL Infill Site would exceed BAAQMD’s or SMAQMD’s respective screening criteria of 44,000 and 31,600 vehicles per hour. As a result, development-generated, long-term operation-related local mobile-source emissions of CO would not violate a standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations.

Long-term operation-related local mobile-source emissions of CO generated by the single, level II infill correctional facility at the CMF/SOL Infill Site would not violate a standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations. As a result, this impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.1-4: Exposure of Sensitive Receptors to Emissions of Toxic Air Contaminants

The exposure of sensitive receptors to emissions of TACs from onsite development-generated construction-related and operation-related sources for each facility type is discussed separately below.

Onsite Construction-Related Equipment Emissions

Construction of the single, level II infill correctional facility would result in short-term, development-generated emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used for site preparation (*e.g.*, excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. Diesel PM was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential non-cancer health impacts (ARB 2003). YSAQMD has not adopted a methodology for analyzing such impacts and does not recommend that HRAs be completed for construction-related emissions of TACs because construction activities typically take place in the short term, whereas HRAs are based on long-term (extending over several decades) exposure.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., the potential exposure to TACs being compared to applicable standards). Dose is a function of the concentration of a substance in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the MEI. Thus, the risks estimated for the MEI are higher if a fixed exposure occurs over a longer period of time. According to the California Office of Environmental Health Hazard Assessment (OEHHA), HRAs, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period or duration of activities associated with the contemplated development. Consequently, it is important to consider that the use of off-road, heavy-duty diesel equipment would be limited to the construction period, which is approximately 26 months. Also, studies show that diesel PM is highly dispersive (i.e., concentration decreases 70 percent at 500 feet from source) (ARB 2005, Zhu and Hinds 2002).

The nearest sensitive receptors outside CMF/SOL are existing residences east of Peabody Road approximately 400 feet from the boundary of the infill site. The infill site would be accessed on Peabody Drive, and sensitive receptors on the access route include residences located along the roadway. These distances represent distances from the reasonable center of construction activity at the infill site to common areas of the nearby receptors. While it is likely that some construction activity would occur within 500 feet of the nearest receptors, construction equipment would not operate in a single location for an extended period. The use of off-road, heavy-duty equipment would be temporary and construction equipment is anticipated to operate at a distance greater than 500 feet from the nearest sensitive receptor (the distance associated with a 70-percent decrease in emissions) for a majority of the duration of construction activities, based on an evaluation of potential onsite structures at the infill site. Consequently, temporary development-generated, construction-related emissions of TACs would not result in the exposure of sensitive receptors to substantial pollutant concentrations.

Onsite Operation-Related Stationary-Source Emissions

Development of the single level II infill correctional facility would include stationary sources of TACs, such as diesel- or natural gas–fueled backup generators. These types of stationary sources, in addition to any other stationary sources that may emit TACs, would be subject to YSAQMD's rules and regulations, including Regulation III (Permit System) and Regulation IX (State Designated Toxic Sources); Rule 3-13 (Toxics New Source Review); and maximum achievable control technology (MACT) and T-BACT requirements. Thus, as discussed above, YSAQMD would analyze such sources (e.g., prepare a health risk assessment, if deemed necessary) based on their potential to emit TACs. If it is determined that the sources would emit TACs in excess of YSAQMD's applicable significance threshold, MACT or T-BACT would be implemented to reduce emissions. If the implementation of

MACT or T-BACT would not reduce the risk below the applicable threshold, YSAQMD would deny the required PTO.

More specifically, the siting of new stationary sources of TACs would be subject to YSAQMD rules and each new stationary source is evaluated to determine whether it has the potential to emit TACs. YSAQMD assesses the impact from TACs based on its own guidance, as well as guidance documents from OEHHA, ARB and the California Air Pollution Control Officers Association. YSAQMD requires TAC emission controls (T-MACT or T-BACT) as deemed necessary.

In addition to T-MACT and T-BACT requirements, permits for stationary equipment that may emit TACs may also contain conditions required by NESHAPs and ATCMs promulgated by EPA and ARB, respectively. In short, a new stationary source of TACs would not receive the ATC or PTO if it would result in:

- an incremental increase in cancer risk greater than 10 in 1 million at any offsite receptor or
- an offsite ground-level concentration of non-carcinogenic TACs generated from the development that would result in a Hazard Index greater than 1 (unless approved by OEHHA).

These permitting requirements reflect YSAQMD's thresholds of significance for TACs generated by stationary sources. Therefore, lead agencies can conclude that a new stationary source of TACs that attains the authority to construct and permit to operate from YSAQMD would not exceed the applicable TAC thresholds of significance.

With regard to onsite receptors (e.g., inmates onsite), ARB's Community Health Air Pollution Information System identifies no major stationary sources of TACs exist within 3 miles of the infill site. Thus, development of the single, level II infill correctional facility would not result in the placement of sensitive receptors within ARB-recommended separation distances considered for the information system. Consequently, development of the single, level II infill correctional facility would not result in the exposure of sensitive receptors (existing or contemplated) to substantial pollutant concentrations from stationary sources.

With regard to construction-related activities, the use of off-road, heavy-duty equipment would be temporary and construction equipment is not anticipated to operate within 500 feet of the nearest sensitive receptor (i.e., sufficient distance from emission sources that excessive concentrations of diesel PM would not occur at the receptor) for an extended period. For any contemplated stationary sources of TACs, CDCR would comply with applicable YSAQMD rules and regulations for permitted stationary sources, and implementation of the contemplated development would not locate any proposed sensitive receptors within ARB-recommended separation distances from emission sources. As a result, development of the single, level II infill correctional facility at the CMF/SOL Infill Site would not result in the exposure of sensitive receptors (existing or proposed) to substantial pollutant concentrations. This impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.1-5: Exposure of Sensitive Receptors to Odors

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause physical harm, they may still be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

No existing major offsite sources of objectionable odors (e.g., wastewater treatment plant, food processing facility) are located within 1 mile of the infill site. No major agriculture-related odor sources (e.g., livestock operations) are located within 2 miles. Development of the single, level II infill correctional facility would not place receptors substantially closer to existing sources of odors. There is an inactive landfill located approximately 1,000 feet west of the infill site and southwest of CMF that operated from the 1950s to 1982. The landfill was used for waste generated by CMF, including incinerator ash, kitchen and household waste, and discarded metal. The landfill is closed and capped; therefore, odors from the landfill, if any, would be intermittent and temporary (no odors were observed during prior site visits). Development of the infill correctional facility would not affect the status of the landfill. Odors from surrounding uses experienced by the new inmates would be similar to those experienced by current inmates.

Development of the single, level II infill correctional facility would not introduce new, permanent odor-generating facilities. Any onsite odor sources (e.g., fryers, charbroilers, solid waste disposal areas) would be controlled under the YSAQMD nuisance regulations and California Department of Public Health emissions reduction mandates that limit exhaust emissions from cooking sources. Thus, development of the single, level II infill correctional facility would not expose the nearby existing receptors to objectionable odors.

Construction of the single, level II infill correctional facility would result in odors from exhaust emissions from onsite diesel equipment, asphalt paving, and painting. Such emissions would be intermittent in nature and would dissipate rapidly with increasing distance from the source.

Development of the single, level II infill correctional facility at the CMF/SOL Infill Site would not involve the construction or operation of any major odor sources. No existing offsite sources of objectionable odors are located within 1 mile of the infill site. The closed landfill onsite is not anticipated to generate significant odors. Thus, development of the infill facility would not be anticipated to result in the exposure of sensitive receptors to objectionable odors. As a result, this impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

3.2 BIOLOGICAL RESOURCES

This section describes the biological resources on and in the vicinity of the Level II Infill Correctional Facility Project at the California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site; describes relevant regulations pertaining to biological resources; and addresses potential impacts on biological resources that could result from construction and operation of the infill project. The analysis includes a description of the existing environmental conditions, the methods used for assessment, the impacts associated with development of level II infill correctional facilities at the CMF/SOL Infill Site, and the mitigation measures necessary to address significant or potentially significant impacts.

Information in this section is based on data collected during reconnaissance-level field surveys, biological database searches, and review of other relevant documentation for the infill site and surrounding areas, including the following documents:

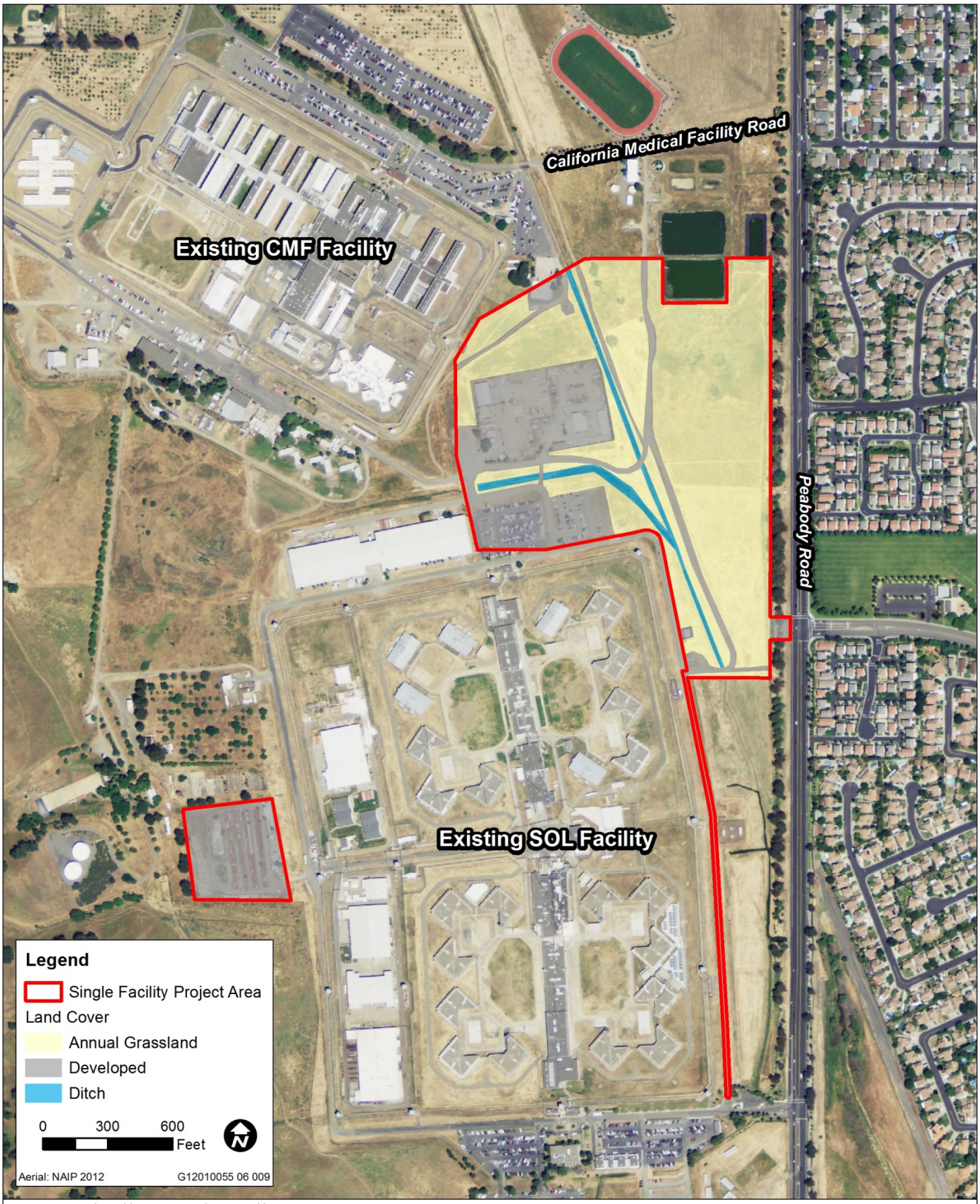
- U.S. Fish and Wildlife Service (USFWS) List of Federal Endangered and Threatened Species that Occur in or May Be Affected by Projects in the Elmira USGS 7.5-Minute Quadrangle (USFWS 2013);
- California Natural Diversity Database (CNDDB) Search (CNDDB 2013); and
- California Native Plant Society (CNPS) Inventory (CNPS 2013).

3.2.1 ENVIRONMENTAL SETTING

The CMF/SOL Infill Site is located in the City of Vacaville in Solano County. This area is within the Sacramento Valley subregion of the Great Valley region of the California Floristic Province, but is near the transition from the Great Valley to the Central Coast Range at the southeastern foot of the Vaca Mountains. The site is flat with elevations ranging from approximately 125 to 135 feet above mean sea level. Soils on the site consist of Brentwood clay loam, Rincon clay loam, and Capay silty clay loam. The entire site was previously used (before it was a prison) for agricultural production, but is currently characterized by disturbed annual grassland and developed areas supporting existing prison facilities. Aquatic features on the site consist of two drainage ditches that converge southeast of the Inmate Ward Labor Yard. The surrounding land uses are primarily urban development to the north and east and open space to the south and west. Wastewater treatment ponds are present on the CMF/SOL property immediately adjacent to the infill site. Exhibit 3.2-1 shows the habitat types on the infill site, including aquatic features and developed areas.

COMMON VEGETATION AND WILDLIFE

Vegetation on the infill site consists of disturbed annual grassland. The annual grassland community is characterized by a mixture of annual grasses and forbs and dominated by nonnative species including ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian ryegrass (*Lolium multiflorum*), medusahead (*Taeniatherum caput-medusae*), filaree (*Erodium* spp.), blessed milk thistle (*Silybum marianum*), and rose clover (*Trifolium hirtum*). The prison wastewater treatment ponds adjacent to the northeast of the infill site support a very limited amount of cattail marsh consisting exclusively of narrow, linear stands of emergent cattails along the margins of the treatment ponds. Ornamental trees and shrubs, including eucalyptus (*Eucalyptus* spp.), Deodor cedar (*Cedra deodora*), pine (*Pinus* sp.), and oleander (*Nerium oleander*), line the eastern boundary along Peabody Road and are scattered near existing facilities and the abandoned railroad line. The tree line along Peabody Road and the wastewater treatment ponds are outside the development footprint and would not be removed as a result of developing an infill facility. However, these adjacent resources could support wildlife species that could be affected by development activities on the infill site. Undeveloped portions of the infill site are mowed or disked three times a year to clear vegetation for fire control.



Source: Adapted by Ascent Environmental in 2013

Exhibit 3.2-1 Habitat Types at the CMF/SOL Infill Site

Annual grassland generally provides habitat for a wide variety of wildlife species; however, the habitat value of annual grassland on the CMF/SOL Infill Site is somewhat diminished due to the regular mowing and disking, small patch size, and surrounding development. The cattail marsh provides very low habitat value to species typically associated with freshwater marsh habitats due to its small size, sparse cover, and linear distribution. Species expected to use the site are those adapted to disturbed environments such as western toad (*Bufo boreas*), American crow (*Corvus brachyrhyncos*), western kingbird (*Tyrannus verticalis*), house finch (*Carpodacus mexicanus*), western meadowlark (*Sturnella neglecta*), Botta's pocket gopher (*Thomomys bottae*), and coyote (*Canis latrans*). Wild turkey (*Meleagris gallopavo*), California ground squirrel (*Spermophilus beecheyi*), and black-tailed deer (*Odocoileus hemionus colombianus*) were observed in grassland habitat on the infill site, and red-eared slider (*Trachemys scripta elegans*), pied-billed grebe (*Podilymbus podiceps*), Canada goose (*Branta canadensis*), and red-winged blackbird (*Agelaius phoeniceus*) have been observed at the adjacent treatment ponds.

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources addressed in this section include those that are afforded consideration or protection under the California Environmental Quality Act (CEQA), California Fish and Game Code, California Endangered Species Act (CESA), Federal Endangered Species Act (ESA), Clean Water Act (CWA), and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

SPECIAL-STATUS SPECIES

Special-status species include plants and animals in the following categories:

- species officially listed by the State of California or the Federal government as endangered, threatened, or rare;
- candidates for state or Federal listing as endangered, threatened, or rare;
- taxa (i.e., taxonomic categories or groups) that meet the criteria for listing, even if not currently included on any list, as described in California Code of Regulations (CCR) Section 15380 of the State CEQA Guidelines;
- species identified by the California Department of Fish and Wildlife (CDFW) as species of special concern;
- species listed as Fully Protected under the California Fish and Game Code;
- species afforded protection under local or regional planning documents; and
- taxa considered by CDFW to be "rare, threatened, or endangered in California" and assigned a California Rare Plant Rank (CRPR). The CDFW system includes five rarity and endangerment ranks for categorizing plant species of concern, which are summarized as follows:
  - CRPR 1A - Plants presumed to be extinct in California;
  - CRPR 1B - Plants that are rare, threatened, or endangered in California and elsewhere;
  - CRPR 2 - Plants that are rare, threatened, or endangered in California but more common elsewhere;
  - CRPR 3 - Plants about which more information is needed (a review list); and
  - CRPR 4 - Plants of limited distribution (a watch list).

All plants with a CRPR are considered "special plants" by CDFW. The term "special plants" is a broad term used by CDFW to refer to all of the plant taxa inventoried in CDFW's CNDDB, regardless of their legal or protection status. Plants ranked as CRPR 1A, 1B, and 2 may qualify as endangered, rare, or threatened species within the definition of State CEQA Guidelines Section 15380. CDFW recommends that CRPR 1A, 1B, and 2 species be addressed in CEQA projects. In general, CRPR 3 and 4 species do not meet the definition of endangered, rare, or threatened pursuant to State CEQA Guidelines

Section 15380; however, these species may be evaluated by the lead agency on a case by case basis to determine significance criteria under CEQA.

The term “California species of special concern” is applied by CDFW to animals not listed under the federal ESA or CESA, but that are nonetheless declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist.

A list of special-status species that could potentially occur on the infill site or immediate vicinity was developed primarily through review of CNDDB (2013) and CNPS Inventory (2013) records of previously documented occurrences of special-status species in the Elmira, Allendale, Bird’s Landing, Denverton, Dixon, Dozier, Fairfield North, Fairfield South, and Mt. Vaca U.S. Geological Survey 7.5-minute quadrangles. The infill site is located on the Elmira quadrangle.

Special-Status Plants

The infill site is situated within an ecologically diverse region that supports a number of rare and endemic plant species. Thirty-eight special-status plant species have been documented in the CNDDB and CNPS Inventory nine-quadrangle search area. However, the majority of these species have no potential to occur on the CMF/SOL Infill Site because they are restricted to particular soil types (e.g., saline, alkaline, or serpentinite) or other habitat types (e.g., vernal pools, salt marsh, meadows and seeps, chenopod scrub, or woodlands) that are not present on the infill site. These 25 species were immediately eliminated from further evaluation in this document and are listed below:

- Ferris’ milk-vetch (*Astragalus tener* var. *ferrisiae*)
- alkali milk-vetch (*Astragalus tener* var. *tener*)
- heartscale (*Atriplex cordulata* var. *cordulata*)
- brittlescale (*Atriplex depressa*)
- San Joaquin spearscale (*Atriplex joaquiniana*)
- vernal pool smallscale (*Atriplex persistens*)
- Congdon’s tarplant (*Centromadia parryi* ssp. *congdonii*)
- hispid bird’s-beak (*Chloropyron molle* ssp*. hispidum*)
- soft bird’s-beak (*Chloropyron molle* ssp*. molle*)
- Suisun thistle (*Cirsium hydrophilum* var*. hydrophilum*)
- recurved larkspur (*Delphinium recurvatum*)
- dwarf Downingia (*Downingia pusilla*)
- Mt. Diablo buckwheat (*Eriogonum truncatum*)
- Bogg’s Lake hedge-hyssop (*Gratiola heterosepala*)
- Carquinez goldenbush (*Isocoma arguta*)
- Contra Costa goldfields (*Lasthenia conjugens*)
- Greene’s Legenere (*Legenere limosa*)
- Heckard’s peppergrass (*Lepidium latipes* var. *heckardii*)
- Baker’s Navarretia (*Navarretia leucocephala* ssp*. bakeri*)
- Colusa grass (*Neostapfia colusana*)
- San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)
- bearded popcorn-flower (*Plagiobothrys hystriculus*)
- Keck’s checkerbloom (*Sidalcea keckii*)
- saline clover (*Trifolium depauperatum* var. *hydrophilum*)
- Solano grass (*Tuctoria mucronata*)

The potential for the remaining 10 species was evaluated further based on specific habitat requirements, geographic distribution, and elevation range, as described in Table 3.2-1. Three were ultimately determined to have some limited potential to occur in the annual grassland habitat or ditches on the CMF/SOL Infill Site; however, the potential for any special-status plant to be found on the site is low at best because the site is regularly mowed or disked to reduce fire risk.

Table 3.2-1 Special-Status Plant Species with Potential to Occur in Habitats Found on the CMF/SOL Infill Site

Species	Status[1]			Habitat and Blooming Period	Potential for Occurrence
	ESA	CESA	CRPR		
Round-leaved filaree *California macrophylla*	–	–	1B.1	Clay soils in cismontane woodland and grassland; 50 to 4,000 feet elevation. Blooms March-May.	Unlikely to occur; this species is restricted to heavy clay soils, which are not present on the site. There are no CNDDB records within 5 miles.
Mt. Diablo fairy lantern *Calochortus pulchellus*	–	–	1B.2	Chaparral, cismontane woodland, valley and foothill grassland; 650 to 2,600 foot elevation. Blooms April-June.	Unlikely to occur, species is endemic to the Diablo Range in Contra Costa County and the infill site is below the species' known elevation range.
Pappose tarplant *Centromadia parryi* ssp. *parryi*	–	–	1B.2	Vernally mesic, often alkaline sites in coastal prairie, coastal salt marsh, valley and foothill grassland, and meadows and seeps; 6 to 1,400 foot elevation. Blooms May-November.	Low potential; alkaline soils are lacking, but this species is not restricted to alkaline soils and vernally moist grassland in or adjacent to the drainage ditches may provide marginally suitable habitat. The nearest CNDDB records are from approximately 3.5 miles southwest in the City of Fairfield.
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	–	–	2.1	Freshwater or brackish marsh; 0 to 650 feet elevation. Blooms July-September.	Unlikely to occur; this species is most often found in coastal marshes. The onsite ditches do not provide the specific habitat conditions required by this species. Nearest CNDDB records are from sloughs in Suisun Marsh.
Fragrant fritillary *Fritillaria liliacea*	–	–	1B.2	Generally in heavy clay soils (often serpentine) in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland; 10 to 1,400 foot elevation. Blooms February-March.	Unlikely to occur, heavy clay soils preferred by this species are not found on the infill site. The nearest CNDDB record is from approximately 2.5 miles north.
Adobe lily *Fritillaria pluriflora*	–	–	1B.2	Chaparral, cismontane woodland, and foothill grassland, usually on heavy clay soils, sometimes serpentine; 180 to 2,700 foot elevation; blooms February-April.	Unlikely to occur, heavy clay soils preferred by this species are not found on the infill site. The nearest CNDDB record is from approximately 2.5 miles north.
Brewer's western flax *Hesperolinon breweri*	–	–	1B.2	Chaparral, cismontane woodland, and valley and foothill grassland, often in rocky serpentine soils; 100 to 3,000 foot elevation; blooms May-July.	Unlikely to occur; although not a strict serpentine endemic, 65-74% of known occurrences are on serpentine soils, which do not occur on the infill site.

Table 3.2-1 Special-Status Plant Species with Potential to Occur in Habitats Found on the CMF/SOL Infill Site

Species	Status[1]			Habitat and Blooming Period	Potential for Occurrence
	ESA	CESA	CRPR		
Woolly rose-mallow *Hibiscus lasiocarpus* var. *occidentalis*	–	–	1B.2	Freshwater marshes and swamps, wet banks; 0 to 400 feet elevation. Blooms June-September. Blooms June-September.	Unlikely to occur; this species is typically found on wet river banks, peat islands, and sloughs of the Delta in areas with perennial water. The onsite ditches do not provide the specific habitat conditions required by this species.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	–	–	1B.1	Freshwater and brackish marshes; 0 to 15 feet elevation. Blooms May-September.	Unlikely to occur; no suitable habitat is present and this species is restricted to coastal and estuarine marshes and sloughs of the Delta. The onsite ditches do not provide suitable habitat conditions.
Mason's lilaeopsis *Lilaeopsis masonii*	–	R	1B.1	Muddy or silty alluvium in freshwater or brackish marshes and riparian scrub; 0 to 35 foot elevation; blooms April-November.	Unlikely to occur; no suitable habitat is present. The onsite ditches and treatment pond do not provide suitable habitat conditions.
Delta mudwort *Limosella australis*	–	–	2.1	Mudflats in freshwater and brackish marshes and riparian scrub; 0 to 10 foot elevation; blooms May-August.	Unlikely to occur; no suitable habitat is present. This species is found at lower elevations in tidally influenced Delta habitats.
Suisun Marsh aster *Symphiotrichum lentum*	–	–	1B.2	Brackish and freshwater marshes and swamps; 0-10 foot elevation; blooms May–November.	Unlikely to occur. The onsite ditches do not provide the specific habitat conditions required by this species. This species is restricted to the Suisun Marsh and Sacramento-San Joaquin River Delta and the CMF/SOL infill site is higher than the known elevation range of this species.
Showy rancheria clover *Trifolium amoenum*	E	–	1B.1	Valley and foothill grassland and coastal bluff scrub, sometimes on serpentine soils; 15 to 1,800 foot elevation; blooms April-June.	Low potential, the onsite annual grassland provides marginal habitat quality due to regular disking and mowing. There are historic CNDDB records within 5 miles of the site, but the most recent of these has not been seen since 1909.

Notes:
CRPR = California Rare Plant Rank; CNDDB = California Natural Diversity Database; ESA = Federal Endangered Species Act; CESA = California Endangered Species Act
[1] Legal Status Definitions

ESA:
E Endangered (legally protected)
CESA:
R Rare (legally protected)

California Rare Plant Ranks:
1B Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
2 Plant species considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
CRPR Extensions:
1 Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat)
2 Fairly endangered in California (20 to 80% of occurrences are threatened)

Sources: Solano County Water Agency 20012, CNDDB 2013; CNPS 2013; data compiled by Ascent in 2013

Special-Status Wildlife

Twenty-six special-status wildlife species have been documented in the CNDDB nine-quadrangle search area. The following 13 of these species were immediately eliminated from further evaluation in this document because they are restricted to particular habitat types (e.g., chaparral, coastal sage scrub, vernal pools, streams and rivers, salt marsh, riparian woodland and forest) that are not present on the CMF/SOL Infill Site:

- Conservancy fairy shrimp (*Branchinecta conservation*),
- vernal pool fairy shrimp *(Branchinecta lynchi),*
- vernal pool tadpole shrimp *(Lepidurus packardi),*
- Delta green ground beetle (*Elaphrus viridis*),
- California red-legged frog (*Rana aurora draytonii*),
- foothill yellow-legged frog (*Rana boylii*),
- California clapper rail (*Rallus longirostris obsoletus*),
- saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*),
- yellow-breasted chat (*Icteria virens*),
- Suisun song sparrow (*Melospiza melodia maxillaris*),
- salt-marsh harvest mouse (*Reithrodontomys raviventris*),
- Suisun shrew (*Sorex ornatus sinuosus*), and
- Sacramento splittail (*Pogonichthys macrolepidotus*).

Based on habitat requirements, geographic distribution, and elevation range, the potential for 16 special-status wildlife species is evaluated in Table 3.2-2, including three species that have not been documented in the CNDDB nine-quadrangle search area, but are known to occur in annual grassland habitat in the region.

Table 3.2-2 Special-Status Wildlife with Potential to Occur at the CMF/SOL Infill Site

Species	Listing Status[1]		Habitat	Potential for Occurrence
	Federal	State		
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/PD	–	Below 3,000 feet in elderberry shrubs, especially in elderberry within riparian habitats.	Unlikely to occur; no elderberry shrubs are present on the infill site.
Amphibians and Reptiles				
California tiger salamander *Ambystoma californiense*	T	T	Vernal pools and seasonal wetlands with a minimum 10-week inundation period and surrounding uplands, primarily grasslands, with burrows and other belowground refugia (e.g., rock or soil crevices).	Unlikely to occur. No suitable breeding habitat is present on the site. Although there are potential breeding ponds within 1.3 miles, they are isolated from the site by substantial barriers including residential development, Peabody Road, the Putah South Canal, and the existing prison facilities and LEF. The potential breeding ponds within 1.3 miles of the infill site are surrounded by ample suitable upland habitat and there is no aquatic habitat on the infill site, so it unlikely to salamanders to disperse to the site.

Table 3.2-2 Special-Status Wildlife with Potential to Occur at the CMF/SOL Infill Site

Species	Listing Status[1]		Habitat	Potential for Occurrence
	Federal	State		
Western pond turtle *Emys marmorata*	–	SC	Forage in ponds, marshes, slow-moving streams, sloughs, and irrigation/ drainage ditches; nest in nearby uplands with low, sparse vegetation.	Could occur; the adjacent treatment ponds provide potentially suitable aquatic habitat for this species, therefore, there is limited potential for this species to be found on the infill site. The nearest CNDDB occurrence is approximately 2.5 miles northwest of the infill site.
Birds				
Tricolored blackbird *Agelaius tricolor* (nesting colony)	–	SC	Forages in agricultural lands and grasslands; nests in marshes, riparian scrub, and other areas that support cattails or dense thickets of shrubs or herbs. Requires open water and protected nesting substrate, such as flooded, spiny, or thorny vegetation (Schuford and Gardali 2008: 439).	Unlikely to nest, the annual grassland habitat provides foraging opportunities but there is no suitable nesting habitat present. The treatment pond does not provide suitable habitat conditions for this species due to the small, narrow, fragmented nature of the emergent vegetation present.
Grasshopper sparrow *Ammodramus savannarum* (nesting)	–	SC	Open grasslands; nests on the ground typically at base of grass clumps.	Unlikely to occur; suitable foraging habitat is present, but this species is unlikely to nest onsite due to regular mowing and disking.
Golden eagle *Aquila chrysaetos* (year round)	–	FP	Forages in large open areas of foothill shrub and grassland habitats and occasionally croplands.	May forage on the site, but no suitable nesting habitat is present. Known nest locations in Vaca Mountains to the west.
Short-eared owl *Asio flammeus* (breeding)	–	SC	Nests in tule patches and tall grass in freshwater and salt marshes, meadows, and irrigated alfalfa fields.	No suitable nesting habitat is present. Cattail marsh in the adjacent treatment ponds does not do not provide suitable habitat conditions for this species due to the small, narrow, fragmented nature of the emergent vegetation present.
Burrowing owl *Athene cunicularia* (burrow sites)	–	SC	Nests and forages in grasslands, agricultural lands, open shrublands, and open woodlands with existing ground squirrel burrows or friable soils.	Could occur; ground squirrels have been observed on the site and their burrows provide suitable habitat for this species.
Swainson's hawk *Buteo swainsoni* (nesting)	–	T	Forages in grasslands and agricultural lands; nests in riparian forests or woodlands and isolated trees.	Could occur; some of the ornamental trees on and adjacent to the site provide suitable nest sites and the annual grassland provides suitable foraging habitat. There are numerous nesting records within 5 miles of the infill site, but the site is at the edge of the species' range.
Mountain plover *Charadrius montanus* (wintering)	–	SC	Found in short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Needs short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	Unlikely to occur; the infill site does not provide the specific microhabitat conditions (i.e., mixture of short vegetation and bare ground within extensive open space) favored by this species and surrounding land uses are not conducive to use by this species. A regular wintering site is located approximately 11 miles southeast of the infill site.

Table 3.2-2 Special-Status Wildlife with Potential to Occur at the CMF/SOL Infill Site

Species	Listing Status[1]		Habitat	Potential for Occurrence
	Federal	State		
Northern harrier *Circus cyaneus* (nesting)	–	SC	Nests and forages in grasslands, agricultural fields, and marshes. Nests on the ground.	Unlikely to occur; suitable foraging habitat is present, but this species is unlikely to nest onsite due to regular mowing and disking.
White-tailed kite *Elanus leucurus* (nesting)	–	FP	Forages in grasslands and agricultural fields; nests in riparian zones, oak woodlands, and isolated trees.	Could occur; some of the ornamental trees on and adjacent to the site provide suitable nest sites and the annual grassland provides suitable foraging habitat.
Loggerhead shrike *Lanius ludovicianus* (nesting)	–	SC	Forages and nests in grasslands, shrublands, and open woodlands. Nest in shrubs or small trees.	Could occur; suitable nesting and foraging habitat is present.
California black rail *Laterallis jamaicensis coturniculus* (year round)	–	T	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes. Requires consistent water depth of 1 inch and dense vegetation to nest.	Unlikely to occur; treatment pond and ditches do not provide suitable habitat conditions for this species due to the small, narrow, fragmented nature of the emergent vegetation present and lack of a consistent supply of shallow water.
Yellow-headed blackbird *Xanthocephalus xanthocephalus* (nesting)	–	SC	Nests in deep water marshes with moderately dense cover of tall, emergent vegetation and large patches of open water and protection from predators.	Unlikely to occur; there is no suitable habitat present on the infill site. The adjacent treatment pond does not provide suitable habitat conditions for this species due to the small, narrow, fragmented nature of the emergent vegetation present and the lack of sufficient areas of open water. The infill site is at the western edge of the species' Central Valley breeding range. There are no CNDDB breeding records for this species in the nine-quadrangle search area.
Mammals				
Western red bat *Lasiurus blossevilli*	–	SC	Roosts primarily in tree foliage, especially in cottonwood, sycamore, and other riparian trees or orchards (Pierson et al. 2004). Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands.	Maternity and roosting colonies unlikely to occur onsite because of lack of suitable habitat.

Notes: CNDDB = California Natural Diversity Database; USFWS = U.S. Fish and Wildlife Service

[1] Legal Status Definitions

Federal:
PD Proposed for Delisting
T Threatened (legally protected)

State:
FP Fully protected (legally protected)
SC Species of special concern (no formal protection other than CEQA consideration)
T Threatened (legally protected)

Source: CNDDB 2013, Shuford and Gardali 2008; data compiled by Ascent in 2013

SENSITIVE HABITATS AND SPECIAL-STATUS PLANT COMMUNITIES

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404

of the CWA, and the State's Porter-Cologne Act, as discussed under "Regulatory Background" below. Sensitive natural habitat may be of special concern to these agencies and conservation organizations for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat to common and special-status species.

CDFW maintains a list of plant communities that are native to California. Within that list, CDFW identifies special-status plant communities (a.k.a. sensitive natural communities), which they define as communities that are of limited distribution statewide or within a county or region and often vulnerable to environmental effects of projects (CDFW 2013: ix). These communities may or may not contain special-status species or their habitat. Special-status plant communities are tracked in the CNDDB, a statewide inventory of the locations and conditions of the state's rarest plant and animal taxa and vegetation types. None of the plant communities present on the infill site are included on CDFW's list of special-status plant communities.

Wetlands and Other Waters of the United States

The CMF/SOL Infill Site contains two drainage ditches that are approximately 5-6 feet wide and 2-3 feet deep and convey stormwater runoff. One ditch runs southeasterly down the approximate center of the infill site and the other ditch runs from west to east and converges with the central ditch southeast of the existing Inmate Ward Labor yard. The ditches are periodically cleared of vegetation, but support occasional patches of weedy generalist wetland plants such as fiddle dock (*Rumex pulcher*), tall flatsedge (*Cyperus eragrostis*), and dallisgrass (*Paspalum dilatatum*). Water from the ditches drains into pipes that eventually flow into Union Creek. Though these ditches were created in uplands, they may be subject to regulation under Sections 404 and 401 of the Clean Water Act (CWA) due to connectivity with Union Creek, a water of the United States. If the onsite drainage ditches were disclaimed by the U.S. Army Corps of Engineers (USACE), they would still be considered waters of the state subject to regulation under the Porter-Cologne Act.

3.2.2 REGULATORY CONSIDERATIONS

A list of the applicable biological resource-related federal and state plans, policies, regulations, and laws is provided below. Complete summaries of these regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

- Federal Endangered Species Act - Persons and parties subject to ESA are prohibited from "taking" endangered or threatened fish and wildlife species on private property, and from "taking" endangered or threatened plants in areas under Federal jurisdiction or in violation of state law.
- Clean Water Act
  - Section 404 - Section 404 of the CWA requires a project applicant to obtain a permit before engaging in any activity that involves any discharge of dredged or fill material into waters of the U.S., including wetlands. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.
  - Section 401 - Under Section 401 of the CWA, an applicant for a Section 404 permit must obtain a certificate from the appropriate state agency stating that the intended dredging or filling activity is consistent with the state's water quality standards and criteria. In California, the authority to grant water quality certification is delegated by the State Water Resources Control Board to the nine RWQCBs.
- Migratory Bird Treaty Act - The Migratory Bird Treaty Act (MBTA) provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of

migratory birds. The MBTA provides that it shall be unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

- California Endangered Species Act - The California Endangered Species Act (CESA) directs state agencies not to approve projects that would jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of a species.
- California Fish and Game Code
  - Lake and Streambed Alteration (Section 1602) - Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by CDFW, or use any material from the streambeds, without first notifying DFG and obtaining a final agreement authorizing such activity.
  - Fully Protected Species (Sections 3511, 4700, 5050, and 5515) - Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code describe the take prohibitions for fully protected birds, mammals, reptiles and amphibians, and fish. Species listed under these statutes may not be taken or possessed at any time and no incidental take permits can be issued for these species except for scientific research purposes or for relocation to protect livestock.
  - Protection of Bird Nests and Raptors (Sections 3503 and 3503.5) - Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors. Typical violations include destruction of active raptor nests as a result of tree removal and failure of nesting attempts, resulting in loss of eggs and/or young, because of disturbance of nesting pairs by nearby human activity.
- Porter Cologne Water Quality Control Act - Under the Porter-Cologne Act, California must adopt water quality policies, plans, and objectives to ensure that the state's beneficial uses for water are reasonably protected. Each RWQCB must prepare and update basin plans to set forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards.

LOCAL PLANS, POLICIES, AND ORDINANCES

As a state agency, the California Department of Corrections and Rehabilitation (CDCR) is not subject to local land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CITY OF VACAVILLE GENERAL PLAN

The conservation element of the City of Vacaville General Plan (2007) contains broad goals and policies aimed at protecting specific biological resources within the City's planning area. These goals and policies are focused on the protection of streams and riparian habitats, which are not present on the infill site, and on the following species: Swainson's hawk, California red legged frog, valley elderberry long horn beetle, loggerhead shrike, conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Contra Costa goldfields, alkali milk-vetch, heartscale and recurved larkspur. The following policies are included in the plan to help protect these species:

- **Policy 8.2-I 3:** Provide wildlife corridors, where feasible, to enable free movement of animals and minimize wildlife-urban conflicts.
- **Policy 8.2-I 4:** Continue to implement the City's existing regulations which protect mature trees and existing natural non-agricultural trees.

- **Policy 8.2-I 6:** Identify areas of wetlands at the earliest possible stage of development application processing. Policies to protect and preserve wetland habitats shall be contained in the Resource Management section of applicable Policy Plans.

CITY OF VACAVILLE TREE PRESERVATION ORDINANCE

City ordinance 14.09.131 provides for the preservation and maintenance of established trees while allowing for removal of certain trees when determined necessary. The ordinance requires that a tree removal permit be acquired from the City Director prior to cutting down, removing, or destroying one or more trees on any property in the City. The ordinance applies to removal of any live woody plant having one or more well-defined perennial stems with an aggregate circumference of 31 inches or more when measured at 4-1/2 feet above ground level.

DRAFT SOLANO MULTISPECIES HABITAT CONSERVATION PLAN

The CMF/SOL Infill Site is located within the proposed Solano Multispecies Habitat Conservation Plan (SMHCP) area. The SMHCP is in draft form (Solano County Water Agency 2012) and is not an approved HCP. The purpose of the proposed SMHCP is to promote the conservation of biological diversity and the preservation of endangered species and their habitats consistent with the recognition of private property rights; provide for a healthy economic environment for the citizens, agriculture, and industries; and allow for the on-going maintenance and operation of public and private facilities in Solano County.

The draft SMHCP establishes a framework for complying with state and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Plan Participants within Solano County over the next 30 years.

The overarching conservation goal of the SMHCP is to preserve contiguous functional landscapes that encompass the full suite of ecological diversity, maintain connectivity among natural communities, and functionally buffer natural communities from direct and indirect impacts from anthropogenic pressures. The Conservation Strategy, if adopted, would provide a comprehensive program for avoiding and minimizing impacts, implementing specific conservation measures designed to preserve, restore, and manage habitats for 37 covered species; and providing long term monitoring and adaptive management to maximize conservation values on established reserves over time. Implementing the current draft Conservation Strategy would result in the establishment of an estimated 25,000 to 30,000 acres of reserves, preserves, open space lands and other cooperative habitat restoration sites. However, because the SMHCP is only in draft form, it is not considered an adopted plan and cannot be relied upon for regulatory guidance.

STATEWIDE ELECTRIFIED FENCE PROJECT HABITAT CONSERVATION PLAN

Development of a level II infill correctional facility at the infill site would include a lethal electrified fence (LEF) similar to those found at state prisons throughout California. Contact with the LEF can result in accidental wildlife electrocution and mortality. CDCR prepared a statewide EIR to assess impacts on wildlife resulting from operation of the LEFs at 25 existing state prisons and four future planned facilities and to identify feasible mitigation measures. CEQA documents prepared for the Statewide Electrified Fence Project include the *Draft Environmental Impact Report (DEIR), Statewide Electrified Fence Project* (CDC 1996a); *Final Environmental Impact Report (FEIR), Statewide Electrified Fence Project* (CDC 1997); and *FEIR Addendum, Statewide Electrified Fence Project* (CDC 1999a). Annual monitoring reports have been prepared in compliance with the incidental take permits, which

summarize the implementation and monitoring of compensatory mitigation and document the results of wildlife mortality monitoring (CDC 2003, 2004 and CDCR 2005-2012).

Impacts of the LEF on species covered by ESA and CESA, and migratory birds, were evaluated further in 1999 when CDCR prepared an HCP for the Statewide Electrified Fence Program (CDC 1999b). USFWS and CDFW issued threatened and endangered species take permits covering 62 wildlife species to CDCR for the 27 prisons in the project on June 12, 2002. The permits expire in 2052. The Statewide Electrified Fence Program's HCP covers mortality of species protected by ESA, CESA, and MBTA, caused by accidental electrocution on the LEF. The HCP does not cover prison construction of any kind and does not address habitat loss or degradation.

The approved HCP for the Statewide Electrified Fence Program includes numerous mitigation measures designed to minimize wildlife use in areas near the LEFs and to deter wildlife from making contact with the LEFs. An extensive feasibility evaluation was conducted over several years by CDCR to determine which mitigation measures were biologically effective, cost effective, and viable based on weather, security, maintenance, and operational issues. Mitigation in the HCP was organized and implemented in three tiers. Tier 1 includes operational measures designed to modify or remove habitat or other attractants to wildlife from the secured perimeter area of each prison. Tier 2 involves installing exclusion and deterrent devices on LEFs and in the perimeters. Tier 3 includes a compensation package designed to offset the residual loss of wildlife resources at each prison as a result of electrocution risks that remain even after Tiers 1 and 2 have been implemented. The plan also includes a wildlife mortality monitoring program. In this program a qualified biologist visits each institution that has an operational LEF three times per year and identifies carcasses of animals collected from the perimeter of the LEF by CDCR staff and inspects compliance with Tier 1 and Tier 2 measures.

Operation of the LEFs has been monitored intensively and regularly, in coordination with USFWS and CDFW, since 1993. No endangered or threatened species have been electrocuted by any of CDCR's fences (per annual monitoring reports [CDC 2003, 2004 and CDCR 2005-2012]). Because of this record, and supporting biological analyses in the locations of these facilities, CDCR constructed LEFs around four additional facilities not covered by the HCP (after consultation with USFWS and CDFW). CDCR has implemented the same three-tier mitigation approach and the same intensive monitoring at these additional prisons as was implemented with the 27 facilities (26 operational fences) covered by the HCP. No take of endangered species has occurred at the facilities not covered by the HCP. Although the electrified fence associated with development of a single, level II infill correctional facility would not be covered under the Statewide Electrified Fence HCP, the HCP provides a useful framework for assessing impacts and determining appropriate mitigation approaches for development of a level II infill correctional facility.

3.2.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State CEQA Guidelines, development of the Level II Infill Correctional Facility Project would result in a significant impact related to biological resources if it would do any of the following:

- 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 CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS;

- have a substantial adverse effect on Federally protected waters of the United States, including wetlands, as defined by Section 404 of the CWA through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory 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, natural community conservation plan, or other approved local, regional, or state habitat conservation plan; or
- 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 substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

The State CEQA Guidelines (Section 15064.5) define “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Riparian communities: No riparian communities or other sensitive natural communities are present on the infill site. Development of a level II infill correctional facility would not result in direct removal of any sensitive natural community or riparian habitat and would not include alteration of any streams or development or uses adjacent to any streams or other sensitive natural communities. Therefore, development and operation of level II infill correctional facilities at CMF/SOL would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.

Wildlife nursery sites or migratory routes: No native wildlife nursery sites or established migratory routes pass through the infill site that are vital for the movement of any resident or migratory fish or wildlife species or population. Development of a level II infill correctional facility at the infill site would not interfere substantially with the movement of native resident or migratory wildlife species because the infill site is surrounded by urban development (the City of Vacaville and existing prison facilities) and does not currently provide an important connection between any areas of natural habitat that would otherwise be isolated. Therefore, development and operation of level II infill correctional facilities at CMF/SOL would not have an impact on wildlife movement or nursery sites.

Habitat conservation plan: The SMHCP is being prepared by the Solano County Water Agency. Consistency with the SMHCP is not required under CEQA because the SMHCP has not been adopted and the schedule for completion is unknown. Therefore, development and operation of level II infill correctional facilities at CMF/SOL have no potential conflicts with the provisions of an adopted habitat conservation plan.

Local Policies or Ordinances: As noted above, CDCR is not subject to local plans, policies, or ordinances, including the City of Vacaville tree preservation ordinance. Further, the City’s ordinance is largely intended as an aesthetic measure to preserve and enhance the attractiveness of the City. The potential wildlife habitat provided by the trees located at the infill site that may be removed during development is not unique and equally suitable habitat is located immediately adjacent to the infill site, as well as throughout the City of Vacaville. As a result, potential conflicts with policies or ordinances intended to protect biological resources are not anticipated.

Survival of species: The infill site provides limited value to wildlife species and development of the site would not eliminate any habitat important to the long-term survival of any species or community and would not substantially reduce the number or restrict the range of any species.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.2-1: Impacts on Special-Status Plants

Construction of a level II infill correctional facility at the CMF/SOL Infill Site would result in direct removal of approximately 31 acres of disturbed annual grassland that has low potential to support showy rancheria clover and 1.5 acres of drainage ditches that have low potential to support pappose tarplant. This potential is considered low because the annual grassland and vegetation in and adjacent to the ditches is managed by mowing, disking, and other clearing techniques and the habitat quality is extremely low. However, the possibility of these plants being found on the infill site cannot be completely ruled out because there is at least some potentially suitable habitat present. Construction of the infill facility could result in direct mortality of these special-status plants if they are present.

Removal of annual grassland and ditch habitat associated with construction of a single, level II infill correctional facility at the CMF/SOL Infill Site could result in loss of special-status plants (pappose tarplant and showy rancheria clover) if they are present. Loss of special-status plants would be a potentially significant impact.

Mitigation Measures

Mitigation Measure 3.2-1

CDCR will implement the following measures to reduce potential impacts on special-status plants:

- Prior to removing any vegetation or initiating ground disturbing activities, a qualified botanist will conduct protocol-level surveys for pappose tarplant and showy rancheria clover in areas where potentially suitable habitat would be removed or disturbed by construction activities. Surveys will be conducted during the appropriate blooming period to aid in proper identification. Pappose tarplant typically blooms from May through November and showy rancheria clover typically blooms from April through June. If no special-status plants are found the botanist will document the findings in a letter report to USFWS, CDFW, and CDCR and no further mitigation shall be required.

- If special-status plant species are found on the infill site, CDCR will develop a mitigation and monitoring plan that describes how the populations would be avoided and protected if feasible. If avoidance and/or protection in place is not feasible, the plan will describe compensatory mitigation measures. These measures may include preserving and enhancing existing populations, creation of offsite populations on mitigation sites through seed collection or transplantation, and/or restoring or creating suitable habitat in sufficient quantities to achieve no net loss of occupied habitat or individuals.

- Compensation for unavoidable losses of special-status plants will be developed, on behalf of CDCR, by a qualified biologist and reviewed by CDFW and/or USFWS, as appropriate depending on species status, and implemented by CDCR.

- If relocation efforts are part of the mitigation plan, the plan will include details on the methods to be used, including collection, storage, propagation, receptor site preparation, installation, long-term protection and management, monitoring and reporting requirements, success criteria, and remedial action responsibilities should the initial effort fail to meet long-term monitoring requirements.

- Success criteria for preserved and compensatory populations will include:

- The extent of occupied area and flower density in compensatory populations will be equal to or greater than the affected occupied habitat.
- Compensatory and preserved populations will be self-producing. Populations will be considered self-producing when:
  - plants reestablish annually for a minimum of 5 years with no human intervention such as supplemental seeding; and
  - reestablished and preserved habitats contain an occupied area and flower density comparable to existing occupied habitat areas in similar habitat types in the vicinity.

〉 If offsite mitigation includes dedication of conservation easements, purchase of mitigation credits, or other offsite conservation measures, the details of these measures shall be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, success criteria such as those listed above, and other details, as appropriate to target the preservation of long term viable populations.

Significance after Mitigation

Implementation of Mitigation Measure 3.2-1 would reduce significant impacts on special-status plants to a **less-than-significant** level because it would require CDCR to identify and avoid special-status plants (pappose tarplant and showy rancheria clover) or provide compensation for loss of special-status plants through creation of offsite populations, conservation easements, or other appropriate measures.

Impact 3.2-2: Impacts on Raptors

The line of trees bordering the infill site along Peabody Road and other scattered large trees on the infill site provide potential nesting sites for white-tailed kite and common raptors, such as red-tailed hawk, red-shouldered hawk, western screech owl, and great horned owl, which are protected under Section 3503.5 of the Fish and Game Code. Although Swainson's hawk is known to occur in the region and the possibility that they could occur onsite cannot be ruled out, it is not expected that they would nest or forage onsite. The site is at the edge of the species' range, where the flat valley terrain transitions into the hills of the coast range. Ground squirrel burrows that provide potential nesting and cover habitat for burrowing owls are also present on the infill site.

Developing a level II infill correctional facility at the CMF/SOL Infill Site would result in removal of approximately six mature trees. These trees are large landscaping trees adjacent to existing buildings or isolated native trees on the prison grounds. The loss of these trees would not result in a substantial loss of habitat for wildlife. However, if trees or burrows are to be removed during the raptor breeding season (February–August), mortality of eggs and chicks could result if an active nest were present. In addition, construction of level II infill correctional facilities at CMF/SOL could disturb active nests near the construction site (e.g., in the treeline along Peabody Road) or in trees not yet removed from the infill site, potentially resulting in nest abandonment by the adults and mortality of chicks and eggs. Burrowing owls need burrows at all times to survive and displacing individuals from their burrows can result in indirect impacts such as predation, increased energetic costs, increased stress, and risks associated with having to find and compete for burrows, all of which can lead to take or reduced reproduction.

Construction of a single, level II infill correctional facility at the infill site would also result in loss of approximately 31 acres of disturbed annual grassland that provides potential foraging habitat for raptors; however, the infill site consists of relatively small patches of grassland habitat dissected by

roads and prison facilities and surrounded by urban development and does not provide large areas of contiguous habitat of the type generally required for good foraging opportunities. An abundance of preferred foraging habitat for Swainson's hawks is available in the agricultural fields to the east of the infill site, beyond the urban development. Therefore, the foraging value of the infill site for Swainson's hawk is low and loss of this habitat is not likely to affect nesting success, survival rates, or availability of prey for the local breeding population.

Construction of a single, level II infill correctional facility at the CMF/SOL Infill Site could result in direct destruction active raptor nests or burrowing owl burrows or disturb nesting raptors located on or near the infill site, resulting in nest abandonment by adult birds and abandonment of chicks and eggs, causing mortality. The potential loss of an active raptor nest and occupied burrowing owl burrows would be considered a significant impact.

Mitigation Measures

Mitigation Measure 3.2-2a

CDCR will implement the following measures to reduce impacts on raptors:

- For construction activities occurring between February 16 and August 31, CDCR will retain a qualified biologist to conduct preconstruction surveys for Swainson's hawk and other nesting raptors and to identify active nests on and within 0.25 mile of the infill site. The surveys will be conducted no more than 30 days before the beginning of construction activities that could remove trees or otherwise disturb nesting raptors. To the extent feasible, guidelines provided in *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley* (Swainson's Hawk Technical Advisory Committee 2000) will be followed.

- If active nests are found, impacts on nesting Swainson's hawks and other raptors will be avoided by establishing appropriate buffers around the nests. No project activity will commence within the buffer area until a qualified biologist confirms that any young have fledged and the nest is no longer active. For Swainson's hawk nests, CDFW guidelines (CDFG 1994) recommend maintenance of 0.25-mile buffers around Swainson's hawk nests in developed areas, but the size of the buffer may be adjusted if a qualified biologist, in consultation with CDFW, determines that such an adjustment would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist will be required if the activity has potential to adversely affect the nest.

Mitigation Measure 3.2-2b

CDCR will implement the following measures to reduce impacts on burrowing owl:

- CDCR will retain a qualified biologist to conduct focused breeding and nonbreeding season surveys for burrowing owls in areas of suitable habitat on and within 1,500 feet of the infill site. Surveys will be conducted prior to the start of construction activities and in accordance with Appendix D of CDFW's *Staff Report on Burrowing Owl Mitigation* (2012) (2012 Staff Report).

- If no occupied burrows are found, a letter report documenting the survey methods and results will be submitted to CDFW and no further mitigation will be required.

- If an active burrow is found during the nonbreeding season (September 1 through January 31), CDCR will consult with CDFW regarding protection buffers to be established around the occupied burrow and maintained throughout construction. If occupied burrows are present that cannot be avoided or adequately protected with a no-disturbance buffer, a burrowing owl exclusion plan will be developed, as described in Appendix E of CDFW's 2012 Staff Report.

No burrowing owls will be excluded from occupied burrows until the project's burrowing owl exclusion plan is approved by CDFW. The exclusion plan will include a plan for creation, maintenance, and monitoring of artificial burrows in suitable habitat proximate to the burrows to be destroyed, that provide substitute burrows for displaced owls.

- If an active burrow is found during the breeding season (February 1 through August 31), occupied burrows will not be disturbed and will be provided with a 150- to 1,500-foot protective buffer unless a qualified biologist verifies through noninvasive means that either: 1) the birds have not begun egg laying, or 2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. The size of the buffer will depend on the time of year and level disturbance as outlined in the CDFW Staff Report (2012, p. 9).The size of the buffer may be reduced if a broad-scale, long-term, monitoring program approved by CDFW is implemented to ensure burrowing owls are not detrimentally affected. Once the fledglings are capable of independent survival, the owls can be evicted and the burrow can be destroyed per the terms of a CDFW-approved burrowing owl exclusion plan developed in accordance with Appendix E of CDFW's 2012 Staff Report.

- If active burrowing owl nests are found on the infill site and are destroyed by project implementation, CDCR will mitigate the loss of occupied habitat in accordance with guidance provided in the CDFW 2012 Staff Report, which states that permanent impacts to nesting, occupied and satellite burrows, and burrowing owl habitat will be mitigated such that habitat acreage, number of burrows, and burrowing owls impacted are replaced through permanent conservation of comparable or better habitat with similar vegetation communities and burrowing mammals (e.g., ground squirrels) present to provide for nesting, foraging, wintering, and dispersal. CDCR will retain a qualified biologist to develop a burrowing owl mitigation and management plan that incorporates the following goals and standards:

  - Mitigation lands will be selected based on comparison of the habitat lost to the compensatory habitat, including type and structure of habitat, disturbance levels, potential for conflicts with humans, pets, and other wildlife, density of burrowing owls, and relative importance of the habitat to the species range wide.

  - If feasible, mitigation lands will be provided adjacent or proximate to the infill site so that displaced owls can relocate with lowered risk of take. Feasibility of providing mitigation adjacent or proximate to the infill site depends on availability of sufficient suitable habitat to support displaced owls that may be preserved in perpetuity.

  - If suitable habitat is not available for conservation adjacent or proximate to the infill site, mitigation lands will be focused on consolidating and enlarging conservation areas outside of urban and planned growth areas and within foraging distance of other conservation lands. Mitigation may be accomplished through purchase of mitigation credits at a CDFW-approved mitigation bank, if available. If mitigation credits are not available from an approved bank and mitigation lands are not available adjacent to other conservation lands, alternative mitigation sites and acreage will be determined in consultation with CDFW.

  - If mitigation is not available through an approved mitigation bank and will be completed through permittee-responsible conservation lands, the mitigation plan shall include mitigation objectives, site selection factors, site management roles and responsibilities, vegetation management goals, financial assurances and funding mechanisms, performance standards and success criteria, monitoring and reporting protocols, and adaptive management measures. Success will be based on the number of adult burrowing owls and pairs using the site and if the numbers are maintained over time. Measures of success, as suggested in the 2012 Staff Report, will include site tenacity, number of adult

owls present and reproducing, colonization by burrowing owls from elsewhere, changes in distribution, and trends in stressors.

Significance after Mitigation

Implementation of Mitigation Measures 3.2-2a and 3.2-2b would reduce significant impacts on burrowing owl and other raptors to a **less-than-significant** level because it would ensure that these species are not disturbed during nesting so that construction would not result in nest abandonment and loss of eggs or young and that any active burrowing owl habitat removed from the infill site would be replaced.

Impact 3.2-3: Impacts on Nesting Birds

Development of a level II infill correctional facility at the CMF/SOL Infill Site could result in direct destruction of active nests of birds protected under the MBTA, including loggerhead shrike, a shrub and small-tree nesting bird. Construction activities at the infill site could also result in disturbance of nesting migratory birds causing nest abandonment by the adults and mortality of chicks and eggs. While loss of some nests of common migratory bird species (e.g., mourning dove, American robin, and house finch) would not be considered a significant impact because it would not result in a substantial effect on their populations locally or regionally, destruction of any migratory bird nest is a violation of the MBTA and Section 3503 of the California Fish and Game Code.

Implementation of the single, level II infill correctional facility at the CMF/SOL Infill Site could result in the loss of active nests belonging to loggerhead shrike or other birds. This would be a significant impact.

Mitigation Measures

Mitigation Measure 3.2-3

CDCR will implement the following measures to avoid or minimize loss of bird nests:

- To the extent feasible, vegetation removal, grading, and other ground disturbing activities will be carried out during the nonbreeding season (September 1-February 31) for migratory birds.
- Prior to commencing any construction activities during the breeding season (March 1-August 31), CDCR will retain a qualified biologist to conduct preconstruction surveys for migratory birds on and within 50 feet of the infill site. The surveys will be conducted no more than 7 days before construction commences.
- If active nests are found, a 50-foot no-disturbance buffer will be established around the nest site until the breeding season has ended or a qualified biologist determines the young have fledged.

Significance after Mitigation

Implementation of Mitigation Measure 3.2-3 would reduce potentially significant impacts on nesting birds to a **less-than-significant** level because vegetation removal would occur during the nonbreeding season to the extent feasible to reduce the likelihood of destruction of migratory bird nests and it would require preconstruction surveys to identify active nests and measures to avoid or minimize disturbances of active nests so that development of a level II infill correctional facility would not result in nest abandonment and loss of eggs or young.

Impact 3.2-4: Impacts on Western Pond Turtle

Construction of a level II infill correctional facility at the CMF/SOL Infill Site would result in fill of approximately 1.5 acres of drainage ditches that could be occupied by western pond turtle, a California species of concern. The ditches convey water intermittently and at varying depths and do not provide permanent habitat for western pond turtle. Permanent aquatic habitat is located adjacent to the CMF/SOL Infill Site in the water treatment ponds and turtles may move from other areas to the drainage ditches when habitat conditions are suitable. In addition to permanent water, pond turtles require structures for basking and cover for protection. Cover and basking features are mostly lacking from the drainage ditches. Although the ditches provide low quality habitat, if western pond turtles are present when the ditches are filled, turtles could be crushed or injured by construction equipment.

Construction of a single, level II infill correctional facility at the CMF/SOL Infill Site could result in the loss of western pond turtles if they are present in the drainage ditch at the time the ditch is filled. This would be a potentially significant impact.

Mitigation Measures

Mitigation Measure 3.2-4

CDCR will fill the drainage ditches when they are dry and no aquatic habitat is present. If no aquatic habitat is present, then western pond turtles would not be likely to occur and no further mitigation is required. If water is present, CDCR will dewater the ditches using pumps or other appropriate methods. A qualified biologist will be present during the dewatering to survey for western pond turtles. If no pond turtles are observed, no further mitigation is necessary. If pond turtles are found, they will be relocated by a qualified biologist to the nearest area with suitable aquatic habitat outside of the area of disturbance and CDFW will be notified.

Significance after Mitigation

Implementation of Mitigation Measure 3.2-4 would reduce significant impacts on western pond turtle to a **less-than-significant** level because individuals would be moved out of the construction area if they are present in the aquatic habitat in the drainage ditches.

Impact 3.2-5: Impacts on Wetlands and Other Waters

Construction of a level II infill correctional facility at the CMF/SOL Infill Site would result in fill of approximately 1.5 acres of drainage ditches that are potentially jurisdictional waters of the United States. Fill of waters of the United States is regulated under Section 404 of the CWA. If the ditches were disclaimed by USACE, they would still be subject to regulation as waters of the state under the Porter-Cologne Act.

Construction of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in the loss of approximately 1.5 acres of federally protected waters of the United States and/or waters of the state. This would be a significant impact.

Mitigation Measures

Mitigation Measure 3.2-5

CDCR will implement the following measures to avoid or minimize impacts to wetlands and other waters:

- CDCR will replace or restore on a “no net loss” basis the acreage and function of waters that would be removed as a result of developing a level II infill correctional facility at the infill site.

- CDCR will submit a wetland delineation report to USACE and request a preliminary jurisdictional determination. Based on the jurisdictional determination, CDCR will determine the exact acreage of waters of the United States, if any, and waters of the state would be filled as a result of development of level II infill correctional facilities at the infill site.

- If the waters to be filled are determined by the USACE to be waters of the United States, CDCR will obtain a USACE Section 404 permit and Regional Water Quality Control Board (RWQCB) Section 401 certification before any groundbreaking activity within 50 feet of or discharge of fill or dredge material into any water of the United States. CDCR will implement all permit conditions.

- If waters (i.e., the ditches) on the infill site are disclaimed by USACE, CDCR will file a report of waste discharge with the RWQCB prior to any groundbreaking activity within 50 feet of, or filling of, the ditches, and comply with all waste discharge requirements prescribed by the RWQCB.

- CDCR will implement all conditions of the Section 404 and Section 401 permits.

Significance after Mitigation

Implementation of Mitigation Measure 3.2-5 would reduce significant impacts on waters of the U.S. and waters of the state to a **less-than-significant** level because it would ensure no net loss of functions and acreage of waters of the United States and waters of the state.

Impact 3.2-6: Mortality of Wildlife Species from the Lethal Electrified Fence

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would include installation and operation of a LEF within the prison's security perimeter, which would likely result in the death of an undetermined number of animals. Lethal electrocution would result when an animal touches two wires simultaneously or touches one wire and an electrical ground. Based on monitoring data collected at the operational LEFs at SOL and CMF, a number of native birds and mammals are likely to be killed. Birds are by far the most common wildlife group electrocuted, with mammals making up a relatively small percentage.

Based on 10 years of mortality monitoring data, approximately 34 and 38 individuals of native birds and mammals are killed per year at SOL and CMF, respectively. Most of these are species protected under the MBTA and California Fish and Game Code. Approximately 1–10 percent of the species killed at these locations are considered "sensitive" species, but none are protected by ESA or CESA. Sensitive species include those that meet the definition of special-status described above (i.e., wildlife species identified by CDFW as species of special concern), as well as common raptor species, and are covered by CDCR's Statewide Electrified Fence HCP. Mortality of sensitive species at SOL for 10 years between June 2002 and June 2012 included five American kestrels, three barn owls, three burrowing owls, nine great horned owls, 11 loggerhead shrikes and two red-tailed hawks. At CMF, mortality of sensitive species during the same ten-year period included one American kestrel, one great horned owl, two loggerhead shrikes, and one red-tailed hawk.

The existing LEF is 8,085 feet in length at SOL and is 5,554 feet at CMF. The proposed LEF around the single infill site would be 3,566 feet in length, or 44 percent of total length of the existing fence at SOL and 64 percent of the existing fence at CMF. Although expected wildlife mortality should not be strictly calculated on a per-linear-foot basis due to considerations of surrounding land uses, adjacent habitat types, species behavior, and other ecological factors at a particular site, it is anticipated that mortality of native wildlife species from a proposed LEF would be between 11 and 25 individuals per year on average. Of those, approximately one individual is expected to be sensitive species. Based on comparison with mortality data from the operational LEF at SOL and CMF, sensitive species that could

be killed by the proposed LEF at the infill site include American kestrel, red-tailed hawk, great horned owl, and loggerhead shrike. Common native species likely to be killed by the electrified fence for the proposed project include house finch, northern mockingbird, California ground squirrel, Brewer's blackbird, red-winged blackbird, and yellow-rumped warbler.

Implementation of the single, level II infill correctional facility at the CMF/SOL Infill Site could result in mortality of sensitive and common wildlife species due to electrocution by contacting the proposed lethal electrified fence, which could result in a substantial reduction of the local populations of the affected species over time. This would be a significant impact.

Mitigation Measures

Mitigation Measure 3.2-6

CDCR will consult with USFWS and CDFW regarding the proposed project and anticipated wildlife mortality and will take appropriate actions to minimize wildlife electrocutions to the extent feasible and compensate for impacts on native wildlife species. It is anticipated that this will be accomplished by following the mitigation approached in the Statewide Electrified Fence HCP although the proposed project would not be covered by the HCP. A monitoring program consistent with the monitoring program established in the Statewide Electrified Fence HCP would be developed to document wildlife mortality and ensure compliance with Tier 1 and Tier 2 measures. The tiered mitigation approach used by the HCP to offset potential adverse effects on birds protected under MBTA and the California Fish and Game Code is outlined below.

Tier 1: These mitigation measures are designed to eliminate or reduce wildlife attractants near the prison perimeter by implementing specific maintenance and operation procedures. By making the perimeter less hospitable, wildlife will frequent this area less often, thus reducing their exposure to accidental electrocution. Tier 1 maintenance and operation procedures will include:

- Minimization of vegetation in the vicinity of the electrified fence perimeter. This will include removal of vegetation growing between and adjacent to chain link fences that surround electrified fences and keeping the first 100 feet of vacant land outside the perimeter and patrol road free of vegetation. Landscaping vegetation near the electrified fence will be minimized and will be trimmed or mowed to reduce its attractiveness to wildlife. Facility landscaping will be designed to provide as little cover and as few foraging and nesting opportunities as possible. Detailed information, including recommended landscape plantings that are less attractive to wildlife, can be found in the *Handbook to Reduce Wildlife Use of Prison Perimeters* (CDCR1996b).

- Minimization of standing water near the fence perimeter. Rainwater will not be allowed to stand in or near the perimeter for more than 24 hours after a storm. Localized recontouring, excavation of ditches, and placement of gravel will occur to prevent ponding. Weeds, grasses, or emergent vegetation will be removed from ditches regularly.

- Timely correction of erosion gaps and spaces under fencing. Inner and outer chain link fences will be inspected weekly to ensure that no gaps or spaces have formed. All eroded areas will be filled with soil or gravel as soon as feasible to prevent animals from entering electrified-fence areas.

- Proper storage of materials and waste. To the extent feasible, equipment, supplies, rubble, or pallets will not be stored (temporarily or permanently) within 200 feet of either side of the fence perimeter. Garbage cans and dumpsters will be covered at all times and emptied as often as required to prevent overflow. The area within 200 feet of the fence perimeter will be kept free of all trash, litter, and loose food waste.

Tier 2: These mitigation measures consist of both exclusion and deterrent devices. Tier 2 measures to be installed on the proposed electrified fence are listed below.

- Vertical netting. Past analysis of the locations of carcasses has shown that wildlife kills were typically the result of animals contacting the lowest nine wires, because wires are vertically closer together, resulting in more opportunities for birds to contact two lethal wires or a wire and a ground. Install three-quarter-inch mesh vertical netting enveloping both sides of the lower section of the electrified fence, which will prevent most birds from contacting the fence.

- Anti-perching wire. Several birds have been electrocuted as a result of contacting electrified wires while perching, or attempting to perch, on the grounding brackets and fence posts of the electrified fence. Anti-perching wires, which consist of 2- to 4- inch pieces of stiff wire connected to an aluminum base, will be strategically attached to the tops of perching sites in and near the perimeter. Once installed, this wire will reduce the ability of birds to perch near the electrified fence, thus reducing exposure to accidental electrocutions.

Tier 3: These mitigation measures compensate for residual wildlife mortality impacts. CDCR will contribute funds to an existing non-profit organization that creates and manages habitat enhancement areas that would improve opportunities for reproductive success of birds likely to be adversely affected by the project. Birds likely to be adversely affected will be predicted based on the results of mortality monitoring at comparable CDCR facilities and based on birds expected to occur in the project vicinity based on surrounding habitat. Mechanisms for implementing the mitigation will be similar to those previously utilized by CDCR for the Statewide and Six Prison Electrified Fence Projects and may include additional funding for a project to which CDCR has already contributed as part of these existing projects. The Sacramento valley will be targeted, but mitigation could be implemented at federal, state, or private lands located anywhere in California if the lands support a large percentage of the species at risk of electrocution at the project site. The amount of funding contributed would depend on the acreage of habitat that would benefit from the mitigation. The mitigation acreage required would be determined based on the anticipated annual mortality of native birds and the area required to support an equivalent number of individuals of the species at greatest risk of electrocution.

Significance after Mitigation

With the implementation of tiered mitigation measures as described in the mitigation for Impact 3.2-6, impacts on wildlife would be reduced by minimizing the number of animals killed by the lethal electrified fence and compensating for unavoidable mortalities by preserving breeding habitat that will increase the reproductive success of affected species. As a result, this impact would be reduced to a **less-than-significant** level.

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3.3 CULTURAL RESOURCES

This section discusses potential impacts on cultural resources that could result from construction of a level II infill correctional facility at the California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site. Cultural resources generally include buildings, sites, districts, structures, and objects significant in history, architecture, archaeology, culture, or science. Historic resources are generally defined as properties that are listed or have been determined eligible for listing on the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), or a local register or inventory of resources.

The analysis includes a description of the existing environmental conditions, research methods, impacts associated with development of a level II infill correctional facility at the CMF/SOL Infill Site, and recommended mitigation measures to address significant or potentially significant impacts. This section is based on a review of the *Archaeological Inventory Report for the California Department of Corrections Level II Infill Project, Amador, Sacramento, San Bernardino, and Solano Counties, California* prepared by ICF International in 2013.

Impacts related to unique paleontological or geologic features at the CMF/SOL Infill Site are addressed in Section 3.5, “Geology, Soils, Seismicity, Minerals, and Paleontological Resources,” of this volume of the draft environmental impact report (DEIR).

3.3.1 ENVIRONMENTAL SETTING

REGIONAL PREHISTORY

EARLY HOLOCENE (LOWER ARCHAIC), 10,000 B.P.–5500 B.P.

The Early Holocene is characterized by a mobile forager pattern throughout the Bay Area. Archaeobotanical remains from CCO-696 (a multi component site in Contra Costa County) suggest an economy focused on acorns and wild cucumbers. The earliest documented grave in west-central California, a tightly flexed burial dating to 7440 before present (B.P.), was discovered at the Los Vaqueros Reservoir site (CCO-637), east of Mount Diablo. The milling slab and hand stone, as well as a variety of large, wide-stemmed and leaf-shaped projectile points, are characteristic of this time.

EARLY PERIOD (MIDDLE ARCHAIC), 5500 B.P.–2500 B.P.

During the Middle Archaic, new ground stone technology and the first cut shell beads in mortuaries signaled sedentism, regional symbolic integration, and increased regional trade in the Bay Area. Rectangular *Haliotis* and *Olivella* shell beads, the markers of the Early Period bead horizon, continued in use at least until 2,800 years ago. *Olivella* rectangle beads with drilled perforations were discovered at the Los Vaqueros reservoir site in a burial that contained red ocher and exhibited pre-interment burning.

The mortar and pestle were first documented in the Bay Area shortly after 6000 B.P.; pestles utilized with wooden mortars have been dated to 5750 B.P. at the Los Vaqueros Reservoir site. Obsidian hydration analysis reveal a span of occupation at CA-SOL-69 spanning 4550–1500 B.P. The comparatively rich assemblage at CA-SOL-315 yielded obsidian hydration dates from 7950 to 1450 B.P., and the period of most intense site use (between 4600 and 1500 B.P.) has been defined as an expression of the Hultman Aspect of the Mendocino Pattern.

LOWER MIDDLE PERIOD (INITIAL UPPER ARCHAIC), 2500 B.P.–1600 B.P.

Although it is unclear when the "major disruption in symbolic integration systems" originated, it is clear in the record around1500 B.P. and may have begun several hundred years earlier. Bead Horizon M1[1] of the Middle Period (Upper Archaic, 2150 B.P–1520 B.P.) brought more tiny *Olivella* saucer beads into the Bay Area, as well as new circular *Haliotis* ornaments. New bone tools, including barbless fish spears, elk femur spatula, tubes, and whistles, appeared for the first time during this period. Basketry awls (split cannon bones) with shouldered tips, indicating coiled basketry manufacture, appeared in the central and north Bay. However, Early-Middle Period Transition (EMT) mortuaries around the Bay Area contained few accompaniments, and spire-lopped *Olivella* beads were more common than cut beads (Luby 2004). EMT sites in the Napa Valley contained rich black midden for the first time, new sites were occupied at Bodega Bay, and cobble mortars and Excelsier leaf-shaped projectile points first appeared on the Santa Rosa Plain.

UPPER MIDDLE PERIOD (LATE UPPER ARCHAIC), 1600 B.P.–950 B.P.

Around 1600 B.P. the *Olivella* saucer bead trade network collapsed, and more than half of known M1 sites were abandoned, while the remaining sites saw a large increase in sea otter bones. Additionally, the Meganos extended burial mortuary pattern began to spread in the interior East Bay. These changes co-occurred with the inception of a series of *Olivella* saddle bead horizons (M2a and 2b, M3, and M4) that marked central California bead trade until 1000 B.P.

Bead Horizon M2a is characterized by rough-edged full saddle Olivella beads with small perforations. Six of these beads, from sites in Alameda and Contra Costa Counties, have been dated to 1550 B.P.

Bead Horizon M2b is marked by mixed Olivella saddle beads with tiny perforations that range in date from 1570–11400 B.P. The Meganos mortuary style continued to spread westward during this Horizon, which also saw the appearance of new items such as show blades, fishtail charmstones, new Haliotis ornament forms, and mica ornaments. The earliest evidence for inland manufacture of Olivella wall beads is found on the Santa Rosa Plain.

Bead Horizon M3, (1400–1200 B.P.), is considered to be the climax of Upper Middle Period stylistic refinement. Burials from this horizon contained mostly small, delicate square saddle *Olivella* beads; however, *Olivella* saucer beads were also found in burial contexts (often in off-village single component cemeteries).

During Bead Horizon M4 (1200–950 B.P.), the *Olivella* saddle bead template is replaced by a variety of wide and tall bisymmetrical forms, and by the appearance of distinctive *Haliotis* ornament styles, such as unperforated rectangles and horizontally perforated half ovals. Few mortuaries can be dated to this time period.

INITIAL LATE PERIOD (LOWER EMERGENT), 950 B.P.–450 B.P.

The term *Emergent* is used to describe this period, in recognition of the appearance of a new level of sedentism, status ascription, and ceremonial integration in lowland central. The Middle/Late Transition (MLT) bead horizon, previously thought to have occurred around 1700 B.P., is now largely believed to have occurred around 1000 B.P. During the MLT, burial objects became much more elaborate, and initial markers of the Augustine Pattern appeared in the form of multiperforated and bar-scored *Haliotis* ornaments, fully-shaped show mortars, and new *Olivella* bead types throughout the East Bay. Classic Augustine Pattern markers, which appeared in Bead Horizon L1 (after 750 B.P.), include the arrow,

[1] Bead phases, or horizons, are used to describe the short time periods marked by trade of particular shell bead types across wide areas of central California, in order to clearly separate units of time. The Middle Period has four primary Bead Horizons, M1, M2, M3, and M4. The Late Period has two main Bead Horizons, L1 and L2.

flanged pipe, *Olivella* callus cup bead, and banjo effigy ornament. The Stockton serrated series, the first arrow-sized projectile point in the Bay Area, also appeared after750 B.P. The Stockton serrated series was a unique central California type.

Evidence for increased social stratification after 750 B.P. can be found in both obsidian production and mortuary evidence. Napa Valley obsidian manufacturing debris increased dramatically in the interior East Bay. With burials, although the quantity of shell beads contained in burials decreased, the quality of burial items increased in high-status burials and cremations. This development may have reflected a new regional ceremonial system that was the precursor of the ethnographic Kuksu cult, a ceremonial system that unified the many language groups around the Bay Area during Bead Horizon L1.

TERMINAL LATE PERIOD: PROTOHISTORIC AMBIGUITIES 450 B.P.–200 B.P.

Changes in artifact types and mortuary objects characterized 500 B.P.-350 B.P. The signature *Olivella* sequin and cup beads of the central California L1 Bead Horizon abruptly disappeared, and clamshell disk beads, markers of the L2 Bead Horizon, spread across the North Bay. However, until around 350 B.P., the only beads found in central Bay mortuaries were *Olivella* lipped and spire-lopped beads, and they occurred in far smaller numbers than the bead offerings of the L1 Horizon. The earliest date for clam disks south of the Carquinez Strait, obtained from a charcoal lens at CCO-309, is 330 B.P. Additionally, simple corner-notched points replaced Stockton serrated points in the North Bay and began to appear in the central Bay.

An upward cycle of regional integration was likely commencing around the time of Spanish settlement in the Bay Area. Such regional integration was a continuing characteristic of the Augustine Pattern, most likely brought to the Bay Area by Patwin speakers from Oregon, who introduced new tools (such as the bow) and traits (such as pre-interment grave pit burning) into central California. Perhaps the Augustine Pattern, with its inferred shared regional religious and ceremonial organization, was developed as a means of overcoming insularity, not in the core area of one language group, but in an area where many neighboring language groups were in contact.

ETHNOGRAPHY

The infill site at CMF/SOL is in the apparent historic territory of the Patwin. *Patwin* is a collective Euroamerican referent for the speakers of one of the three languages in the Wintuan group, a part of the Penutian language family. One translation for the word is “people.” The approximate maximum extent of Patwin territory in the late eighteenth and early nineteenth centuries was from the town of Princeton in Colusa County south to Suisun Bay, and from the Sacramento River west across the eastern slope of the Coast Range.

The evidence for the chronology of the initial establishment and subsequent development of Patwin territory is equivocal. Glotto-chronological estimates for the internal divergence of Wintuan languages suggests a California entry for Wintuan speakers at least 2,500 years ago, although present archaeological data do not seem to support this timeframe. It appears more probable that the Wintuan entry into California occurred approximately between A.D. 1 and A.D. 500. Glottochronological and other linguistic evidence suggests that the Patwin were in the lower Sacramento Valley by approximately A.D. 700 and that they began to move onto the eastern slope of the Coast Range after approximately A.D. 1000.

The character of the culture that developed in the Patwin region is known from ethnographic and historic sources that date from the late eighteenth to the early twentieth centuries. The majority of these sources date to the latter end of this range because the intense proselytization of the Patwin by the Missions San Francisco de Asís, San Jose de Guadalupe, and San Francisco Solano de Sonoma in the late eighteenth and early nineteenth centuries, in combination with the malaria epidemic of 1833

and the smallpox epidemic of 1837, led to an apparent rapid decline in Patwin population and the abandonment, particularly in the south, of significant portions of former Patwin territory. Most of the actual ethnographic data from native Patwin informants dates to the late nineteenth and early twentieth centuries and actually postdates the cultural upheaval of the earlier period. It is unclear how well the available data represent Patwin culture prior to European contact.

The tribelet was the broadest apparent unit of political organization among the Patwin. The territory typically includes a permanent principal settlement or village and a number of subordinate villages that may or may not have been permanently occupied. Principal Patwin villages with dance houses appear to have been the residences of tribelet head chiefs. Each subordinate village in a Patwin tribelet also had a chief. The Patwin economy was principally based on the utilization of natural resources from the riverine corridor, the wetlands, and the grasslands of the lower Sacramento Valley, and from the open woodlands on the eastern foothills of the Coast Ranges. The family was the basic subsistence unit within the tribelet that engaged in the exploitation of this resource mosaic. Tribelets with territory primarily on the floor of the Sacramento Valley were more reliant on riverine and wetland resources. Tribelets with territory on the western margin of the Sacramento Valley were less reliant on riverine and wetland animal resources and more reliant on terrestrial game.

The majority of the plant resources that were important factors in the Patwin diet came from the grasslands of the lower Sacramento Valley and the woodlands of the Coast Range foothills.

REGIONAL HISTORY

The history of Solano County can be divided into two general periods: the early history of the region, dominated by Spanish and Mexican influence, and more recent history, beginning with statehood and continuing to the present day.

EXPLORATION AND EARLY SETTLEMENT

Because of its distance from San Francisco Bay, the project area was of minor importance during the Spanish and Mexican Periods. The earliest overland exploration of the Bay Area was completed in 1772. This expedition traveled up the east side of the Bay from what is now Milpitas, north through present-day Pinole, and then turned east and passed along the south side of the Sacramento–San Joaquin River Delta. In 1776, the Anza-Font Expedition followed a similar route.

In 1775, the Ayala Expedition traveled up the Sacramento–San Joaquin Delta in search of suitable locations on which to establish missions. Missions were established in San Francisco (1776), the southeast Bay (1797), and numerous other locations in California, but the project area was largely removed from the influence of the missions. However, this period brought about the “missionization” of the local native peoples and, consequently, disease and decimation of the Native American populations in the area. Many punitive and exploratory expeditions were made into the project area by the Spanish, both to convert those who had not been Christianized and to pursue runaway mission neophytes.

In the 1840s, Mexico took over rule of California from Spain, and the mission system was abandoned. Mission lands were divided, and land grants or ranchos were established. These lands were used predominantly for cattle grazing and the raising of livestock. In Solano County, Rancho Suisun was the first of six Mexican land grants that were established in the area. The land, consisting of 17,754 acres west of the present day City of Fairfield, was granted to a Suisun chief named Sem-Yeto, later baptized as Francisco Solano, in 1845.

The Suscol Rancho in western Solano County and eastern Napa County included land that would become Vallejo, Benicia, Cordelia, and Green Valley. The Suscol Rancho was granted originally to

General Mariano G. Vallejo, but squatters laid claim to the rancho. Because General Vallejo never occupied the rancho, his claim was eventually invalidated.

Five confirmed Mexican land grants were established in Solano County. One of these, Rancho los Putos, consisted of 18,000 acres and included Lagoon Valley, Vaca Valley, and Vacaville. The grant was confirmed to Juan Felipe Pena and Juan Manuel Vaca in the 1840s.

Deterioration of relations between the United States and Mexico resulted in the Mexican War, ending with the relinquishment of California to the United States under the Treaty of Guadalupe Hidalgo in 1848. The formation of the new state of California and the onset of the American Period were to bring rapid change to the region. The California Gold Rush of 1848 brought an increase in population to the region, and the focus of land use changed from ranching to agriculture in order to feed the swelling population of miners in the Sierra Nevada foothills.

ECONOMIC DEVELOPMENT

The primary economic endeavor in the region during the Rancho period was the hide and tallow trade. Large herds of cattle were raised and slaughtered for their hides, which were traded for goods and services. Each hide was worth one dollar in trade and was referred to as a “California dollar.” The hides were shipped to New England and used in the shoe and boot industry. Tallow was derived from the fat and used to make candles and soap. Because this was prior to the Gold Rush, there was little value to the meat, and therefore dead carcasses littered fields and ports.

In the late 1840s and 1850s, pioneers and former gold seekers began settling Solano County, where they raised livestock and cultivated fruit orchards, vineyards, wheat, barley, and oats. Produce and livestock were transported overland by wagons to docks located at the numerous sloughs throughout the county where they were shipped to market.

As a result of this trade, general economic development, and the arrival of the railroad, 12 townships were established in Solano County between 1850 and 1871. While the largest towns were located adjacent to San Pablo and Suisun Bays, small towns were situated at the ends of sloughs and channels that primarily ran through the eastern portion of the county. It was during the late 1850s that the fruit industry around Vacaville became established. In order to provide access to water transportation, Ansel W. Putnam and John Dolan, local nursery owners, along with William and Simpson Thomas, constructed a road from Pleasants Valley to Suisun City. Later known as the Pleasants Valley Road, the route served the orchards of Pleasant, Vaca, and Laguna Valleys, and prompted additional growth in the fruit industry.

The construction of two rail networks further spawned economic growth in the region. In 1868, the completion of the California Pacific Railroad through Solano County allowed the shipment of goods to east coast markets, significantly bolstering economic development, agricultural production, and population growth. In 1913, the Oakland, Antioch, and Eastern Railway, a high-speed electric interurban railway, opened its 93-mile route from San Francisco to Sacramento, through largely unpopulated parts of Solano County. This route was purchased in 1928 by the Sacramento Northern Railway. However, the rise in popularity of the automobile and the economic difficulties caused by the Great Depression contributed to the end of passenger service in 1940. The route was abandoned in 1987. This abandoned route is located immediately east of the project area.

Currently, Solano County’s most prevalent economic activities continue to be agriculture and ranching. Solano County farmers grow a wide variety of vegetables, fruits, and nuts, with walnuts being the most recent crop to have gained in economic importance. The county is one of the top five California producers of corn, lamb, sheep, and Sudan grass hay.

SITE INVESTIGATION

NWIC RECORDS SEARCH

On February 25, 2013, staff members of the Northwest Information Center (NWIC) in Sacramento, California, part of the California Historical Resources Information System (CHRIS), conducted a cultural resources records search for the CMF/SOL infill site area. Records of previously conducted cultural resource investigations and previously recorded cultural resources were consulted for the project area and a 0.25-mile radius around the project area. The records search also included a review of the NRHP (1988 and computer listings 1966 through 2008), CRHR (2008 and up), California Inventory of Historic Resources (1976), *California Historical Landmarks* (1996), *California Points of Historical Interest* listing (1992), Caltrans Bridge Inventory (2009), and the Directory of Properties in the Historic Properties data file for the City of Vacaville (2012). Historic maps including the 1908 U.S. Geological Survey Vacaville Quadrangle, the 1941 U.S. Army Corps of Engineers Tactical Map–Vacaville Quadrangle Grid Zone "G," the 1946 Thomas Brothers Map of Solano County, the 1857 Rancho Los Putos plat map, and the 1859 General Land Office plat map (T6N, R1W) were also examined as part of the records search.

According to the records search, a portion of the infill site was previously part of a cultural resources study conducted in 2005 (Bowen and Siskin 2005). Two other studies were conducted within a 0.25-mile radius of the infill site. No cultural resources have been recorded in the infill site. One previously recorded cultural resource, a highly disturbed historic era refuse scatter, is located adjacent to the infill site.

NATIVE AMERICAN CONSULTATION AND OTHER INTERESTED PARTIES

On January 16, 2013, a project description and maps were sent to the Native American Heritage Commission (NAHC). The purpose was to request a search of the NAHC's sacred lands file and request a list of Native American contacts for the project area. The NAHC responded by fax with sacred lands search results and contacts for Solano County on January 24, 2013. The sacred lands file searches did not have record of Native American resources in the infill site. The NAHC also provided a list of seven individuals to contact for additional information regarding cultural resources. As of February 25, 2013, no concerns or information regarding potential cultural resources have been received.

PEDESTRIAN SURVEYS

On February 11, 2013, qualified archaeologists conducted a pedestrian archaeological survey of the project area. Survey transects no wider than 15 meters were walked to ensure maximum coverage in a timely manner. Ground visibility was moderate. Signs of ground disturbance due to grading were apparent. Areas with poor visibility were subjected to boot scrapes every 10 meters in order to more closely inspect the ground surface. All cut and eroded banks were closely inspected for cultural materials. No cultural resources were located as a result of the survey effort.

RESOURCES ON OR ADJACENT TO THE INFILL SITE

The 2013 records search identified one cultural resource within a 0.25-mile radius of the infill site. No cultural resources were identified within the disturbance boundaries of the infill site. The NAHC did not identify any sacred lands within or near the infill site. Individuals and tribal groups identified by the NAHC as potentially interested contacts were sent contact letters informing them of the contemplated development of the infill site and asking for any input they might have.

3.3.2 REGULATORY CONSIDERATIONS

A list of the applicable cultural resource-related federal and state plans, policies, regulations, and laws is provided below. Complete summaries of the federal and state regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

- National Historic Preservation Act (NHPA) - The NHPA of 1966 established the National Register of Historic Places which guarantees recognition in planning for federal or federally-assisted projects. Section 106 of the NHPA requires that federal agencies consider the effects of their actions on significant archaeological properties prior to implementing a project or "undertaking."

STATE PLANS, POLICIES, REGULATIONS AND LAWS

- California Environmental Quality Act - Under CEQA, public agencies must consider the effects of their actions on both "historical resources" and "unique archaeological resources." lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources. Section 15064.5 (e) requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains.
- California Native American Historical, Cultural, and Sacred Sites Act - The Act requires that upon discovery of human remains, that construction or excavation activity cease and that the county coroner be notified. If the remains are of a Native American, the coroner must notify the NAHC.
- California Health and Safety Code - Section 7050.5 (b) of the California Health and Safety code specifies protocol when human remains are discovered.

LOCAL PLANS, POLICIES, AND ORDINANCES

As a state agency, the California Department of Corrections and Rehabilitation (CDCR) is not subject to land use plans, policies, and ordinances adopted by local agencies. However, CDCR considers the plans, policies, and ordinances of surrounding local jurisdictions to reduce any environmental consequences to the extent most feasible.

CITY OF VACAVILLE GENERAL PLAN

The City of Vacaville recognizes the importance of significant cultural resources. The City's 2007 General Plan seeks to protect these resources through guiding and implementing policies. The following polices in the *2007 City of Vacaville General Plan* relating to cultural resources are applicable to the proposed project.

- **8.5-G 1:** Continue to protect historic sites and archaeological resources for their aesthetic, scientific, educational, and cultural values.
- **8.5-I 1:** Working in conjunction with the California Archaeological Inventory, review each proposed development project to determine whether the site contains known prehistoric or historic cultural resources and/or to determine their potential for as-yet-undiscovered cultural resources.
- **8.5-I 2:** Require that areas found to contain significant historic or prehistoric artifacts be examined by a qualified consulting archaeologist or historian for appropriate protection and preservation, if feasible.

3.3.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State CEQA Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact related to cultural resources if it would do any of the following:

- cause a substantial adverse change in the significance of an historical resource as defined in Section 15064.5 of the State CEQA Guidelines;
- cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5 of the State CEQA Guidelines; or
- disturb any human remains, including those interred outside of formal cemeteries.

The State CEQA Guidelines (Section 15064.5) define “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Historical resources: As discussed above, no designated historic resources are located within the boundaries of the infill site, including the potential disturbance area. Development of a level II infill correctional facility at the infill site would not result in the physical demolition of these features. As such, no impacts to potentially historic structures would occur. This issue is not discussed further.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.3-1: Impacts on Archaeological Resources

No known unique archaeological sites or historical resources have been documented within or near the infill site. However, the potential exists to encounter previously undiscovered or unrecorded archaeological sites and materials during preconstruction or construction-related ground disturbing activities. If such resources were to represent “historical resources” or “unique archaeological resources” as defined by CEQA, any substantial change to or destruction of these resources would be a potentially significant impact.

Although no “unique” or “historical” cultural resources (as defined by CEQA) have been documented on the CMF/SOL Infill Site, construction activities associated with development of the single, level II infill correctional facility may uncover or otherwise disturb previously undiscovered or unrecorded archaeological resources. If such resources were to represent “historical resources” or “unique archeological resources,” as defined by CEQA, any substantial change to or destruction of these resources would be a significant impact.

Mitigation Measures

Mitigation Measure 3.3-1

In the event that any prehistoric or historic-era subsurface archaeological features or deposits, including locally darkened soil (midden), that could conceal cultural deposits, are discovered during construction-related earth-moving activities, all ground-disturbing activity within 100 feet of the resources will be halted and a qualified professional archaeologist will be retained to assess the significance of the find. If the find is determined to be significant by the qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist will develop appropriate mitigation to protect the

integrity of the resource and ensure that no additional resources are affected. Mitigation could include but would not necessarily be limited to preservation in place, archival research, subsurface testing, or contiguous block unit excavation and data recovery.

Significance after Mitigation

Implementation of a plan to address discovery of unanticipated buried cultural resources and to preserve and/or record those resources consistent with appropriate laws and requirements would reduce potentially significant impacts to cultural resources to a **less-than-significant** level.

Impact 3.3-2: Impacts on Human Remains

Based on documentary research, no evidence suggests that any prehistoric or historic-era marked or un-marked human interments are present within or in the immediate vicinity of the infill site. However, there is a possibility that unmarked, previously unknown Native American or other graves could be present within the project area, and could be uncovered by construction activities. Because any disturbance of human remains during construction activities would be considered significant, this impact is considered potentially significant.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site could result in disturbance of previously unknown human remains, including those interred outside of formal cemeteries, which would result in a significant impact.

Mitigation Measures

Mitigation Measure 3.3-2

If human remains are discovered during any demolition/construction activities, all ground-disturbing activity within 50 feet of the remains will be halted immediately, and the Sacramento County coroner will be notified immediately, according to Section 5097.98 of the California Public Resources Code and Section 7050.5 of California's Health and Safety Code. If the remains are determined by the County coroner to be Native American, the NAHC will be notified within 24 hours, and the guidelines of the NAHC will be adhered to in the treatment and disposition of the remains. CDCR will also retain a professional archaeologist with Native American burial experience to conduct a field investigation of the specific site and consult with the Most Likely Descendant (MLD), if any, identified by the NAHC. Following the coroner's findings, the archaeologist, and the NAHC-designated MLD will determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in California Public Resources Code Section 5097.94.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code Sections 7050.5 and 7052 and California Public Resources Code Section 5097.

Significance after Mitigation

Implementation of the Mitigation Measure 3.3-2 would result in coordination between the MLD and CDCR with the assistance of an archaeologist. The steps outlined in the mitigation measure would minimize or eliminate adverse impacts on undiscovered human remains resulting from construction activities. As a result, potentially significant impacts to previously undiscovered human remains would be reduced to a **less-than-significant** level.

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3.4 EMPLOYMENT, POPULATION, AND HOUSING

This section evaluates the potential employment, population, and housing impacts of the potential single, level II infill correctional facility at the California Medical Facility/California State Prison, Solano (CMF/SOL) in Vacaville, including effects on regional population and employment trends, regional housing supplies, and employment opportunities.

3.4.1 ENVIRONMENTAL SETTING

The CMF/SOL Infill Site is located in the southern portion of the City of Vacaville in Solano County, California (Volume 5, Chapter 2, Exhibit 2-1). The study area for this analysis is based on the existing distribution of employees of the California Department of Corrections and Rehabilitation (CDCR) and their families. Based on current zip code data that identifies the residential communities where CMF/SOL employees reside, approximately 61 percent (775) of 1,267 CMF/SOL employees and their families reside in the cities of Vacaville, Sacramento, Fairfield, and Elk Grove.

Because the type of staff required for the level II infill correctional facility is similar to the employment mix at CMF/SOL, it is reasonable to assume that the staff for the level II infill correctional facility would also predominantly reside in Solano and Sacramento counties (with a focus on the cities of Vacaville, Sacramento, Fairfield, and Elk Grove). Therefore, these areas constitute the study area for the employment, population, and housing analysis provided below. Other locations are not considered in this analysis because the number of CMF/SOL employees who currently reside, and would be expected to reside, in other communities is low (less than 4 percent in each community) and would not have a measurable impact on employment, population, and housing characteristics in these communities.

EMPLOYMENT

Information about the employed civilian labor force, unemployment rates, and employment opportunities for the cities of Vacaville, Sacramento, Fairfield, and Elk Grove is summarized briefly below based on the most recent information collected by the U.S. Census Bureau and California Employment Development Department (EDD) statistics. Published in 2011, census data were based on the American Community Survey Three-year Estimates from data collected between January 2009 and December 2011. County and state employment statistics reflect conditions in December 2012 as published by EDD in 2013.

From a regional perspective, the unemployment rates (in December 2012) for Solano and Sacramento counties were 9.3 percent and 9.9 percent, respectively, which is similar to the statewide average (9.7 percent) (EDD 2013).

CITY OF VACAVILLE

In 2011, the employed civilian labor force in Vacaville was 44,932 people, and the unemployment rate was 6.5 percent (U.S. Census Bureau 2011a). According to the U.S. Census Bureau (2011a), civilian employment in Vacaville was distributed among the following sectors:

- management, business, science, and arts occupations (31.5 percent);
- sales and office occupations (24.7 percent);
- service occupations (21.9 percent);
- production, transportation, and material moving occupations (12 percent); and
- natural resources, construction, and maintenance occupations (9.9 percent).

CITY OF SACRAMENTO

In 2011, the employed civilian labor force in Sacramento was 233,069 people, and the unemployment rate was 9.6 percent (U.S. Census Bureau 2011a). According to the U.S. Census Bureau (2011a), civilian employment in Sacramento was distributed among the following sectors:

- management, business, science, and arts occupations (38.2 percent);
- sales and office occupations (26.7 percent);
- service occupations (20.3 percent);
- production, transportation, and material moving occupations (8.6 percent); and
- natural resources, construction, and maintenance occupations (6.2 percent).

CITY OF FAIRFIELD

In 2011, the employed civilian labor force in Fairfield was 50,179 people, and the unemployment rate was 6.3 percent (U.S. Census Bureau 2011a). According to the U.S. Census Bureau (2011a), civilian employment in Fairfield was distributed among the following sectors:

- management, business, science, and arts occupations (30.3 percent);
- sales and office occupations (27.5 percent);
- service occupations (19.7 percent);
- production, transportation, and material moving occupations (12.7 percent); and
- natural resources, construction, and maintenance occupations (9.9 percent).

CITY OF ELK GROVE

In 2011, the employed civilian labor force in Elk Grove was 77,807 people, and the unemployment rate was 7.3 percent (U.S. Census Bureau 2011a). According to the U.S. Census Bureau (2011a), civilian employment in Elk Grove was distributed among the following sectors:

- management, business, science, and arts occupations (43.4 percent);
- sales and office occupations (26.1 percent);
- service occupations (18.4 percent);
- production, transportation, and material moving occupations (6.7 percent); and
- natural resources, construction, and maintenance occupations (5.4 percent).

POPULATION

Most of the current employees at CMF/SOL reside in communities within Solano and Sacramento Counties. Table 3.4-1 presents the geographic distribution of existing CMF/SOL employees and the regional population estimates for the major cities that support these employees.

The U.S. Census Bureau estimates that the population in Solano County was 413,344 people in 2010 (U.S. Census Bureau 2013a). By 2025, the total population in Solano County is projected to reach 468,039 people, a gain of 54,695 people (California Department of Finance 2012). Sacramento County had a 2010 population of 1,418,788 people (U.S. Census Bureau 2013b) and is expected to grow to a population of 1,643,263 people by 2025, a gain of 224,475 people (California Department of Finance 2012). Between Solano and Sacramento Counties, the regional population is expected to grow by more than 279,000 people within the next 12 years.

Table 3.4-1 Geographic Distribution of Existing CMF/SOL Employees

City	2000 Population	2010 Population	Projected 2025 Population	Number/Percent of CMF/SOL Employees Residing in the Area[1]
City of Vacaville	88,625	92,428	122,300	380 (30%)
City of Sacramento	407,018	466,488	528,880	165 (13%)
City of Fairfield	96,178	105,321	135,000	131 (10%)
City of Elk Grove	59,984 [2]	153,015	168,465	99 (8%)
Other cities	N/A	N/A	N/A	492 (39%) [3]
Total				**1,267 (100%)**

Notes:
[1] Number is approximate; zip code survey data do not match number of employees due to various factors. Numbers were adjusted to match the employment count.
[2] Elk Grove was incorporated as a city in July 2000. U.S. Census Bureau information for 2000 does not reflect this change.
[3] Less than 39% of CMF/SOL employees reside in 96 other jurisdictions, each of which represents less than 4% of total employee population.
Sources: U.S. Census Bureau 2013c, 2013d, 2013e, 2013f; City of Vacaville 2010; Sacramento County 2008; zip code data provided by CDCR in 2013

The populations for Vacaville, Sacramento, Fairfield, and Elk Grove are summarized below, based on the most recent information from the U.S. Census Bureau and the general plans of the respective jurisdictions.

CITY OF VACAVILLE

The population of Vacaville increased from 88,625 people in 2000 to 92,428 people in 2010, which was an increase of 4.1 percent (U.S. Census Bureau 2013c). As indicated in Table 3.4-1, approximately 30 percent of current CMF/SOL employees reside in Vacaville.

By 2025, the total population in Vacaville is projected to be 122,300 people, an increase of approximately 27 percent from 2000 (City of Vacaville 2010:31).

CITY OF SACRAMENTO

Sacramento's population increased from 407,018 people in 2000 to 466,488 people in 2010, which was an increase of 12.7 percent, representing an average growth of 1.27 percent per year (U.S. Census Bureau 2013d). As indicated in Table 3.4-1, approximately 13 percent of current CMF/SOL employees reside in Sacramento.

By 2025, the total population in Sacramento is projected to be 528,880 people, an increase of approximately 23 percent from 2000 (Sacramento County 2008:5-4).

CITY OF FAIRFIELD

The population of Fairfield increased from 96,178 people in 2000 to 105,321 people in 2010, which was an increase of 8.7 percent (U.S. Census Bureau 2013e). As indicated in Table 3.4-1, approximately 10 percent of current CMF/SOL employees reside in Fairfield.

By 2025, the total population in Fairfield is projected to be 135,000 people, an increase of approximately 28.7 percent from 2000 (City of Vacaville 2010:31).

CITY OF ELK GROVE

The population of Elk Grove increased from 59,984 people in 2000 to 153,015 people in 2010, which was an increase of 60.8 percent (U.S. Census Bureau 2013f).[1] As indicated in Table 3.4-1, approximately 8 percent of current CMF/SOL employees reside in Elk Grove.

By 2025, the total population in Elk Grove is projected to be 168,465 people, an increase of approximately 64.4 percent from 2000 (Sacramento County 2008:5-4).

HOUSING

The California Department of Housing and Community Development defines a housing shortage as a vacancy rate of less than 5 percent. The vacancy rate is the percentage of total owner-occupied residential units that are for sale and unoccupied. Data on housing availability and vacancy rates (combined for total owner-occupied and renter-occupied housing units) for Vacaville, Sacramento, Fairfield, and Elk Grove in 2011 are provided in Table 3.4-2. As shown, there is a general availability of housing within these cities; Vacaville has the lowest vacancy rate (5.5 percent) and Sacramento has the highest (9.2 percent).

Table 3.4-2 Vacant Units per City

City	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Vacancy Rate
City of Vacaville	32,408	30,622	1,786	5.5%
City of Sacramento	193,263	175,570	17,693	9.2%
City of Fairfield	35,310	33,138	2,172	6.2%
City of Elk Grove	49,285	46,395	2,890	5.9%
Total	**310,266**		**24,541**	

Notes: N/A = not applicable
Source: U.S. Census Bureau 2011b

From a regional perspective, Solano and Sacramento Counties had vacancy rates of 8.2 percent and 7.9 percent, respectively, in 2011 (U.S. Census Bureau 2011b).

3.4.2 REGULATORY CONSIDERATIONS

No federal or state plans, policies, regulations, or laws related to employment, population, and housing are applicable to development of a single, level II infill correctional facility at the CMF/SOL Infill Site.

3.4.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Population and employment growth associated with implementation of the proposed Level II Infill Correctional Facilities Project would not, in and of itself, result in significant environmental impacts. However, development-related growth could result in significant impacts in communities where growth occurs, through the construction of housing and increased demand for community services. These secondary effects could result in significant environmental impacts and are appropriately addressed in other sections (e.g., air quality, noise, and transportation) of this draft environmental impact report (DEIR) (Volume 5).

[1] Elk Grove was incorporated as a city in July 2000. U.S. Census Bureau information for 2000 does not reflect this change.

The discussion of employment, population, and housing impacts focuses on where development-related employees and their families would reside; the removal of existing housing; and availability of housing supplies for new employees, their families, and other potential new residents in the area.

In accordance with Appendix G and Section 15065 of the State of California Environmental Quality Act (CEQA) Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact related to employment, population, and housing if it would do any of the following:

- 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);
- displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

The State CEQA Guidelines (Section 15064.5) define a “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Displacement of existing housing or people: Because the proposed level II infill correctional facility, would be located on undeveloped, disturbed annual grasslands and land used for non-residential uses (i.e., inmate labor yard), on State-owned property, it would not displace existing housing or people. Therefore, no impact would occur, and these issues are not discussed further.

Impacts of increased inmate population: Although development of 792 new level II beds could occur at the CMF/SOL Infill Site, the inmates would not participate in or have access to social or economic aspects of the surrounding communities. Therefore, the increased number of inmates would not directly affect population or housing in surrounding communities. Further, inmate population growth is not, in itself, a physical environmental effect, although it has implications related to increased demand for public utilities such as water and wastewater, which are addressed in Section 3.12, “Utilities,” of Volume 5). For these reasons, this issue is not discussed further.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.4-1: Substantial Population Growth

Implementation of a single, level II infill correctional facility at CMF/SOL would provide both short-term and permanent employment opportunities. The number of short-term jobs required during construction would peak at 355. Construction would take place over a 26-month period. Of these 355 required jobs, 335 would last for a minimum of 15 months. More than 48,000 construction workers were living in Solano and Sacramento Counties in 2011 (U.S. Census Bureau 2011a) Because the supply of general construction labor in the project vicinity (is not constrained, it is expected that workers would be available from the region to meet the construction needs of a level II infill correctional facility at CMF/SOL. Therefore, implementation of a single, level II infill correctional facility at CMF/SOL would not generate employment opportunities that would require in-migration of construction personnel from outside the region.

Operation of a single, level II infill correctional facility would require 193 new correctional officers, medical/mental health personnel, vocational and educational staff, facility maintenance personnel, and administrative support staff (see Table 3-1 in Chapter 3, “Project Description,” of Volume 1). More than half of these positions would be correctional staff, and the remaining positions would be in support services. Solano and Sacramento Counties have a combined labor force of approximately 893,000 people and high unemployment rates (9.3 percent and 9.9 percent, respectively) (EDD 2013). While

many of these new employment positions require a certain level of experience that may necessitate in-migration by some existing correctional staff from other facilities, it is unlikely that a large number of employees would need to relocate from outside of the region because of the general availability in the labor market. (

To provide a conservative analysis of potential population growth associated with a level II infill correctional facility at CMF/SOL, this analysis assesses the population impact if all 193 new employees and their families were to migrate into the region from outlying areas even though some or most are likely to already reside within the region. Using a statewide average household size of 2.91 (U.S. Census Bureau 2013a), implementation of a single level II infill correctional facility at CMF/SOL could result in a population increase of 562 people.

If this population increase occurs, it is anticipated that these 562 people would distribute themselves in a pattern similar to the existing regional CMF/SOL employee distribution patterns. That is to say, the majority (61 percent) of new employees would be anticipated to reside in the cities of Vacaville, Sacramento, Fairfield, and Elk Grove, and the remainder (39 percent) would be anticipated to reside in other outlying cities. As indicated in Table 3.4-1, Vacaville would be expected to receive the largest portion of any development-related population increase (approximately 169 [30 percent] of the 562 people). The remaining employees and their families would be distributed throughout other adjacent and outlying cities (including Sacramento, Fairfield, and Elk Grove). The maximum population increase of 562 people would be indistinguishable from other projected growth in the region and is planned for in regional growth plans in each of these communities (e.g., general plans, community plans). For example, population growth associated with level II infill correctional facilities in Vacaville of 169 people would represent 0.0014 percent of the City's projected 2025 population of 122,300 people (City of Vacaville 2010:31). This level of growth, by itself, would not stimulate any new development, the construction of which could result in significant environmental impacts.

Implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in both short-term and permanent employment opportunities in a region with a large labor pool. It is anticipated that these new employment opportunities would be largely met by the existing regional labor force without resulting in substantial in-migration from outside the region. Development-related population growth would not stimulate any new residential development, the construction of which could result in significant environmental impacts, and the population growth would be absorbed in growth projections of regional and local communities (Vacaville, Sacramento, Fairfield, and Elk Grove). Therefore, this impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.4-2: Increased Demand for Housing

As discussed in Impact 3.4-1, above, a maximum in-migration of new employees and their families from areas outside the identified study area would increase population by approximately 562 people, which would in turn increase housing demand in the communities near CMF/SOL. For purposes of this analysis, it is assumed that every new employee who relocates to the region would require one housing unit. The distribution of new housing needs corresponds to the distribution of existing employee residences as shown in Table 3.4-1, above. Because development of a level II infill correctional facility at CMF/SOL would increase the number of job opportunities at CMF/SOL by 193 positions, a corresponding increase in demand for 193 housing units would occur as follows: approximately 58 (30 percent) housing units in Vacaville, approximately 25 (13 percent) housing units in Sacramento, approximately 19 (10 percent) housing units in Fairfield, 15 (8 percent) housing units in Elk Grove, and approximately 75 (39 percent) housing units in other communities. Because no single community would receive a substantial number of new residents, or corresponding demand for housing, and because the

region offers a large housing base (see Table 3.4-2, above), development of a single, level II infill correctional facility would not substantially decrease the available housing stock in the region and would not result, in and of, in the construction of new housing in the study area.

Further, this assumes that all employees would relocate to these communities and none would be hired from the local population, which is considered very conservative for the purposes of this analysis given the large labor pool (as described in Impact 3.4-1).

Because no single community would receive a substantial number of new residents, or corresponding demand for housing, and because the region offers a large housing base, development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not substantially decrease the available housing stock in the region and would not result, in and of itself, in the construction of new housing in the study area. Therefore, this impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

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3.5 GEOLOGY, SOILS, SEISMICITY, MINERALS, AND PALEONTOLOGICAL RESOURCES

This section identifies existing geologic, soils, seismicity, minerals, and paleontological resources at the CMF/SOL Infill Site and analyzes the potential for the development of level II infill correctional facilities at CMF/SOL to affect those resources. Information presented in the discussion and subsequent analysis was drawn, in part, from the *Geotechnical Investigation Report for the 64 Bed Intermediate Care Facility at California Mental Facility, Vacaville, California* prepared by Fugro West, Inc. in 2008.

3.5.1 ENVIRONMENTAL SETTING

REGIONAL TOPOGRAPHY AND GEOLOGY

The infill site is located between the Coast Range and the Great Valley geomorphic provinces. The Great Valley of California, also called the Central Valley, is a nearly flat alluvial plain extending from the Tehachapi Mountains in the south to the Klamath Mountains in the north and from the Sierra Nevada in the east to the Coast Ranges in the west. Elevations of the alluvial plain are generally just a few hundred feet above mean sea level (MSL), with extremes ranging from a few feet below MSL to about 1,000 feet above MSL (Hackel 1966). The Coast Ranges are fault bounded rocks of various ages and origins.

The infill site is near the southwestern portion of the Sacramento Valley. The site is a low gradient alluvial fan derived from local bedrock upland to the southwest. The bedrock in this local upland is mapped as Guinda Formation, a thick-bedded fine-grained sedimentary rock (Dawson 2009).

INFILL SITE TOPOGRAPHY AND GEOLOGY

The infill site is located in the U.S. Geological Survey Elmira 7.5-minute quadrangle map, near the low foothills of the Vaca Mountains. The topography varies from approximately 150 feet above MSL in the eastern portion of the infill site to approximately 190 feet at the western edge of the infill site.

The infill site is underlain by Holocene-age (within the last 11,000 years) alluvium mapped as alluvial fan deposits (Dawson 2009, Fugro West 2008), which consists of interbedded silts, sands and gravel. In borings at the adjacent CMF, Fugro West (2008) found silt and clay with varying amounts of sand. No significant gravel lenses were identified at that site.

SOILS

Surface Soils

The soils at the CMF/SOL Infill Site have been mapped by the Natural Resources Conservation Service (formerly called the U.S. Soil Conservation Service) and presented in the Web Soil Survey (NRCS 2013). According to the soil survey (Table 3.5-1), two individual soil map units occupy the infill site: the Brentwood clay loam, 0 to 2 percent slopes and the Rincon clay loam, 0 to 2 percent slopes.

Table 3.5-1 Detailed Soil Characteristics of the Infill site

Soil Map Unit	Shrink-Swell Potential	Erosion Hazard[a]	Runoff Rate
Brentwood clay loam, 0 to 2% slopes	High	Slight	Moderately low
Rincon clay loam, 0 to 2% slopes	Moderate to high	Slight	Moderately high

Source: NRCS 2013

Both the Brentwood and Rincon soils are formed in stream sediments (alluvial fan) and there is no near-surface bedrock. The soil mapping (NRCS 2013) indicates that the Brentwood soil has a high shrink-swell potential and the Rincon soil has a moderate to high shrink-swell potential. In borings at CMF near the present infill site, Fugro West (2008) found the expansion potential to be low to medium. The erosion hazard for both soils is slight which is partially related to the low slope. The runoff rate for the Brentwood is moderately low, while for the Rincon it is moderately high.

Subsurface Conditions

Both the Brentwood and Rincon soils are formed in deep alluvial fan sediments, and are about 60 inches deep. Both soils are fine grained with clay loams in the surface horizon, clay and clay loams in the intermediate horizon, and clay loams or loams in deepest horizon. Since both are formed in stream deposits similar characteristics extend to some depth. In borings at CMF near the infill site Fugro West (2008) found similar sediments to the Brentwood and Rincon soils in near surface. However, at about 30–50 feet below ground surface they encountered a sandy layer. Beneath the sandy layer they found a hard clay to the maximum explored depth of 75 feet below ground surface.

Soil Corrosion Potential

Based on the soil survey data (NRCS 2013), both the Brentwood and Rincon soils have a high risk of corrosion for uncoated steel but a low risk of corrosion for concrete. In borings at CMF near the present infill site, Fugro West (2008) found the soils to be non-corrosive to mildly corrosive to concrete and moderately corrosive to metal pipe.

SEISMICITY AND FAULTS

Seismic hazards are earthquake fault ground (surface) rupture and ground shaking (primary hazards) and liquefaction and earthquake-induced slope failure (secondary hazards).

Surface Rupture and Faulting

The purpose of the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) is to regulate development in the immediate vicinity of active faults to mitigate the hazard of surface rupture. Faults in an Alquist-Priolo Earthquake Fault Zone are typically active faults. As defined under the Alquist-Priolo Act, an active fault is one that has had surface displacement within the Holocene epoch (the last 11,000 years); an early Quaternary fault is one that has had surface displacement during Quaternary time (the last 1.6 million years); and a pre-Quaternary fault is one that has had surface displacement before the Quaternary period.

The infill site is not identified as being located in an Alquist-Priolo Fault Zone Study Zone (California Geological Survey 2010). There is no evidence of recent (i.e., Holocene) faulting within the infill site, and no faults are mapped to cut at or near the infill site (Fugro West 2008, Bryant and Hart 2007, International Conference of Building Officials 1997, Jennings and Bryant 2010).

Table 3.5-2 provides a summary of seismic sources (faults) identified within 50 miles of the infill site, and their predicted maximum earthquake magnitudes (moment magnitude).

Table 3.5-2 Near Site Seismic Sources

Fault Name	Approximate Distance, Miles	Maximum Earthquake Magnitude
Great Valley Segment (GVS) 4	0.0	6.6
Great Valley 5	3.7	6.5
Concord/Green Valley (GV)	9.6	6.0
Concord/GV (Con+GVS+GVN)	9.6	6.7
Concord/GV (Floating)	9.6	6.2
Concord/GV (Con+GVS)	9.6	6.5
Concord/GV (GVS)	10.1	6.2
Hunting Creek–Berryessa	14.4	7.1
West Napa	17.8	6.5
Concord/GV (Con)	20.7	6.3
Great Valley Segment 3	22.3	6.9
Mount Diablo	26.5	6.7
Hayward (RC)	29.5	7.3
Hayward (Floating)	29.5	6.9
Hayward (HN+RC)	29.5	7.1
Hayward (HS+HN+RC)	29.5	7.3
Hayward (HS+HN)	29.6	6.9
Hayward (HN)	29.6	6.5
Greenville (GN)	31.8	6.7
Calaveras (CS+CC+CN)	35.4	6.9
Calaveras (CN)	35.4	6.8
Hayward (HS)	36.8	6.7
Maacama-Gerberville	42.1	7.5
San Andreas (SAS+SAP+SAN)	47.5	7.9
Greenville (GS)	47.7	6.6
Greenville (GS+GN)	47.7	6.9
Great Valley 7	48.0	6.7
San Andreas (SAP)	49.4	7.2
San Andreas (SAS+SAP)	49.4	7.2

Source: Fugro West 2008

Ground-shaking Hazard

The infill site is not located within a State-designated zone for potential seismic hazards (California Geological Survey 2007). Although the risk of surface rupture is low because of the distance from active faults, the infill site is located in a region of California characterized by high historical seismic activity.

The measurement of the energy released at the point of origin, or epicenter, of an earthquake is referred to as the magnitude, which is generally expressed in the Richter Magnitude Scale or as moment magnitude. The scale used in the Richter Magnitude Scale is logarithmic so that each successively higher Richter magnitude reflects an increase in the energy of an earthquake of about

31.5 times. Moment magnitude is the estimation of an earthquake magnitude by using seismic moment, which utilizes rock rigidity, amount of slip, and area of rupture.

The greater the energy released from the fault rupture, the higher the magnitude of the earthquake. Earthquake energy is most intense at the fault epicenter; the farther an area is from an earthquake epicenter, the less likely it is that ground shaking will occur there. Geologic and soil units comprising unconsolidated, clay-free sands and silts can reach unstable conditions during ground shaking, which can result in extensive damage to structures built on them (described in “Liquefaction and Associated Hazards”). Ground shaking is described as ground acceleration as a fraction of the acceleration of gravity, expressed in units of “g.”

The intensity of ground shaking that would occur at the infill site as a result of an earthquake is partly related to the size of the earthquake, its distance from the infill site, and the response of the geologic materials within the infill site. As a rule, the greater the earthquake magnitude and the closer the fault rupture is to the site, the greater the intensity of ground shaking will be. When various earthquake scenarios are considered, potential ground-shaking intensities will reflect both the effects of strong ground accelerations and the consequences of ground failure.

Estimates of Earthquake Shaking

The intensity of ground shaking that would occur at the infill site as a result of an earthquake is partly related to the size of the earthquake, its distance from the infill site, and the response of the geologic materials within the infill site. As a rule, the greater the earthquake magnitude and the closer the fault rupture to the site, the greater the intensity of ground shaking. Based on a probabilistic seismic hazard map depicting the peak horizontal ground acceleration values exceeded at a 10 percent probability in 50 years (Cao et al. 2003), the probable peak horizontal ground acceleration at the infill site range from 0.4 to 0.5g, where 1g equals the force of gravity. Fugro West (2008) calculated peak ground accelerations of 0.56–0.71g based on detailed site characteristics at CMF near the CMF/SOL infill site. There is a moderate risk of ground shaking at the CMF/SOL Infill Site.

LIQUEFACTION AND ASSOCIATED HAZARDS

Liquefaction is a phenomenon in which the strength and stiffness of unconsolidated sediments are reduced by earthquake shaking or other rapid loading. Poorly consolidated, water-saturated fine sands and silts have low plasticity and, when located within 50 feet of the ground surface, are typically considered to be the most susceptible to liquefaction. Soils and sediments that are not water-saturated and that consist of coarser or finer materials are generally less susceptible to liquefaction. Geologic age also influences the potential for liquefaction. Sediments deposited within the most recent millennia are generally more susceptible to liquefaction than older, early Holocene sediments; Pleistocene sediments are even more resistant; and pre-Pleistocene sediments are generally not susceptible to liquefaction (California Geological Survey 2008b).

Two types of potential ground failure associated with liquefaction in the region are lateral spreading and differential settlement (Association of Bay Area Governments 2001). In lateral spreading, a layer of ground at the surface being carried on an underlying layer of liquefied material over a gently sloping surface toward a river channel or other open face. In differential settlement (also called ground settlement and, in extreme cases, ground collapse), soil compacts and consolidates after the ground shaking ceases, when the layers that liquefy are not of uniform thickness, which is a common problem when the liquefaction occurs in artificial fills. Settlement can range from 1 percent to 5 percent, depending on the cohesiveness of the sediments (Tokimatsu and Seed 1984).

The City of Vacaville General Plan (2007) shows the infill site’s liquefaction susceptibility as low and moderate. Borings by Fugro West (2008) at CMF encountered potentially liquefiable sandy soil layers at 30–50 feet below the ground surface.

LANDSLIDES AND SEISMICALLY INDUCED SLOPE FAILURES

For the overall area and the area within the limits of ground disturbance of the infill site, there is no risk of naturally occurring landslides because of the area's very low gradient. The City of Vacaville (2007) maps the site as least susceptible to landsliding.

OTHER HAZARDS

Several other geologic and seismic hazards (i.e., land subsidence, volcanic activity, tsunami, seiche, and mudflow) that could be experienced in the larger region are unlikely to affect the infill site. No land subsidence is reported in the vicinity (City of Vacaville 2007). There are no volcanoes near the infill site. The infill site is not on a large body of water and could not be affected by a tsunami or seiche. The infill site is one-half mile from the bedrock hillsides to the southwest so there is minimal potential for these upslope areas to generate mudflows that would impact the infill site. Consequently, these hazards are not likely to affect the development of level II infill correctional facilities at CMF/SOL and, therefore, are not discussed in this draft environmental impact report. As appropriate, radon and naturally occurring asbestos are discussed in Section 3.6, "Hazards and Hazardous Materials," of this volume.

MINERAL RESOURCES

The California Geological Survey and the State Mining and Geology Board are the state agencies responsible for the classification and designation of areas containing, or potentially containing, significant mineral resources. Areas known as Mineral Resource Zones (MRZs) are classified on the basis of geologic factors, without regard to existing land use and land ownership. The primary objective of the process is to provide local agencies with information on the location, need, and importance of minerals within their respective jurisdictions. Areas are categorized into four general classifications (MRZ-1 through MRZ-4), as defined in Volume 1, Appendix 1B.

The infill site lies in the designated Sacramento-Fairfield Production-Consumption Region for Portland cement concrete aggregate, which includes all designated lands in the marketing area of the active aggregate operations supplying the Sacramento-Fairfield urban center. The infill site is classified as MRZ-1, an area where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence (County of Solano 2008).

PALEONTOLOGICAL RESOURCES

Paleontological resources (such as fossils) are considered limited, nonrenewable, and sensitive scientific resources. The infill site is underlain by Holocene alluvial fan sediments (Dawson 2009), which are generally associated with soils from the last 11,000 years. The definition of fossil includes objects that are greater than 11,000 years old. Consequently, the potential for paleontological resources at the infill site is considered low.

3.5.2 REGULATORY CONSIDERATIONS

A list of the applicable federal and state plans, policies, regulations, and laws relating to geology, soils, seismicity, minerals, and paleontological resources is provided below. Complete summaries of the federal and state regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

- Clean Water Act Section 402/National Pollutant Discharge Elimination System - The CWA is the primary federal legislation governing water quality whose objective is "to restore and maintain the

chemical, physical, and biological integrity of the nation's waters," which includes oceans, bays, rivers, lakes, ponds, and wetlands. This act regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.

- International Building Code - The design and construction of engineered facilities in the state of California must comply with the requirements of the International Building Code and the adoptions to that code adopted by the State of California.
- U.S. Geological Survey Landslide Hazard Program - The U.S. Geological Survey created the National Landslide Hazards Program to reduce long-term losses from landslide hazards by improving understanding of the causes of ground failure and suggesting mitigation strategies.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

GEOLOGY AND MINERALS

- Alquist-Priolo Earthquake Fault Zoning Act - California's Alquist-Priolo Act is intended to reduce the risk to life and property from surface fault rupture during earthquakes. It prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults.
- Seismic Hazards Mapping Act - The Seismic Hazards Mapping Act addresses identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.
- California Building Standards Code - The CBSC is based on the International Building Code and has been modified for California conditions with numerous, more detailed or more stringent regulations. The California Building Code requires extensive geotechnical analysis and engineering for grading, foundations, retaining walls, and other structures, including criteria for seismic design.
- Surface Mining and Reclamation Act of 1975 - The purpose of SMARA is to provide a comprehensive surface mining and reclamation policy that will encourage the production and conservation of mineral resources while ensuring that adverse environmental effects of mining are prevented or minimized.

PALEONTOLOGICAL RESOURCES

- State of California Environmental Quality Act (CEQA) Guidelines Section 15064.5(a)(3) - State CEQA Guidelines Section 15064.5(a)(3) provides protection for paleontological resources by requiring that they be identified and mitigated as historical resources.
- California Environmental Quality Act (*13 PRC 21000 et seq.*) - California requires identification of the environmental consequences of proposed projects to any object or site important to the scientific annals of California.

LOCAL PLANS, POLICIES, AND ORDINANCES

As a state agency, the California Department of Corrections and Rehabilitation (CDCR) is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CITY OF VACAVILLE MUNICIPAL CODE

Title 14 of the City of Vacaville's Municipal Code contains the City's grading, erosion, and sediment control ordinance. This division sets forth rules and regulations to control land disturbances, landfill, soil

storage, pollution, and erosion and sedimentation resulting from new development and redevelopment, and establishes procedures for the issuance, administration, and enforcement of permits for such activities.

CITY OF VACAVILLE GENERAL PLAN

The following policies from the City of Vacaville General Plan (City of Vacaville 2007) regarding geology and soils are applicable to development in the City:

- **Policy 9.1-G 1:** Investigate and mitigate geologic and seismic hazards or locate development away from such hazards in order to preserve life and protect property.
- **Policy 9.1-G 3:** Give primary consideration to geologic conditions in the selection of land use and in the design of development in Vacaville. Retain high-risk areas in low-occupancy or open forms of use where potential risks are unmitigable.
- **Policy 9.1-I 3:** Require geotechnical studies prior to approval of rezoning, specific plans, or subdivision maps in areas of low damage susceptibility designated 2 through 4 and areas of high damage susceptibility as shown on the Relative Susceptibility to Landsliding Map within a quarter-mile of a known fault. Require comprehensive geologic and engineering studies of critical structures regardless of location.
- **Policy 9.1-I 4:** To the extent practicable, do not allow critical facilities, structures involving high occupancies, and public facilities to be sited in areas of high damage susceptibility. Where such location is deemed essential to the public welfare, these structures will be sited, designed and constructed with due consideration of the potential for earthquake damage due to ground shaking, associated ground deformation, seismically triggered flooding, liquefaction and landslide.
- **Policy 9.1-I 9:** Require preparation of a soils report prior to issuing a building permit, except where the Building Official determines that a report is not needed.
- **Policy 9.1-I 11:** Require contour rounding and revegetation to preserve natural qualities of sloping terrains and mitigate the artificial appearance of engineered slopes, and control erosion.

3.5.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State CEQA Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact relating to geology, soils, seismicity, minerals, or paleontological resources if it would do any of the following:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death from seismic hazards including earthquake fault rupture, strong seismic ground-shaking, seismic-related ground failure, including liquefactions, and landslides, or inundation by seiche, tsunami, or mudflow;
- 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 onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;
- be located on expansive soil, as defined in Table 18-1-B of the California Building Code (CBC), creating substantial risks to life or property;
- have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater;

- 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, or 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; or
- directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature.

The State CEQA Guidelines (Section 15064.5) define a “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Fault rupture: The CMF/SOL Infill Site is not located in an Alquist-Priolo Earthquake Fault Study Zone, although the closest active fault zone is less than 0.5 mile away. Consequently, fault rupture at the infill site from an earthquake is not anticipated. Other seismic hazards including tose related to volcanic activity, tsunami, seiche, and mudflow are not anticipated at the infill site. This issue is not evaluated further.

Geologic and seismic hazards: Within the limits of ground disturbance of the infill site and the immediate vicinity, there is no risk of naturally occurring large landslides, due to low slopes in the area and the distance from upslope highlands. This issue is not evaluated further.

Mineral resources: The infill site is not located within an area where known mineral resources are located. The development of level II infill correctional facilities at CMF/SOL would not 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 or 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. Therefore, this issue is not discussed further.

Paleontological resources: The development of level II infill correctional facilities at CMF/SOL would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature as none occur in the vicinity of the infill site. Therefore, this issue is not discussed further.

Septic systems: No septic systems or other infiltrating wastewater disposal systems are included as part of the development of level II infill correctional facilities at CMF/SOL and this issue is not evaluated further.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: Seismic Hazard Impacts

Although the CMF/SOL infill site is not identified as being within an Alquist-Priolo Fault Zone Study Zone (Bryant and Hart 2007), the site may experience ground shaking as a result of fault activity that could impact site or facility stability. Consistent with State regulations, CDCR is required to design facilities to meet CBC standards to minimize the potential impact of ground shaking hazards onsite features. Further, a geotechnical study for a previous project in the immediate vicinity (Fugro West 2008) of the infill site identified potentially appropriate mitigation measures for the project including fill material and placement, soil stabilization, foundations, and slabs on grade requirements indicating that CBC criteria can be met. CDCR would incorporate these measures, as appropriate, in the final design and construction of the facility.

Liquefaction and related hazards, such as lateral spreading and differential settlement, have the potential to compromise the structural integrity of new facilities and cause injury to construction workers and residents. Borings by Fugro West (2008) at CMF identified a liquefiable layer at a depth of 30 to 50 feet that required further investigation. Furthermore, CBC standards require incorporation of applicable features into site designs to minimize the potential liquefaction hazards.

As a state agency, CDCR is required to construct all new facilities in accordance with CBC standards, which would require that appropriate soils and geotechnical reports be prepared and site-specific engineering design measures be implemented to appropriately minimize adverse impacts related to risks related to seismic hazards at the infill site. Therefore, impacts related to liquefaction and lateral spreading would be less than significant.

A single, level II infill correctional facility at the CMF/SOL Infill Site would be designed to comply with the most recent requirements of the CBC, which has provisions for seismic safety. This would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

Impact 3.5-2: Soil Erosion Impacts

Development of level II infill correctional facilities at the CMF/SOL Infill Site would involve grading, removal of vegetation cover, and excavation activities that would result in the temporary disturbance of soil such that wind and rain events could cause erosion, runoff, sedimentation, and downstream water quality degradation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at the construction sites and staging areas, thereby increasing erosion potential.

Consistent with State requirements and as discussed in Impact 3.7-1, a Stormwater Pollution Prevention Plan (SWPPP) would be developed for the project by a qualified SWPPP developer. The objectives of the SWPPP would be to identify pollutant sources that may affect the quality of stormwater associated with construction. Therefore, the SWPPP would include a description of potential pollutants, the management of dredged sediments, and hazardous materials present on the site during construction (including vehicle and equipment fuels). The SWPPP also would include details of how sediment and erosion control practices (best management practices) would be implemented. Implementation of the SWPPP would comply with state and federal water quality regulations.

Furthermore and as noted above, CDCR is required to construct all new facilities in accordance with CBC standards. These standards require that appropriate soils and geotechnical reports be prepared and that site-specific engineering design measures, including those related to general site grading, clearing and grubbing, soil stabilization, and general erosion control, be implemented to appropriately minimize potential adverse impacts related to erosion at the infill site. This, coupled with preparation of a site-specific SWPPP, would minimize potential adverse impacts related to erosion and loss of topsoil at the infill site, and impacts would be less than significant.

Because CDCR would implement appropriate stormwater controls in accordance with federal and state requirements that would reduce potential runoff, development of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in ***less-than-significant*** *impacts related to erosion.*

Mitigation Measures

No mitigation measures are required.

Impact 3.5-3: Expansive Soils and Corrosion Impacts

The soil expansion potential at the infill site is moderate to high based on the soil survey and geotechnical report for a nearby location (Fugro West 2008), and construction on these soils could result in potential structural damage. The soil survey (NRCS 2013) reports a moderate to high shrink-swell potential and the Fugro West (2008) geotechnical report for the CMF found a low to medium shrink-swell potential. Based on the soil survey data (NRCS 2013), both the Brentwood and Rincon

soils have a high risk of corrosion for uncoated steel but a low risk of corrosion for concrete. In borings at CMF near the CMF/SOL Infill Site, Fugro West (2008) found the soils to be non-corrosive to mildly corrosive to concrete and moderately corrosive to metal pipe. Techniques to address this characteristic include excavation of potentially problematic soils during construction and replacement with engineered backfill, ground treatment processes, and direction of surface water and drainage away from foundation soils (Fugro West 2008). These measures would be developed and implemented as part of the infill site's design, based on a site-specific geotechnical report.

CDCR would design and construct all structures for a single, level II infill correctional facility at the CMF/SOL Infill Site in accordance with CBC design standards, which regulate grading activities and construction on expansive and corrosive soils. This impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

3.6 HAZARDS AND HAZARDOUS MATERIALS

This section evaluates the potential for development of the level II infill correctional facility at California Medical Facility/California State Prison, Solano (CMF/SOL) to expose construction workers and future occupants to existing hazards and hazardous materials, and to expose surrounding residences and other land uses to operation-related hazards and hazardous materials. The analysis contained herein is largely based on a records review conducted by Environmental Data Resources (EDR) in June 2012 (provided in Appendix 5C, Volume 5). This records review included searches of the U.S. Environmental Protection Agency's (EPA's) and California Department of Toxic Substances Control's (DTSC's) databases for known hazardous materials in the vicinity of the infill site.

Impacts related to emergency response at the CMF/SOL Infill Site are addressed in Section 3.10, "Public Services," of this draft environmental impact report (DEIR). For more information on geological hazards associated with development of the CMF/SOL Infill Site, refer to Section 3.5, "Geology, Soils, Seismicity, Minerals, and Paleontological Resources," of this volume. For information related to flooding and water quality at this site, refer to Section 3.7, "Hydrology and Water Quality," of this volume.

3.6.1 ENVIRONMENTAL SETTING

The entire CMF/SOL property, including the CMF/SOL Infill Site, was historically used for agriculture, including row crops, orchards, and grazing. Based on a review of historical aerial photographs (dated 1937, 1957, 1965, 1970, 1984, 1993, 1998, 2005, and 2006) and topographic maps (dated 1908, 1917, 1953, 1953, 1968, 1973, and 1980), the infill site was used for agricultural prior to development of the CMF facility in the early 1950s. Sewage treatment ponds were constructed to the north-northeast of the potential facility sometime between 1953 and 1957. In the early 1980s, an equipment yard and storage buildings were constructed on part of the infill site. The fenced Inmate/Ward Labor (IWL) Yard is currently used for limited equipment staging, and includes portable facilities and semi-permanent metal warehouses. Adjacent land uses include existing prison facilities to the south and west, CMF wastewater treatment ponds and a City of Vacaville park (Al Patch Park) to the north, and residences to the east.

HAZARDOUS MATERIALS

For the purposes of this analysis, hazardous materials are defined as any materials that, because of quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety, or to the environment, if released. Hazardous materials include, but are not limited to, hazardous substances, hazardous wastes, and any material that a handler or the administering regulatory agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment (California Health and Safety Code, Section 25501 [o]). Several characteristics may cause a substance to be considered hazardous, including toxicity, ignitibility, corrosivity, or reactivity. Although often treated separately from hazardous materials, petroleum products (including crude oil and refined products such as fuels and lubricants), and natural gas are considered in this analysis because they may also pose a potential hazard to human health and safety if released into the environment.

POTENTIALLY HAZARDOUS BUILDING MATERIALS

Buildings currently located on the CMF/SOL Infill Site were constructed in the 1980s, generally after the use of lead-based paints, asbestos-containing materials, and polychlorinated biphenyls now understood to be potentially hazardous to human health and the environment. Although the older CMF buildings may contain these materials, structures within the existing CMF are outside of the potential development area of the level II infill correctional facility at CMF/SOL.

NATURALLY OCCURRING HAZARDS

Asbestos is naturally occurring as fibrous minerals found in certain types of rock formations. Weathering or human disturbance can break naturally occurring asbestos down to microscopic fibers that are suspended easily in air. When airborne asbestos is inhaled, these thin fibers irritate tissues and resist the body's natural defenses. According to the California Department of Conservation, Division of Mines and Geology (2000), naturally occurring asbestos is not common in the vicinity of the CMF/SOL Infill Site.

CONTAMINANTS ASSOCIATED WITH AGRICULTURAL OPERATIONS

Pesticide residues may persist in area soils from historical agricultural operations. However, routine application these materials would not generally accumulate to levels sufficient to cause concern because of product testing by EPA prior to commercial use and subsequent regulation of product application by various agencies. As stated above, the infill site has not been used for agricultural purposes in more than 50 years. Therefore, the potential for pesticide residues at the infill site is considered low.

HISTORICAL RAILROAD CORRIDOR

The former Sacramento Northern Railroad corridor traverses the CMF/SOL Infill Site. Contaminants common in rail corridors include wood preservatives (e.g., creosote and arsenic), heavy metals in ballast rock, and herbicide residues. The tracks were moved and the former alignment partially obscured during construction of the SOL facility in the early 1980s.

SITES OF POTENTIAL ENVIRONMENTAL CONCERN

Sites of potential concern are identified where there is the possible presence of any hazardous material or waste under conditions that indicate the possibility of an existing release, a past release, or a threat of a release of the hazardous material or waste into structures on the property or into the ground, groundwater, or surface water of the property. Smaller hazardous materials spills/accidental releases that are cleaned up immediately are not believed to present a substantive risk of potential harm to public health or the environment and are not listed as sites of potential environmental concern.

This analysis considered potential effects based on proximity of the CMF/SOL Infill Site to known hazardous material and waste sites identified through environmental database record searches conducted by EDR in 2012 (Appendix 5C, Volume 5) and general knowledge of the existing CMF and SOL facilities. The CMF/SOL Infill Site is not located on any of the databases searched by EDR. The only hazardous waste site in the vicinity of the infill site is CMF.

California Medical Facility

Approximately 500 feet from the infill site, two underground storage tanks (USTs) associated with a maintenance building garage fuel island on the southern side of the CMF were removed in 1989 as a result of a leak detected in 1986. At the time of excavation, petroleum hydrocarbons and benzene were recorded in soil and groundwater samples. An interim remedial action work plan that includes semi-annual monitoring of diesel, gasoline, and metals in groundwater in eight wells was approved in 2011.

In May 2012, Solano County Community College District, which leases part of the CMF property, conducted an assessment of residual petroleum hydrocarbons in soil and groundwater. The assessment included explorations to a maximum depth of 20 feet below the ground surface. Groundwater was not encountered during the assessment, but diesel organics were detected in soils.

Additionally, approximately 1,250 feet northwest of the infill site, a leak was detected in an above-ground storage tank (AST) outside of the CMF B-Wing Emergency Generator in the northern part of the CMF site in 2004. Investigations concluded that soil and groundwater that could be contaminated by this spill contained low to non-detectable concentrations of diesel and volatile organic compounds. As a result, the Solano County Department of Resource Management granted closure of the AST release incident on May 12, 2008.

There is an inactive landfill located approximately 1,000 feet to west of the infill site and southwest of CMF that operated from the 1950s to 1982. The landfill was used for waste generated by CMF, including incinerator ash, kitchen and household waste, and discarded metal. The approximately two-acre site was not constructed with a liner or perimeter monitoring network for landfill gas or leachate. It is listed in the Solid Waste Information System database as an unpermitted solid waste disposal site and is inspected annually. A periodic inspection conducted in April 2012 reported no violations (Solano County Local Enforcement Agency 2012). There is a modified cap consisting of at least two feet of clean soil on the site of the former landfill.

Landfills can release gases, leach liquids, and expose combustible and/or putrid garbage and rubbish if they are not closed in accordance with applicable statues, regulations, and local ordinances. Landfill gas (methane) can be generated during decomposition of wastes and create an explosion hazard. Development is restricted within 1,000 feet of the landfill. It should be noted that the CMF/SOL Infill Site is located outside the 1,000-foot buffer.

Firing Range

A firing range used by officers from CMF, SOL, City of Vacaville, and the Solano County Sheriff's Office is located 2,000 feet southwest of the infill site. This 300-foot long firing range has been in use since the 1950s. Due to the buildup of used shell casings, firing ranges can become sources of lead contamination. Testing of soils in and around the active firing range has not been conducted as part of this analysis due to the distance between the firing range and the infill site. The potential for metals associated with the firing range to affect conditions at the infill site is considered low.

SAFETY HAZARDS

PROXIMITY TO SCHOOLS

Children are particularly sensitive to hazardous materials exposure, and additional protective regulations apply to projects that could use or disturb potentially hazardous products near schools. No schools have been identified within 0.25 mile of the CMF/SOL Infill Site. The nearest existing schools are: Foxboro Elementary (600 Morning Glory Drive) approximately 0.3 mile to the east of the infill site, across Peabody Road; and the Irene Larsen Education Center (1707 California Drive), a special education center for children from birth to age five, that is located 0.4 mile north of the infill site. The City of Vacaville General Plan land use map (2008) does not identify any proposed schools within 0.25 miles of the CMF/SOL Infill Site.

PROXIMITY TO AIRPORTS

There are two airports in the vicinity of the infill site: Nut Tree Airport and Travis Air Force Base. No private airstrips are known to occur near the CMF/SOL Infill Site.

Nut Tree Airport

The Nut Tree Airport (301 County Airport Road) is owned and operated by Solano County. The airport is located over three miles north of the CMF/SOL Infill Site, and the infill site is not located within the limits of the airport land use plan for Nut Tree Airport.

Travis Air Force Base

Travis Air Force Base (400 Burgan Boulevard) is located approximately three miles south of the CMF/SOL Infill Site. The *Travis Air Force Base Land Use Compatibility Plan* (2002) establishes zones around the airport that restrict land use to minimize the risk to people and property in the event of an off-airport accident or emergency landing. The CMF/SOL Infill Site is located in Compatibility Zone D, which consists of the area furthest from the airport but still within any of the Travis Air Force Base airspace protection surfaces delineated in accordance with Federal Aviation Regulations, Part 77. Limitations on the height of structures are the only compatibility factors within this zone. Any proposed structures taller than 200 feet must be reviewed by the Solano County Airport Land Use Commission and the Federal Aviation Administration (FAA).

FIRE HAZARD

Although located within a heavily urbanized area (i.e., within the City of Vacaville and less than 3 miles north of the City of Fairfield), the CMF/SOL Infill Site is situated near an urban-wildland interface. Wildlands are located immediately west and south of the existing CMF and SOL facilities. The brush-covered hills to the west provide conditions that are conducive to fire.

The CMF/SOL Infill Site is not zoned by California Department of Forestry and Fire Protection (CAL FIRE) for fire hazard severity; although the surrounding hills are mapped in the moderate fire hazard severity zone (CAL FIRE 2007). The City of Vacaville General Plan (2007) maps the areas to the west and south of the infill site as high and extreme/very high fire hazard areas. The General Plan classifies the infill site as a moderate fire hazard area, which is the city's least severe fire hazard designation.

The area to the south of the landfill and west of the SOL facility is a fire training area used to practice firefighting techniques by the CMF Fire Department. The area, historically including the landfill, has been regularly burned through controlled burning exercises under the direction of trained personnel. The fenced security zones around the prison facilities provide fire breaks around existing structures and a fire station is located on the CMF/SOL property to respond to fires. For more information on firefighting facilities and emergency service to the CMF/SOL Infill Site, refer to Section 3.10, "Public Services," in this volume of the DEIR.

3.6.2 REGULATORY CONSIDERATIONS

A list of the applicable federal and state plans, policies, regulations, and laws related to hazards and hazardous materials is provided below. Complete summaries of these regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

- Resource Conservation and Recovery Act - RCRA established a framework for national programs to achieve environmentally sound management of both hazardous and non-hazardous wastes. The Hazardous Waste Management subchapter of the RCRA deals with issues including the export of hazardous waste, inspections of hazardous waste disposal facilities, and the identification and listing of hazardous waste.
- Comprehensive Environmental Response, Compensation, and Liability Act - CERCLA created a tax on the chemical and petroleum industries and provided federal authority to respond directly to releases of hazardous substances that may endanger public health or the environment. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste; and established a trust fund to provide for cleanup when no responsible party could be identified.

- Emergency Planning and Community Right to Know Act - EPCRA establishes requirements for federal, state and local governments, Indian tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals.
- Hazardous Materials Transportation Act - The transportation of hazardous materials is regulated by HMTA, which provides DOT with a broad mandate to regulate the transport of hazardous materials, with the purpose of adequately protecting the nation against risk to life and property which is inherent in the commercial transportation of hazardous materials.
- Chemical Accident Prevention Provisions - This regulation sets forth the list of regulated substances, the petition process for adding to or deleting from the list, the requirements for owners or operators of stationary sources concerning the prevention of accidental releases, and the state accidental release prevention programs.
- Clean Air Act - This act protects the general public from exposure to airborne contaminants that are known to be hazardous to human health. Under the Clean Air Act, EPA established National Emissions Standards for Hazardous Air Pollutants, which are emissions standards for air pollutants, including asbestos.
- Clean Water Act - The CWA is the primary federal legislation governing water quality whose objective is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters," which includes oceans, bays, rivers, lakes, ponds, and wetlands. This act regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.
- Safe Drinking Water Act [42 U.S.C. Section 300(f) et seq.] - This act regulates discharges of pollutants to underground aquifers.
- Toxic Substances Control Act [15 U.S.C. Section 2601 et seq.] - This act regulates the manufacturing, inventory, and disposition of industrial chemicals, including hazardous materials.
- Federal Insecticide, Fungicide, and Rodenticide Act [7 U.S.C. Section 136 and 40 CFR Parts 152 to 171] - This act regulates the manufacturing, distribution, sale, and use of pesticides.
- Uniform Fire Code - The UFC is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage for hazardous materials at fixed facilities. To ensure that these safety measures are met, the UFC employs a permit system based on hazard classification.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

- California Health and Safety Code: Hazardous Materials Release Response Plans and Inventory Law (Section 25500 et seq.) - Under this law, facilities using hazardous materials are required to prepare Hazardous Materials Business Plans.
- Hazardous Waste Control Act - Similar to RCRA, the Hazardous Waste Control Act regulates the identification, generation, transportation, storage, and disposal of materials the State of California has deemed hazardous.
- California Code of Regulations (CCR), Title 27, Division 2, Chapter 3, Subchapter 5, Closure and Post Closure Maintenance of Landfills - Provides post-closure maintenance guidelines for landfills including requirements for an emergency response plan and site security.
- California Public Resources Code Section 21151.4 - The Public Resources Code requires the lead agency to consult with any school district with jurisdiction over a school within 0.25 mile of a proposed project about potential impacts on the school if the project might reasonably be anticipated to emit or handle hazardous substances.
- Porter-Cologne Water Quality Act - Under the Porter-Cologne Act, California must adopt water quality policies, plans, and objectives to ensure that the state's beneficial uses for water are reasonably protected. Each RWQCB must prepare and update basin plans to set forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards.

- Safe Drinking Water and Toxic Enforcement Act - The Safe Drinking Water and Toxic Enforcement Act regulates the discharge of contaminants to groundwater.
- California Government Code Section 65962.5 - Requires the California Department of Toxic Substances Control DTSC to compile and maintain lists of potentially contaminated sites located throughout the State of California.
- Fire Hazard Severity Zones (Public Resources Code Sections 4201-4204 and Government Code Sections 51175–51189) - Requires identification of fire hazard severity zones within the state of California. The hazard ranges are measured quantitatively, based on: vegetation, topography, weather, crown fire potential, and ember production and movement within the area of question.

LOCAL PLANS, POLICIES, AND ORDINANCES

As a state agency, the California Department of Correction and Rehabilitation (CDCR) is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CITY OF VACAVILLE GENERAL PLAN

The following policies from the *City of Vacaville General Plan* (City of Vacaville 2007) regarding hazards are applicable to the development at CMF/SOL:

9.3-G 1: Reduce the risk of wildfires by implementing policies restricting development in Extreme and High Hazard areas.

9.3-G 2: Ensure adequate funding is available to provide fire protection services, equipment, and maintenance as new development takes place.

SOLANO COUNTY SOLID WASTE DISPOSAL

The Solano County Environmental Health Department (SCEHD) is the Local Enforcement Agency (LEA) overseeing the sanitary disposal of solid waste. This includes issuance of permits, inspection, monitoring, and enforcement activities to assure proper storage, collection, transportation, and disposal of solid waste consistent with local and State regulations. The SCEHD regulates the construction of structures near landfills.

TRAVIS AIR FORCE BASE LAND USE COMPATIBILITY PLAN

As stated above, the *Travis Air Force Base Land Use Compatibility Plan* sets forth land use compatibility policies adopted by the Solano County Airport Land Use Commission (SCALUC) that are applicable to future development in the vicinity of the base. The infill site is located in Travis Compatibility Zone D (Solano County 2002). Limitations on the height of structures are the only compatibility factors within this zone. An airspace review is required for objects taller than 200 feet within Zone D.

3.6.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State of California Environmental Quality Act (CEQA) Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact relating to hazards and hazardous materials if it would do any of the following:

- 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 likely release of hazardous materials into the environment;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- create a significant hazard to the public or the environment as a result of being included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5;
- result in a safety hazard for people residing or working in the project area for those projects located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport;
- result in a safety hazard for people residing or working in the project area for those projects within the vicinity of a private airstrip; or
- expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

The State CEQA Guidelines (Section 15064.5) define a “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Hazards to Schools: The CMF/SOL Infill Site is not located within 0.25 mile of an existing or proposed school. Therefore, potential safety impacts to schools are not discussed further.

Airport Safety Hazards: The CMF/SOL Infill Site is located within the vicinity of the Travis Air Force Base and is subject to potential compatibility zone requirements related to safety concerns. The FAA requires an airspace review for proposed structures that are more than 200 feet high. However, planned height of the potential infill housing facilities would be less than 30 feet. As such, compliance with Travis Air Force Base Compatibility Zone D would be achieved and no FAA review of the infill site would be required. All structures developed for the single, level II infill correctional facility at the CMF/SOL Infill Site would comply with the building requirements set forth in the Travis Air Force Base Land Use Compatibility Plan, and there would be no impact to the safety of people working or residing in the area. This issue is not discussed further.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.6-1: Construction-Related and Operational Hazardous Materials Impacts

Construction and operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would increase the regional transportation, use, storage, and disposal of hazardous materials and petroleum products (such as diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals). Standard accident and hazardous materials recovery training and procedures are enforced by the state and followed by private state-licensed, certified, and bonded transportation companies and contractors. Further, 40 Code of Federal Regulations (CFR) 112 requires that a spill prevention, containment, and countermeasures plan or, for smaller quantities, a spill prevention and response plan, that identifies best management practices (BMPs) for spill and release, and disposal of any spills or releases, must be established for the infill site. As required under state and federal law, plans for notification and evacuation of site workers and local residents in the event of a hazardous materials release would be in place throughout construction.

Infill site development would conform to spill prevention plans prepared under a Construction General Permit (2009-0009 DWQ), required by the State Water Resources Control Board, to avoid spills and

releases of hazardous materials and wastes. Inspections would be conducted to verify consistent implementation of general construction permit conditions and BMPs would be required to minimize the potential for spills and releases and help ensure the immediate cleanup and response thereto. BMPs include, for example, the designation of special storage areas and labeling, containment berms, coverage from rain, and concrete washout areas.

Operation of a level II infill correctional facility at the CMF/SOL Infill Site would comply with the State of California Division of Occupational Safety and Health's (Cal OSHA's) regulations for the use of hazardous materials in the workplace, as detailed in CCR Title 8. These regulations include requirements for safety training, availability of safety equipment, accidents and illness prevention programs, hazardous substance exposure warnings, and preparation of an emergency action and fire prevention plan. Cal OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparing health and safety plans to protect workers and employees at hazardous waste sites. The hazard communication program requires that Material Safety Data Sheets be available to employees and that employee information and training programs be documented.

Operation of level II infill correctional facilities would involve the routine transport of common hazardous materials. Facility maintenance activities would require the use of various common hazardous materials, including cleaners, paints, fuels, and oils and lubricants. The effects of hazardous materials handled onsite would generally be limited to the immediate areas where materials would be located because this is where exposure would most likely occur. Accordingly, the individuals most at risk would be the facilities and maintenance employees, or others in the immediate vicinity of hazardous materials. The routes through which these individuals could be exposed include inhalation, contact, ingestion, and injection. Exposure could occur as a result of an accident involving hazardous materials, either onsite or during hazardous materials or hazardous waste transport to and from the site. However, transportation of hazardous materials on area roadways is regulated by the California Highway Patrol and California Department of Transportation, whereas use of these materials is regulated by DTSC under CCR Title 22.

Hazardous materials specific to correctional uses are generally limited to firearms, ammunition, and other miscellaneous weaponry, such as tear gas and pepper spray canisters. The level II infill correctional facility would include an armory for the safe and secure storage of firearms, ammunitions, and miscellaneous weaponry. The armory would be constructed to meet the "safe storage" requirements of Dangerous Weapons Control Laws (Title 2, Part 4 of the California Penal Code) as regulated by the California Department of Justice. Therefore, because firearms and ammunitions would be used and stored according to state regulations, the level II infill correctional facilities would not result in a safety risk related to the storage of weapons on the site.

Compliance with federal and state laws setting occupational safety standards and the emergency preparedness plan and any other safety plans prepared for the level II infill correctional facilities to minimize worker safety risks from both physical and chemical hazards in the workplace would reduce impacts to a less-than-significant level. With implementation of the regulations and procedures outlined above and standard Cal OSHA procedures, impacts associated with hazards to the public or environment through the routine transport, use, or disposal of hazardous materials would be reduced to a less-than-significant level.

Because development of the single, level II infill correctional facility at the CMF/SOL Infill Site would comply with applicable laws and regulations regarding the routine transport, use, and disposal of hazardous materials during construction and operation, this impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.6-2: Site Contamination Impacts

Sites of potential environmental concern are present west of the CMF/SOL Infill Site. These include sites where leaking USTs have been removed that are monitored for petroleum and metal contamination, and a historical landfill where the potential for methane production and leachate are not well characterized. All potential construction activities would take place over 1,000 feet from these previously identified sites.

There is no evidence of hazardous materials use on the CMF/SOL Infill Site that has, or would be expected to, result in contamination of site soils or groundwater. There is, however, a potential for existing groundwater to be affected by the historic contamination associated with the CMF site (i.e., leaking USTs) that are located within 1,500 feet of the infill site. Construction activities would only require excavation to a depth of approximately 10 feet and local groundwater depths have historically been over 100 feet below ground surface (Fugro West 2008). Therefore, the potential to encounter groundwater and contamination associated with historic remediation efforts in the area during excavation and other construction is considered minimal.

Additionally, the relocation of the IWL yard, including modular structures, to an area west of SOL and southeast of the firing range that is currently used for firefighting training would not be expected to result in the release or upset of hazardous materials. The site is currently graded and paved, and no excavation or grading would be required. No other demolition would be required.

Because of historic occurrences of contamination in the vicinity of the CMF/SOL Infill Site, construction workers could be exposed to these chemicals during construction activities for the single, level II infill correctional facility. This would be a significant impact.

Mitigation Measures

Mitigation Measure 3.6-2

Prior to initiation of grading or other groundwork, CDCR will investigate if soil and/or groundwater have been contaminated from past operations. This investigation will follow environmental site assessment (ESA) and/or other appropriate testing guidelines and will include, as necessary, analysis of soil and/or groundwater samples taken at or near potential contamination sites. If the results indicate that contamination exists at levels above regulatory action standards, then the site will be remediated in accordance with recommendations made by the Regional Water Quality Control Board (RWQCB), and DTSC. The agencies involved would depend on the type and extent of contamination. Remediation activities could include but would not be limited to the excavation of contaminated soil areas and hauling of contaminated soil materials to an appropriate offsite disposal facility, mixing of onsite soils, and capping (i.e., paving or sealing) of contaminated areas.

Based on the results and recommendations of the ESA-level investigation described above, CDCR will prepare a site plan that identifies any necessary remediation activities appropriate for the contemplated correctional facilities, including excavation and removal of onsite contaminated soils, and redistribution of clean fill material on the infill site. The plan will include measures that ensure the safe transport, use, and disposal of contaminated soil removed from the site.
The development contractors will be required to comply with the plan and relevant local, state, and federal laws for dewatering discharge. The plan will outline measures for specific handling and reporting procedures for hazardous materials, and disposal of hazardous materials removed from the site at an appropriate offsite disposal facility. The contractor will notify appropriate local agencies if evidence of previously undiscovered soil or groundwater contamination (e.g., stained

soil, odorous groundwater) is encountered during excavation. Any contaminated areas will be remediated in accordance with California human health screening levels criteria and recommendations made by RWQCB and DTSC.

Significance after Mitigation

With implementation of Mitigation Measure 3.6-2, the potential for release of residual chemicals within onsite soil and groundwater would be reduce to **less than significant** because CDCR will investigate the extent to which soil and/or groundwater has been contaminated from past operations and prepare a site plan that identifies any necessary remediation activities appropriate for development at the infill site, including excavation and removal of onsite contaminated soils and redistribution of clean fill material on the infill site.

Impact 3.6-3: Wildland Fire Impacts

The CMF/SOL Infill Site is adjacent to a moderate to high fire hazard area. However, existing CDCR fire prevention operations at CMF/SOL have capacity to extend service to the infill facility. In addition, the buildings that would be constructed would be designed to meet all fire code requirements that would address ignition resistive construction, interior fire sprinklers, and/or sufficient water supply (volume) and pressure. The facility would include other features, such as a vegetation-free clearing associated with the fenced building perimeter, which would minimize the risk of damage in the event of a wildland fire.

*Although the CMF/SOL Infill Site is located in an area of high fire hazards, CDCR has appropriate fire protection services and measures in place to prevent the loss, injury, or death of people or damage to structures at a single, level II infill correctional facility as a result of a wildfire. This would be a **less-than-significant** impact.*

Mitigation Measure

No mitigation measures are required.

3.7 HYDROLOGY AND WATER QUALITY

This section discusses the existing hydrological setting at the California Medical Facility/California State Prison, Solano (CMF/SOL), including runoff, storm drainage, and flood control. This section describes regulations and policies affecting local hydrology and water quality, identifies impacts that may result from development of level II infill correctional facilities at CMF/SOL, and recommends mitigation measures to reduce potential impacts, where appropriate. Impacts associated with water supply are discussed in Section 3.12, "Utilities."

3.7.1 ENVIRONMENTAL SETTING

REGIONAL SETTING

The CMF/SOL Infill Site is located in the city of Vacaville, within Solano County, at the western edge of California's Central Valley and on the hydrologic boundary of the Sacramento-San Joaquin Delta and Suisun Bay. The infill site is located on existing California Department of Corrections and Rehabilitation (CDCR) property, adjacent to the southern portion of the Vaca Mountains, and comprises the immediate western boundary of the existing CMF and SOL facilities. The land to the north and south is heavily urbanized with numerous subdivisions. Some open space to the south separates the existing CDCR facilities and the infill site from Travis Air Force Base.

The infill site is located within a Mediterranean climate characterized by dry, hot summers and cool, wet winters. The 1980–2012 water year average annual precipitation in the area is 24.45 inches (PRISM 2013). More than 95 percent of the precipitation falls from October to April.

AREA HYDROLOGY

SURFACE WATER

The infill site is within the U.S. Geological Survey's HUC-12 Union Creek-Frontal Suisun Bay Estuaries hydrologic basin boundary, which has a watershed area of 43 square miles where it empties into Hill Slough in Suisun Bay, over nine miles downstream of the site (Natural Resources Conservation Service 2012). Union Creek is an intermittent drainage where it flows by the existing prison facilities, and its natural drainage has been altered by the prison, which is discussed below. Union Creek is intersected by the Putah South Canal about one mile downstream of the CMF/SOL Infill Site. The canal delivers water from the Baker Slough basin to the east and north, which drains runoff from the numerous subdivisions in the basin, across the Union Creek basin and into the Laurel Creek-Frontal Suisun Bay Estuaries hydrologic basin. Union Creek has been highly altered from its natural form downstream of the infill site by multiple actions, including diversions, extensive channelization, and sections where it is piped underground as it flows through urban areas and Travis Air Force Base.

Immediately north of the Union Creek basin is the Alamo Creek basin. Alamo Creek flows through Vacaville, agricultural fields, and eventually empties into Ulatis Creek, which empties into Cache Slough in the Sacramento-San Joaquin Delta.

FLOODPLAINS

A small portion of the southeast corner of the existing SOL facility adjacent to Union Creek and west of Peabody Road is mapped within Federal Emergency Management Agency's (FEMA's) flood zone A, which are areas with a 1 percent annual chance of flooding (FEMA 2013). No depths or base flood elevations are shown within these zones. The CMF/SOL Infill Site is not located in flood zone A, but is

mapped within “Shaded X,” which is a moderate risk area. These are areas usually between the limits of the 100-year and 500-year flood boundaries. They are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile (FEMA 2013).

The existing CDCR property, which includes CMF/SOL and the infill site, is not within the preliminary100-year or 200-year floodplain according to mapping performed by the California Department of Water Resources (DWR) in conjunction with the U.S. Army Corps of Engineers’ Sacramento and San Joaquin River Basins Comprehensive Study (California Department of Water Resources 2013).

ONSITE DRAINAGE

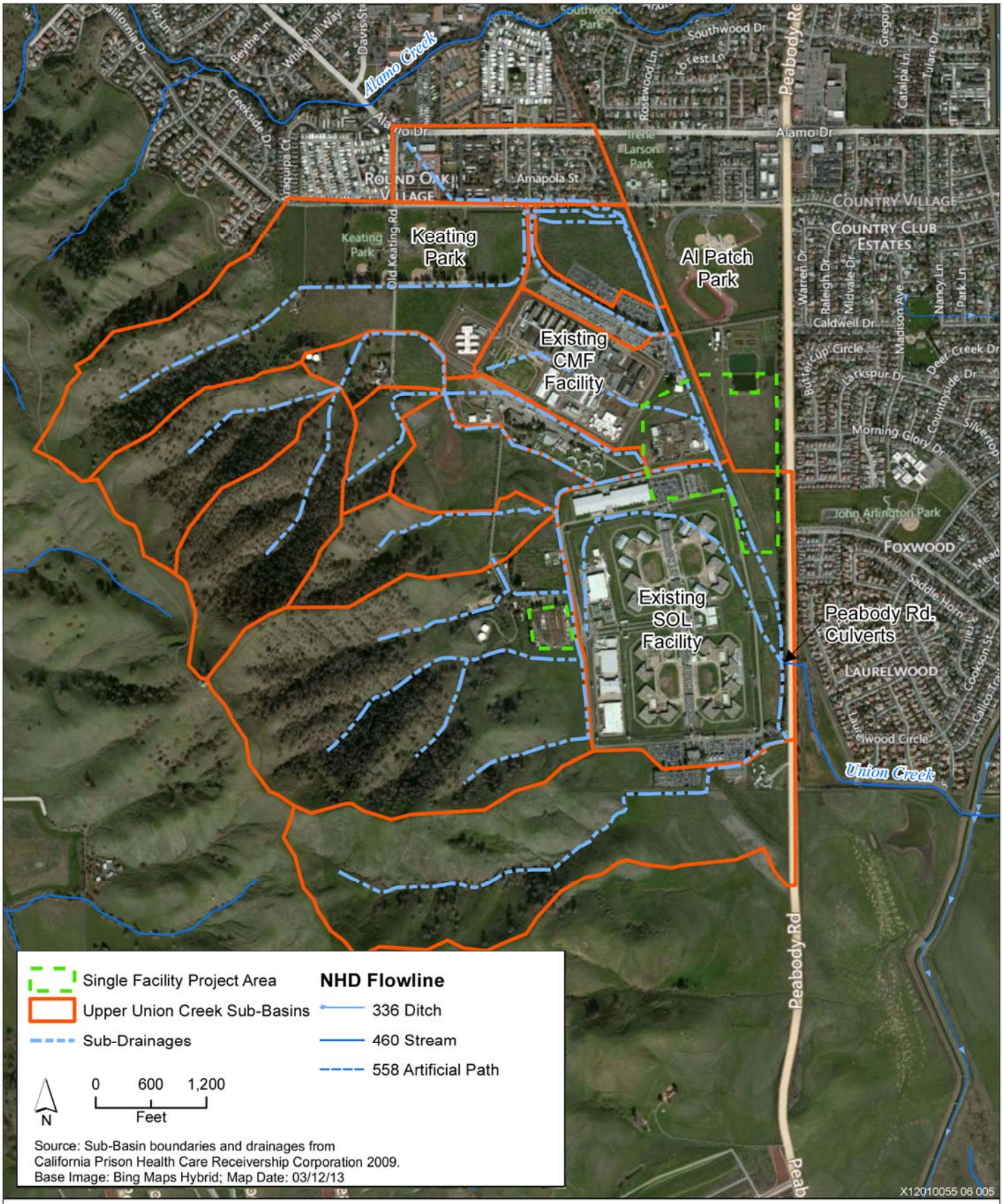
The footprint of the contemplated infill facility is approximately 35 acres, of which 6.3 acres of land is impervious pavement, buildings, or compacted ground. The other 28.7 acres are generally open and undeveloped land. Elevations at the infill site range from 127 feet to 138 feet over gently sloping terrain tilted to the southeast. No perennial water features are located near the infill site. Water flowing off the hills to the west is routed through natural channels, underground pipes, and ditches into Union Creek, as shown in Exhibit 3.7-1.

Overall, the drainage from the northern portion of the Union Creek watershed, including runoff from the CMF/SOL facilities, is routed into two culverts (42 inches and 48 inches in diameter) that cross under Peabody Road and into Union Creek. A shallow detention basin is located upstream of the culverts and was constructed at the same time as SOL to mitigate for increased runoff. An underground drain pipe currently runs through CMF and the infill site and into a drainage ditch that flows southeast toward the Peabody Road culverts. An earthen drainage ditch to the south of the pipe runs between CMF/SOL, cutting through the infill site, and then southeast toward the Peabody Road culverts. Several of the earthen ditches that drain the prison facilities are crossed by roads that may restrict high flow. Approximately 28 acres of the infill site is on land that currently drains to the Peabody Road culverts. The other 7 acres is mapped as being outside the sub-watershed within the prison facilities and would drain northeast toward the playing fields at the intersection of Peabody Road and California Drive.

Based on data obtained from the National Cooperative Soil Survey (2013), the majority of the infill site is Brentwood clay loam, 0-2 percent slopes, which have moderately low runoff potential when thoroughly wet and water transmission through the soil is unimpeded. Approximately one-third of the infill site is mapped as Rincon clay loam, 0-2 percent slope, which are soils with moderately high runoff potential when thoroughly wet and water transmission through the soils is somewhat restricted. A small portion of the site is mapped as Capay silty clay loam, which are soils exhibiting high runoff potential when thoroughly wet with water movement through the soil restricted or very restricted.

SURFACE WATER QUALITY

Section 303(d) of the federal Clean Water Act (CWA) requires states to identify water bodies that do not meet water quality standards and are not supporting their beneficial uses. The State Water Resources Control Board (SWRCB) published a Statewide 2008–2010 303(d) List of impaired water bodies (SWRCB 2010) that was subsequently amended with additional listings and approved by the U.S. Environmental Protection Agency (U.S. Environmental Protection Agency 2011). Union Creek is not listed on the final U.S. Environmental Approved list of impaired water bodies. However, its receiving waterbody, Suisun Marsh Wetlands and Suisun Bay, appear on the list for multiple pollutants.



Source: ICF 2013

Exhibit 3.7-1 CMF/SOL Infill Site Watersheds and Drainages

The Union Creek watershed is within the boundary of, and regulated by, the San Francisco Bay Regional Water Quality Control Board (RWQCB). The San Francisco Bay RWQCB considers beneficial uses as being critical to water quality management in California. California state law defines beneficial uses of California's waters that may be protected against water quality degradation to include (and not be limited to) "domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (California Water Code Section 13050(f)). Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning. The beneficial uses of any specifically identified water body generally apply to its tributary streams to the extent that they could also support similar beneficial uses (San Francisco Bay RWQCB 2011). The Water Quality Control Plan (Basin Plan) for the San Francisco Bay defines the beneficial uses that the San Francisco Bay RWQCB has specifically designated for water bodies in the region. No specific beneficial uses are listed for Union Creek. However, beneficial uses are listed for Hill Slough, which Union Creek empties into, and are listed in Table 3.7-1. The San Francisco Bay RWQCB does not list any specific water quality objectives for Union Creek of Hill Slough. Likewise, the watersheds in the Vacaville and Dixon area are not cited for impairment in the Wetlands Management Initiatives (Cities of Vacaville and Dixon 2008).

Table 3.7-1 Beneficial Uses of Surface Water in Hill Slough of the Suisun Basin

	Suisun Basin – Hill Slough
Agricultural Supply	
Municipal & Domestic Supply	
Freshwater Replenishment	
Groundwater Recharge	
Industrial Service Supply	
Industrial Process Supply	
Commercial & Sportfishing	✓
Shellfish Harvesting	
Cold Freshwater Habitat	
Estuarine Habitat	✓
Marine Habitat	
Fish Migration	
Preservation of Rare & Endangered Species	✓
Fish Spawning	
Warm Freshwater Habitat	
Wildlife Habitat	✓
REC-1 Contact	✓
REC-2 Other Noncontact	✓
Navigation	

Source: San Francisco Bay Regional Water Quality Control Board 2011
REC-1 = Indicates recreational activities involving body contact with water, where ingestion of the water is reasonably possible. These uses include, but are not limited to, swimming, wading, water skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.
REC-2 = Indicates recreational activities involving proximity to water, but generally with no body contact with water nor any likelihood of ingestion of water. These include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment associated with the above activities.

GROUNDWATER

Regional Groundwater

The CMF/SOL Infill Site is located at the northern edge of DWR's San Francisco Bay Hydrologic Region–Suisun-Fairfield Valley Subbasin (number 2-3) (DWR 2004). As of February 2013, DWR had

not yet completed the basin description. Approximately 400 feet to the north of the infill site is the DWR Sacramento Valley Groundwater Basin – Solano Subbasin (number 5.21-66).

The 664 square-mile subbasin is bordered on the north by Putah Creek, to the east by the Sacramento River, to the southeast by the Mokelumne River, and to the south by the San Joaquin River. The western boundary of the subbasin is the drainage divide between land draining into the San Francisco Bay and land draining into the Sacramento-San Joaquin River Delta (DWR 2004). The Solano Subbasin is the largest groundwater basin in the county. Two basic levels exist within the groundwater basin. The Putah Fan is a shallower aquifer providing agricultural water and local domestic supplies. The Putah Fan starts near the town of Winters and extends south and east through Vacaville and Dixon. The Tehama Formation is underneath the Putah Fan in some areas and is underlain by the English Hills area north and west of Vacaville. The City of Vacaville's (City's) wells draw from the Tehama Formation for groundwater supply (DWR 2004).

From 1912 to 1932, below-average precipitation resulted in low groundwater levels throughout the basin. Due to above-average precipitation from 1932 and 1941 groundwater levels recovered slightly in spite of increased groundwater development. After 1941, groundwater levels continued to decline due to increasing agricultural and urban development, reaching their lowest historical levels in the late 1950s. A large pumping depression between Davis and Dixon was one of the more notable groundwater level depressions in the subbasin. Surface water deliveries from the Solano Project beginning in 1959 caused groundwater levels to rise slightly or slow their descent. Since this time, groundwater level trends within the Solano subbasin have been affected by drought periods in the mid-1970s and late-1980s but have recovered quickly in the following "wet" years (DWR 2004). Groundwater within the Solano subbasin is considered to be of generally good quality, and useable for both domestic and agricultural purposes (DWR 2004). Total dissolved solids range from 250 parts per million (ppm) to 500 ppm in the northwest and eastern portion of the basin, and are found at levels higher than the 500-ppm secondary maximum contaminant level (MCL) in the central and southern areas. Drinking water standards include primary and secondary drinking water standards. Drinking water contaminant levels are reported as maximum contaminant levels (MCLs), which are legally enforceable standards based on health risk or non-health concerns (such as taste or odor). In general, most of the water within the subbasin is classified as hard to very hard (high mineral content).

Other contaminants have the potential to affect the quality of groundwater for domestic or agricultural use in the area of the CMF/SOL Infill Site. Boron concentrations are less than 0.75 ppm, except in the southern and southeastern portion of the basin, where concentrations average between 0.75 ppm and 2.0 ppm (more than 1.0 ppm would affect sensitive tree crops). Arsenic concentrations are typically between 0.02 ppm and 0.05 ppm, with the highest concentrations found along the southeastern margin of the basin. The current primary MCL for arsenic is 0.01 ppm. Also, manganese is found at concentrations above the secondary MCL of 0.05 ppm along the Sacramento River, where if flows along the eastern portion of the subbasin (California Department of Water Resources 2004).

Local Groundwater

Public agencies that overlie the Solano Subbasin have developed groundwater management plans. The Solano County Water Agency (SCWA) prepares biannual reports on groundwater levels for the groundwater basin. Groundwater level data come from DWR and local public agencies that utilize the groundwater basin. These reports show no trend of groundwater overdraft with current levels of groundwater use (SCWA 2005).

Groundwater used domestically by the City of Vacaville comes from 13 wells, 12 of which withdraw water from the deep aquifer in the basal zone of the Tehama Formation. Although most city wells are located in the Elmira wellfield near Elmira Road, additional wells are situated further north near Interstate 80. The City is the primary groundwater user in the Vacaville area. Currently, approximately

6,650 acre-feet per year (AFY) is withdrawn. The estimated safe yield is 8,000 AFY, which can be increased to 10,000 AFY in dry years (SCWA and Solano Agencies 2004).

Potable water is delivered to CMF/SOL by the Solano Irrigation District (SID) and the City. SID delivers untreated surface water from Lake Berryessa. Vacaville receives water from several sources, including surface water from the Lake Berryessa reservoir and groundwater from local City wells. The City water system consists of surface water treatment facilities, wells, pumping facilities, and distribution pipelines.

Non-potable irrigation water is supplied to the infill site from three onsite wells owned and operated by CDCR. Two of the wells are 65 feet below ground surface (bgs) and one is 70 feet bgs. Water from these wells is used to irrigate landscaping at the former warden's residence and oleander bushes lining the northern boundary of the CMF, and are not used to supplement the potable water supply at CMF or SOL. None of the onsite wells are suitable for potable water supply because they are too shallow and were not constructed in accordance with the State of California potable water well standards.

3.7.1 REGULATORY BACKGROUND

A list of the applicable federal and state plans, policies, regulations, and laws is provided below. Complete summaries of the federal and state regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

- Section 402 - The 1972 amendments to the CWA established the NPDES permit program to control discharges of pollutants from point sources.
- Section 404 - Section 404 of the CWA requires a project applicant to obtain a permit before engaging in any activity that involves any discharge of dredged or fill material into waters of the U.S., including wetlands. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.
- National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 - These acts reduce the need for large publicly funded flood control structures and disaster relief by providing flood insurance and restricting development on floodplains, respectively.

STATE PLANS, POLICIES, REGULATIONS AND LAWS

- Porter-Cologne Water Quality Control Act of 1969 - Under the Porter-Cologne Act, California must adopt water quality policies, plans, and objectives to ensure that the state's beneficial uses for water are reasonably protected. Each RWQCB must prepare and update basin plans to set forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards.
- Recycled Water Policy (State Board Resolution No. 2009-0011) - The Policy is intended to encourage the beneficial use of recycled water instead of sole disposal. The purpose of this Policy is to provide direction to the RWQCBs, proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.
- California State Nondegradation Policy - The nondegradation policy states that the disposal of wastes into State waters shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of California.

LOCAL PLANS, POLICIES, AND ORDINANCES

The CMF/SOL Infill Site is located on land that is owned or controlled by the State. As a state agency, CDCR is not subject to local land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

SCWA FLOOD CONTROL MASTER PLAN

SCWA has adopted a master plan governing flood control and flood control improvements within its territory. One of the major recommendations of SCWA's Flood Control Master Plan is to develop watershed studies to address flooding problems on a watershed basis. Several watershed studies have been completed and many projects are being considered for implementation. SCWA also funds small projects that address localized flood control and drainage projects that meet specified criteria. As the SCWA Flood Control Master Plan is a program administered at the county level, state correctional facilities are not bound to these requirements.

CITY OF VACAVILLE AND CITY OF DIXON STORM WATER MANAGEMENT PLAN

To meet stormwater management permitting requirements, the City of Vacaville and the City of Dixon jointly prepared a stormwater management plan (SWMP). The Vacaville-Dixon SWMP is consistent with NPDES Phase II permit procedures and is designed to enable the cities to meet CWA stormwater requirements. Regulations and requirements for construction onsite stormwater runoff control, post construction stormwater management, and pollution prevention for municipal operations are included in the SWMP (Cities of Vacaville and Dixon 2008).

The Vacaville-Dixon SWMP outlines a comprehensive program, consisting of six core program elements that requires numerous BMPs with measurable goals to reduce or eliminate stormwater pollution to the maximum extent practicable. The SWMP has six elements:

- Public Education and Outreach,
- Public Participation and Involvement,
- Illicit Discharge Detection and Elimination,
- Construction Site Stormwater runoff Control,
- Post-Construction Storm Water Management in New and Redevelopment Areas, and
- Pollution Prevention and Good Housekeeping for (Municipal) County Operations.

SOLANO COUNTY GRADING AND EROSION CONTROL ORDINANCE

The purpose of the Solano County Grading and Erosion Control Ordinance (Chapter 31 of the County Code) is to provide the means for controlling soil erosion, sedimentation, increased rates of water runoff, and related environmental damage by establishing minimum standards and regulations for the construction and maintenance of fills, excavations, cuts and clearing of vegetation, revegetation of cleared areas, drainage control, and protection of exposed soil surfaces to safeguard downstream waterways and wetlands and to promote the safety, public health, convenience, and general welfare of the community.

3.7.2 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State of California Environmental Quality Act (CEQA) Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact relating to hydrology and water quality if it would do any of the following:

- violate any water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- 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- or offsite;
- 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- or offsite;
- create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or flood insurance rate map (FIRM) or other flood hazard delineation map;
- place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of a levee or dam; or
- cause inundation by seiche, tsunami, or mudflow.

The State CEQA Guidelines (Section 15064.5) define a “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Groundwater supply: Potable water would be supplied through the existing infrastructure for CMF/SOL to the infill site by arrangements with the City of Vacaville and SID. The City receives water from several sources, including groundwater from local City wells. Implementation of the infill project would not substantially deplete City groundwater supplies because adequate aquifer capacity exists in the Tehama Formation to supply both existing and future City water demands and the water demands of the infill project. Currently, the City withdraws approximately 6,650 AFY. As previously mentioned, the estimated safe aquifer yield is 8,000 AFY, and can be increased to 10,000 AFY in dry years (refer to Section 3.12, “Utilities,” of this volume for additional discussion). Nonpotable irrigation water is supplied to CMF/SOL from three onsite wells owned and operated by CDCR. Water from these shallow wells is currently used to irrigate landscaping, and the increased demand for irrigation water due to the infill site is not appreciable enough to significantly alter local groundwater supplies. In summary, the amount of groundwater demand associated with development of the CMF/SOL Infill Site for potable water uses could be met by City groundwater supplies, and non-potable groundwater demand could be met by existing onsite wells.

Development of the infill site would result in additional impervious surfaces that would alter groundwater recharge. Although construction of level II infill correctional facilities would result in additional impervious surfaces, it is not anticipated to significantly affect groundwater supply because sufficient

stormwater drainage and detention basins would be constructed as part of the project to maintain stormwater runoff at or below existing levels. Although groundwater recharge would occur over a smaller surface area compared to the baseline condition, infrastructure would be designed to allow infiltration to occur over a longer duration and thus not result in significant change to overall groundwater supplies. Therefore, development of level II infill correctional facilities at the CMF/SOL Infill Site would have no impact on groundwater supply or quality, and this issue is not discussed further.

Flood hazard: The infill site is mapped within "Shaded X," which is a moderate risk area. These are areas usually between the limits of the 100-year and 500-year flood boundaries. They are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than one square mile (FEMA 2013). Because implementation of the infill site would not place housing in a 100-year flood hazard area or within the 200-year flood zone, or place structures in a 100-year flood hazard area that would redirect flood flows. Thus, these issues are not discussed further.

Potential impacts related to seiches, tsunamis, or mudflows, are discussed in Section 3.5, "Geology, Soils, Seismicity, Minerals, and Paleontological Resources."

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.7-1: Short-Term, Construction-Related Water Quality Degradation

Construction of a single, level II infill correctional facility and parking lots at the CMF/SOL Infill Site, as well as the demolition and relocation of some existing facilities, would include extensive ground-disturbing activities over approximately 52 acres and would include earth removal, grading, trenching, and restoration. Construction is proposed to begin in May 2014 and would be scheduled for completion by June 2016. Depending on scheduling, construction could potentially occur during two rainy seasons (October 1 through April 30). Because of the increase in exposed surfaces and the earth-moving activities, the potential for erosion and sedimentation runoff is higher during the rainy season.

Activities related to the construction of a level II infill correctional facility at CMF/SOL and the relocation of existing structures would create the potential for soil erosion and possibly increase sedimentation of stormwater facilities, both onsite and downstream of the infill site. Construction activities also increase the potential for accidental release of pollutants that could affect not only surface waters, but the beneficial uses associated with them. Such pollutants include oil and gas from machinery, chemicals associated with construction, and waste material. Many construction-related pollutants have the potential to degrade water quality by increasing constituent levels in surface waters and exceeding water quality standards. Onsite construction activities could violate these standards if mitigation measures are not implemented and can cause harm to surrounding habitats and their associated plant and animal life.

The potential for erosion hazards within the infill site is moderate given the steepness of the existing ground terrain. Rainfall and associated stormwater runoff could result in periods of sheet erosion within areas of exposed or stockpiled soils. If uncontrolled, these soil materials could cause sedimentation and blockage of drainage channels. Further, the compaction of soils by heavy equipment may reduce the infiltration capacity of soils and increase the potential for runoff and erosion. Stormwater runoff could also wash construction materials into receiving waterbodies and negatively impact water quality. Non-stormwater discharges could result from activities such as construction dewatering procedures, or discharge or accidental spills of hazardous substances such as fuels, oils, concrete, paints, solvents, cleaners, or other construction materials.

The Level II Infill Correctional Facilities Project would be implemented in compliance with applicable state laws. As part of the design and implementation of a level II infill correctional facility at CMF/SOL, CDCR or its contractor would retain a California registered civil engineer to prepare a Storm Water

Pollution Prevention Plan (SWPPP) that would include site-specific BMPs and any other necessary site-specific Waste Discharge Requirements (WDRs) or waivers under the Porter-Cologne Act.

The following list identifies standard BMPs that will be incorporated into the SWPPP for development of a level II infill correctional facility at RJD. These BMPs are based on practices outlined in the California Stormwater Quality Association's (CASQA) *Best Management Practice Handbook Portal* (California Stormwater Quality Association 2010):

- *Desilting basin and sediment trap:* Construction of a temporary basin designed to remove sediment from runoff will prevent constituents from reaching existing on- and offsite drainages by allowing sediment to settle before discharging water to natural drainages.
- *Erosion control blankets/mats, geotextiles, plastic covers:* These erosion control methods will be used on flat or sloped surfaces to keep soil in place and can be used to cover disturbed soil to prevent runoff.
- *Gravel/sandbag barrier:* A temporary sediment barrier will be constructed using gravel or sand filled bags to prevent sediment from disturbed areas from reaching existing drainages by reducing the volume of sheet flows.
- *Hydraulic, straw, and wood mulch:* The use of these various mulches will temporarily stabilize soil on surfaces with little or no slope.
- *Preservation of existing vegetation:* Preserving the existing vegetation to the maximum extent possible will provide protection of exposed surfaces from erosion and can keep sediment in place. Sensitive areas defined in Section 3.2, "Biological Resources," of this volume will be clearly indicated and protected during and after construction.

The following list identifies additional BMPs that may be incorporated into the SWPPP for development of a level II infill correctional facility at RJD. These BMPs are also based on practices outlined in the California Stormwater Quality Association's (CASQA) *Best Management Practice Handbook Portal* (California Stormwater Quality Association 2010):

- *Runoff control BMPs:* These measures include grading surfaces to control sheet flow, barriers or berms that force sheet flows around protected areas, and stormwater conveyances such as channels, drains, and swales. These practices and features collect runoff and redirect it to prevent contamination to surface waters. Calculations would be made for anticipated runoff, and the stormwater conveyances will be constructed, designed, and located to accommodate these flows.
- *Scheduling and planning:* Appropriate scheduling and planning provide ways to minimize disturbed areas, which reduces the amount of activity in the area that requires protection and minimizes the duration of exposure of disturbed soils to erosion.
- *Stabilized construction entrance/exit:* A graveled area or pad located at points where vehicles enter and leave a construction site can be built. This BMP provides a buffer area where vehicles can drop their mud and sediment to avoid transporting it onto public roads, to control erosion from surface runoff and to help control dust.
- *Storm drain inlet protection:* Protection consists of devices and procedures that detain or filter sediment from runoff, thereby preventing them from reaching drainage systems that would be used post-construction, as well as surface waters.

Additional concerns include potential pollutant exposure related to improper material storage and handling, as well as non-stormwater discharges. The following BMPs address these potential problems, which would be included in CDCR's SWPPP.

- *Concrete waste management:* Excess or leftover concrete would be properly disposed of in designated concrete waste facilities.
- *Material delivery and storage practices:* All materials, especially toxic or hazardous materials, would be covered to prevent exposure to stormwater and runoff. Toxic or hazardous materials would also

be stored and transferred on impervious surfaces that would prevent immediate exposure to soils. Vehicles and equipment used for material transport and storage, as well as any other vehicles, would be parked in clearly designated areas.

- *Street sweeping and maintenance:* Regular cleaning would occur at the entrances and exits to and from the infill site to avoid contamination of offsite areas.
- *Solid waste management:* An appropriate amount of conveniently located trash and waste containers would be placed around the infill site for proper disposal of solid wastes. All receptacles would have lids or covers that will not blow off in windy conditions.
- *Spill prevention and control:* Any spills or releases of materials would be cleaned up immediately and comprehensively. Appropriate and easily accessible cleanup equipment, including spill kits containing absorbents, would be located in several areas around the site. Used cleanup materials would be disposed of properly and in accordance with applicable regulations. Hazardous or toxic material spills must be treated as hazardous waste and be treated and disposed of accordingly.
- *Vehicle and equipment cleaning and refueling:* Vehicles and equipment that regularly enter and leave the infill site would be cleaned. Additionally, refueling of vehicles and equipment would occur offsite whenever possible. An onsite, designated fueling area with appropriate containment and cleanup materials would be used when offsite refueling is impractical.
- *Vehicle and equipment maintenance:* Offsite maintenance facilities would be used whenever possible. Whenever onsite maintenance is necessary, ensure designated maintenance areas are protected from stormwater runoff and are provided with proper spill cleanup and containment materials.

CDCR's SWPPP would also identify the following:

- Pollutants likely to be used during construction activities or that could be present in stormwater and nonstormwater discharges, as well as any other type of materials included in equipment operation.
- Personnel training requirements and procedures that would be used to ensure that all workers are aware of the applicable regulations regarding the permit requirements. Personnel would also be made aware of the BMPs designated and specified in the SWPPP.
- Site inspection and maintenance responsibilities.
- Spill prevention measures, including those mentioned above.
- A monitoring program to be implemented and carried out by CDCR's contractor, which would include site inspections during dry and wet weather conditions to ensure personnel are following SWPPP conditions. A sampling analysis plan would also be included, as per the any General Construction Permit.
- Appropriate supervisory personnel who will be responsible for carrying out the implementation of the SWPPP.

Because CDCR would implement adequate measures to control onsite stormwater and protect water quality as part of the planning and design phase of implementation, no adverse construction-related stormwater impacts would occur.

While construction activities during development of a single, level II infill correctional facility at the CMF/SOL Infill Site would involve grading and soil movement, could generate sediment, erosion, and other nonpoint source pollutants in onsite stormwater, which could drain to offsite areas, thereby degrading local water quality. CDCR would be obligated as a matter of State requirements to implement adequate measures to control onsite stormwater (i.e., SWPPP and BMPs) and protect water quality; this would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

Impact 3.7-2: Stormwater System Impacts

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in an increase in impervious surfaces in the local area. The contemplated single facility would occupy approximately 35 acres and convert most of this to impervious surface. As noted above, approximately 6.3 acres is currently developed with impervious surfaces. An underground drain pipe currently runs through the CMF and the land where the potential level II infill correctional facility would be constructed and into a drainage ditch that flows southeast toward an existing Peabody Basin detention basin located just upstream of the Peabody Road culverts. An earthen drainage ditch to the south of the pipe runs between CMF and SOL, cutting through the land where the facility would be constructed, and then southeast toward the Peabody Road culverts. Approximately 28 acres of the infill site includes land that currently drains to the Peabody Road culverts. The other 7 acres is mapped as being outside the sub-watershed within the prison facilities and would drain northeast toward the playing fields at the Peabody Road/California Drive intersection.

The potential increase in impervious land would not only increase runoff into the existing drainage network, but it would also require modification of the existing drainage infrastructure that drains to the Peabody Basin detention basin and northeast toward California Drive. The existing earthen drainage ditches would be susceptible to erosion from increased flow and shear stress, and the capacity of culverts and underground pipes could be exceeded.

Because final drainage design specifications have not been completed, including stormwater flow paths and magnitudes based on a finalized site plan, development of a single, level II infill correctional facility at the CMF/SOL Infill Site has the potential to cause an increase in surface runoff that would exceed the capacity of the stormwater drainage system, resulting in on- and offsite flooding and erosion. This would be considered a significant impact.

Mitigation Measure

Mitigation Measure 3.7-2

Before any construction-related ground disturbance, final drainage plans will be completed to demonstrate that all runoff will be appropriately conveyed through the infill site and not leave the site at rates exceeding pre-development runoff conditions. The drainage design for the infill site would limit the 10-year and 100-year peak runoff from the infill site to no more than pre-development conditions. The plan will include, but not be limited to, the following items:

- an accurate calculation of pre-development and post-development runoff scenarios, obtained using appropriate engineering methods, that accurately evaluates potential changes to runoff, including increased surface runoff;
- a description of the proposed maintenance program for the onsite drainage system; site-specific standards for installing drainage systems; and
- a final drainage plan, which requires that 100-year flood flows be appropriately channeled and contained, such that the risk to people or damage to structures within or down gradient of the infill site do not occur.

New storm drainage facilities will be constructed, and existing facilities will be reconfigured in order to accommodate increased surface flows associated with the increase in impervious surfaces. Final infill site design will incorporate features that will minimize flood risk by controlling the anticipated increase in flow and stormwater runoff and reduce offsite runoff to rates not exceeding pre-development conditions.

The onsite detention basins will be designed to contain and control the potential peak flow discharge rates to pre-development levels and to improve water quality. Discharge will be accomplished through a water quality outlet that has been designed to minimize concentrated flows, turbulence, and scour. The water quality outlet will be designed to empty the detention basins within 24–72 hours, with 40 hours as the preferred drawdown time. The 24-hour limit is specified to provide adequate settling time; the 72-hour limit is specified to mitigate vector control concerns.

The final drainage plan will include, but not be limited to, the following items:

- an accurate calculation of pre-development and post-development runoff scenarios, obtained using appropriate engineering methods, that accurately evaluates potential changes to runoff, including increased surface runoff;
- documentation of how the system meets necessary requirements, such as that 100-year flood flows be appropriately channeled and contained, such that the risk to people or damage to structures within or down gradient of the infill site do not occur;
- a description of any treatments necessary to protect earthen channels from erosion, and modifications that may be needed to existing underground pipe and culvert capacities; and
- a description of the proposed maintenance program for the onsite drainage system; site-specific standards for installing drainage systems.

The facilities would adhere to the requirements of the existing NPDES permit, including the associated monitoring and reporting program. The final drainage plan may demonstrate that the existing ponds that serve as stormwater detention at CMF/SOL could be enhanced to accommodate the increased runoff. However, expanded or entirely new detention basins may need to be constructed. The final drainage plan will also specify any treatments necessary to protect earthen channels from erosion, and modifications that may be needed to existing underground pipe and culvert capacities.

Other low-impact development (LID) methods will be used to maintain pre-development runoff levels, including planning and design considerations for buildings, landscaping, parking lots, and roads that maximize runoff infiltration into the ground and reduce the peaks of stormwater hydrographs. All RWQCB requirements will be followed in the development of the final drainage plan.

Significance after Mitigation

Implementation of the mitigation measure for Impact 3.7-2 would reduce the potential impact associated with increased surface runoff that could exceed the capacity of the stormwater drainage system to a **less-than-significant** level by providing adequate onsite storm drainage facilities to accommodate the potential stormwater demands and runoff from the infill site and to ensure that stormwater discharges do not exceeding pre-development conditions.

Impact 3.7-3: Long-Term Water Quality Degradation

Construction and operation of a level II infill correctional facility at CMF/SOL would increase the footprint of development on the existing CDCR property, adding impervious surfaces, including roadways and parking areas, which could potentially increase the level of urban contaminants discharged into the stormwater drainage system.

Approximately 35 acres of the infill site would be developed (of which about 6.3 acres is already developed) with permanent uses associated with the new facility. The development of a level II infill correctional facility has the potential to increase the pollutant load of stormwater discharges as a result of the contemplated uses. Anticipated pollutants associated with the site include trash, debris, heavy metals, and hydrocarbons from parking areas. In addition, potential pollutants associated with the development include sediment from pervious areas that will not be landscaped, pesticides from potential pest control activities, nutrients, fertilizers, oxygen-demanding substances from landscaped areas, and organic compounds from uncovered parking areas and roadway/driveway systems.

In accordance with federal and state stormwater management regulations, new construction and significant redevelopment must maintain pre-development hydrology and incorporate proper pollutant source controls, minimize pollutant exposure outdoors, and treat stormwater runoff through proper BMPs when source control or exposure protection are insufficient for reducing runoff pollutant loads. In accordance with San Francisco Bay RWQCB compliance guidelines, the infill site would be required to incorporate BMPs and low impact development stormwater management principles. These would include detention systems and other suitable stormwater pollutant control BMPs to reduce the discharge of pollutants into stormwater to the maximum extent practicable.

While the potential for development of a single, level II infill correctional facility at the CMF/SOL Infill site to cause or contribute to long-term discharges of urban contaminants into the stormwater drainage system could increase compared to existing condition, CDCR would be required to comply with federal and state stormwater management regulations, which would require the incorporation of appropriate BMPs into the design of the development to prevent long-term water quality degradation. This would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

3.8 LAND USE, AGRICULTURE, AND FORESTRY RESOURCES

This section describes the existing onsite and surrounding land uses and evaluates the potential effect of development of a single, level II infill correctional facility at California Medical Facility/California State Prison, Solano (CMF/SOL) on existing land uses and agricultural and forestry resources. As a state agency, the California Department of Corrections and Rehabilitation (CDCR) must consider relevant federal or state land use policies. However, CDCR is generally not subject to local plans, policies, and ordinances. Nevertheless, CDCR has provided a discussion of relevant plans and policies because conflicts with these policies could result in environmental impacts and sometimes the local standards can provide guidance in the development of mitigation measures. The discussion does not imply that CDCR would be subject to local plans or ordinances, either directly or through the California Environmental Quality Act (CEQA) environmental review process.

3.8.1 ENVIRONMENTAL SETTING

ONSITE LAND USES

The CMF/SOL Infill Site, which is approximately 35 acres in size, is located on a portion of 474 acres that are state-owned property in the City of Vacaville in western Solano County, less than 1 mile from the southern city limit. The 474-acre State-owned property is also the site of the existing CMF and SOL facilities (see Exhibit 2-2 in Chapter 2, “Project Description,” of this volume). The state property is situated between Peabody Road to the east, California Drive to the north and the foothills of the Vaca Mountains to the west. The infill site is located in the eastern portion of the existing state property, and is currently a mix of partially vacant land and supporting structures for the existing CMF and SOL facilities. Existing improvements located on the site include the inmate ward labor (IWL) yard and parking lots. As noted previously, a portion of the site (approximately 6.8 acres) is undeveloped and contains nonnative grasslands, and open space. A row of mature, nonnative trees is located adjacent to the east along Peabody Road, which borders the CDCR property on the east.

SURROUNDING LAND USES

Existing land uses immediately surrounding the CMF/SOL Infill Site are described in Table 3.8-1.

Table 3.8-1 Existing Land Uses Surrounding the CMF/SOL Infill Site

North	Al Patch Park adjacent to the state-owned property and residential across California Drive.
Northwest	Existing CMF facility, Keating Park, self-storage, mobile home park, neighborhood center, and residential neighborhoods.
West	CMF, open space areas in the Vaca Mountains including Lagoon Valley Park
South	Exisitng SOL facilities and Vacaville-Fairfield-Solano Greenbelt open space to the south of the state-owned property.
Southeast	Arlington Park, Foxboro Elementary School, residential neighborhoods.
East	Residential neighborhoods.

The existing residences to the east of Peabody Road are the closest land uses outside of the state-owned property and are located approximately 200 feet from the limits of the infill site. The Vacaville-Fairfield-Solano greenbelt is located just south of the State-owned property in Solano County.

Travis Air Force Base (AFB) is located approximately three miles to the south. Travis AFB occupies approximately 7,100 acres of land including two 11,000-foot runways oriented along the northeast-

southwest diagonal away from existing housing developments. Consistency with the *Travis Air Force Base Land Use Compatibility Plan* (SCALUC 2002) is addressed in Section 3.6, "Hazards and Hazardous Materials," of this volume of the draft environmental impact report (DEIR). The remainder of the land surrounding the infill site to the west and south is largely open space with undeveloped terrain.

AGRICULTURAL DESIGNATIONS

The California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP) is designed to inventory, map, and monitor the acreage of California farmland to document how much agricultural land was being converted to nonagricultural land or transferred into (or out of) Williamson Act contracts. (The Williamson Act is explained in Volume 1, Appendix 1B.) CDC's classifications are as follows (CDC 2009):

- Prime Farmland—land that has the best combination of features for the production of agricultural crops;
- Farmland of Statewide Importance—land other than Prime Farmland that has a good combination of physical and chemical features for the production of agricultural crops, but that has more limitations than Prime Farmland, such as greater slopes or less ability to store soil moisture;
- Unique Farmland—land of lesser quality soils used for the production of the state's leading agricultural cash crops;
- Farmland of Local Importance—land of importance to the local agricultural economy;
- Grazing Land—existing vegetation that is suitable to grazing;
- Urban and Built-Up Land—land occupied by structures in density of at least one dwelling unit per 1.5 acres;
- Land Committed to Nonagricultural Use—vacant areas; existing land that has a permanent commitment to development but has an existing land use of agricultural or grazing lands; and
- Other Land— land not included in any other mapping category, common examples of which include low-density rural developments, brush, timber, wetland, and vacant and nonagricultural land surrounded on all sides by urban development.

Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are defined as Important Farmland in Appendix G of the State CEQA Guidelines.

The state-owned property was converted from farmland to institutional land uses in the early 1950s. Approximately 80 acres of abandoned prune and plum orchards are located in the northern portion of the existing state-owned property. However, the FMMP designates the entire CMF/SOL Infill Site as Urban and Built-up Land (CDC 2011). Urban and Built-Up Land is described as land occupied by structures in density of at least one dwelling unit per 1.5 acres.

There are no lands under Williamson Act Contract within the CMF/SOL state-owned property, including the infill site.

FORESTRY RESOURCES

Appendix G of the State CEQA Guidelines defines forestland as land that can support 10 percent native tree cover and woodland vegetation of any species—including hardwoods—under natural conditions, and that allows for management of one or more forest resource—including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation—and other public benefits (California Public Resources Code [PRC] Section 12220[g]).

The infill site does not support any natural habitat. Habitat types include landscaped and developed areas associated with the existing IWL yard, a maintained drainage, and open space with nonnative

grasses. The CMF/SOL Infill Site does not contain native tree cover that would be classified as forestland under PRC Section 12220(g).

3.8.2 REGULATORY CONSIDERATIONS

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, regulations, or laws relating to land use, planning, and agriculture are applicable to the development of level II infill correctional facilities at CMF/SOL.

STATE PLANS, POLICIES, REGULATIONS AND LAWS

A list of the applicable state plans, policies, regulations, and laws addressing land use planning, agriculture, and forestry resources is provided below. Complete summaries of these regulations are provided in Volume 1, Appendix 1B.

- California Important Farmland System and Farmland Mapping and Monitoring Program - The FMMP was designed to inventory, map, and monitor the acreage of California farmland to document how much agricultural land was being converted to nonagricultural land or transferred into (or out of) Williamson Act contracts. Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are defined as Important Farmland in Appendix G of the State CEQA Guidelines.
- California Land Conservation Act (Williamson Act) - The California Land Conservation Act (Williamson Act) was enacted in 1965 when population growth and rising property taxes were recognized as a threat to the viability of valuable farmland in California. The State is not subject to the Williamson Act.
- Statewide Electrified Fence Habitat Conservation Plan (HCP) (CDCR 1999) (as discussed in Section 3.2, “Biological Resources,” of this volume of the DEIR) - The approved HCP for the Statewide Electrified Fence Program includes numerous mitigation measures designed to minimize wildlife use in areas near the lethal electrified fences and to deter wildlife from making contact with the lethal electrified fences. The plan also includes a wildlife mortality monitoring program.

LOCAL PLANS, POLICIES, AND ORDINANCES

The CMF/SOL Infill Site is located on land that is owned or controlled by the State. As a state agency, CDCR is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CITY OF VACAVILLE GENERAL PLAN

The City of Vacaville is currently in the process of updating its general plan, which was previously updated in 2007. The following discussion is based on the currently adopted City of Vacaville General Plan.

The infill site is located within the jurisdictional boundary of the City of Vacaville. The City of Vacaville (City) General Plan land use designation for the site is “Public/Institutional” (City of Vacaville 2008a). This designation includes the CMF, SOL, other public facilities, large institutions, and utilities (City of Vacaville 2008b: 26), General Plan land use designations for the area surrounding the infill site and CMF/SOL property are listed in Table 3.8-2 below.

Table 3.8-2 Vacaville General Plan Land Use Designations Surrounding the CMF/SOL Property	
North	Public Park, Commercial Office, Medium Density Residential, School, Low Density Residential, High Density Residential, Manufactured Home, General Commercial
Northwest	Low Density Residential, Neighborhood Residential
West	Public Open Space, Hillside Agriculture, Low Density Residential
South	Hillside Agriculture with Community Separator Overlay
Southeast	Community Separator
East	Low Density Residential, Medium Density Residential, Public Park

The City of Vacaville General Plan does not contain goals or polices related to land uses on the CMF/SOL Infill Site.

CITY OF VACAVILLE ZONING

The City zoning designation for the CMF/SOL Infill Site is Community Facilities. This designation indicates establishment of a wide range of community uses, located on public or private property, which provide a benefit or service to the public, and sites for large public facilities with a minimum site area of two acres. A community facility is defined as a structure or a use which is owned, managed, or maintained by a government entity for the purpose of providing services or benefit to the public. This definition may include facilities leased, operated, owned, or planned to be owned by private parties as part of a public facility (City of Vacaville 2008b).

Vacaville zoning designations for the area surrounding the infill site and CMF/SOL property are listed in Table 3.8-3.

Table 3.8-3 Vacaville Zoning Designations Surrounding the CMF/SOL Property	
North	Community Facility, Residential Low Density, Commercial Office, Residential High Density, Manufactured Housing Park, General Commercial, Residential Low/Medium Density
Northwest	Residential Low Density
West	Residential Low Density
South	Agricultural Hillside, Open Space
Southeast	NA (Solano County unincorporated-Greenbelt)
East	Residential Low Density, Residential Medium Density, Community Facility

TRAVIS AIR FORCE BASE LAND USE COMPATIBILITY PLAN

The *Travis Air Force Base Land Use Compatibility Plan* (SCALUC 2002) sets forth land use compatibility policies adopted by the Solano County Airport Land Use Commission (SCALUC) that are applicable to future development in the vicinity of the base. The policies are designed to ensure that future land uses in the surrounding area are compatible with potential aircraft activity at the base. These policies provide the basis on which the commission can carry out its land use development review responsibilities in accordance with Section 21670 et seq. of the California State Public Utilities Code. According to the *Travis Air Force Base Land Use Compatibility Plan*, the infill site is located in Travis Compatibility Zone D (SCALUC 2002). Limitations on the height of structures are the only compatibility factors within this zone. An airspace review is required for objects taller than 200 feet within Zone D (SCALUC 2002: 2-13).

SOLANO COUNTY GENERAL PLAN

The *Solano County General Plan* was adopted in November 2008. Although the infill site is located within the limits of the City of Vacaville, the Solano County General Plan land use designation for the site is "Public/Quasi-Public" (Solano County 2008a). The General Plan is the guide for both land development and conservation in the unincorporated portions of the county. It contains the policy framework necessary to fulfill the community's vision for Solano County in 2030 as a sustainable place with a thriving environment and an economy that maintains social equity (Solano County 2008b: IN-1).

The area to the south of the CMF/SOL property is within the Vacaville-Fairfield-Solano County Greenbelt Overlay and is designated Agriculture on the Solano County General Plan Land Use Diagram (Solano County 2008a).

3.8.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State CEQA Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact relating to public services if it would do any of the following:

- physically divide an established community;
- conflict with any applicable habitat conservation plan or natural community conservation plan;
- 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, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;
- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use;
- conflict with existing zoning for agricultural use, or a Williamson Act contract;
- conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by California Government Code Section 51104(g));
- result in the loss of forest land or conversion of forest land to non-forest use; or
- involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

The State CEQA Guidelines (Section 15064.5) define a "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Conflicts with agricultural zoning: No lands on the infill site are designated for agricultural use in the City of Vacaville General Plan, zoned for agricultural use by the City of Vacaville, currently used for agriculture, currently under a Williamson Act contract, or are designated Important Farmland under CEQA. Additionally, construction of a level II infill correctional facility would not result in conflicts with adjacent agriculture because and the infill site is not located in close proximity to any lands with existing agricultural operations. Therefore, no impacts related to conversion of Important Farmland, conflicts

with zoning for agriculture, or urban/agriculture land use conflicts would occur. Therefore, this issue is not evaluated further.

Conflicts with habitat conservation plans: Impacts related to potential conflicts with applicable habitat conservation plans or natural community conservation plans are addressed in Section 3.2, “Biological Resources” of this volume of the DEIR, and are not discussed further within this section.

Conversion of forestry resources: The infill site does not contain forestry resources that would be defined as forest land under PRC Section 12220(g) and State CEQA Guidelines Appendix G. Therefore, the development of level II infill correctional facilities at the CMF/SOL Infill Site would not result in conversion of forest land to non-forest use. No impact would occur, and this issue is not evaluated further.

Division of an established community: Development of level II infill correctional facilities at CMF/SOL would not result in any physical barriers that would divide an established community. Construction would occur on existing State-owned prison grounds adjacent to existing facilities operated by the State of California. According to the *City of Vacaville General Plan* land use map, the site is designated “Public/Institutional.” Some limited institutional land uses are currently on the infill site and would be relocated with implementation of the project. The proposed infill facility would be consistent with this designation as it would continue institutional land uses at the site. Therefore, there is no potential for the proposed project to physically divide an established community and this issue is not evaluated further.

Consistency with land use plans, policies, and regulations: Land use planning documents that include the infill site within their planning area are the City’s general plan and zoning ordinance. These documents do not apply to the site because it is a state-owned site. However, the proposed project would be consistent with the Public/Institutional land use designation within the City’s general plan, as it is owned by a public agency and intended for institutional use. No other land use plans, policies or regulations addressing environmental effects are applicable to the infill site. Specific policies, plans, or regulations adopted for the purpose of avoiding or mitigating an environmental effect are considered within the resource issue discussions (e.g., aesthetics, noise, air quality) of this DEIR where the plans and policies are relevant. The project would have no impact, and this issue is not evaluated further.

PROJECT IMPACTS AND MITIGATION MEASURES

No impacts related to land use, planning, agriculture, and forestry would occur as a result of development of a single, level II infill correctional facility at the CMF/SOL Infill Site.

3.9 NOISE

This section describes ambient noise conditions in the vicinity of the California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site and summarizes applicable regulations. This section also analyzes noise impacts associated with the implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site, including a discussion of short-term construction and long-term operational noise sources, and compatibility of surrounding land uses with onsite noise levels. Information and modeling related to traffic noise levels are based on data provided in Section 3.11, “Transportation,” and modeling results provided by Fehr & Peers in Appendix 5D of this volume of the draft environmental impact report (DEIR). Noise modeling inputs and results are provided in Appendix 5C of this volume.

3.9.1 ENVIRONMENTAL SETTING

NOISE FUNDAMENTALS

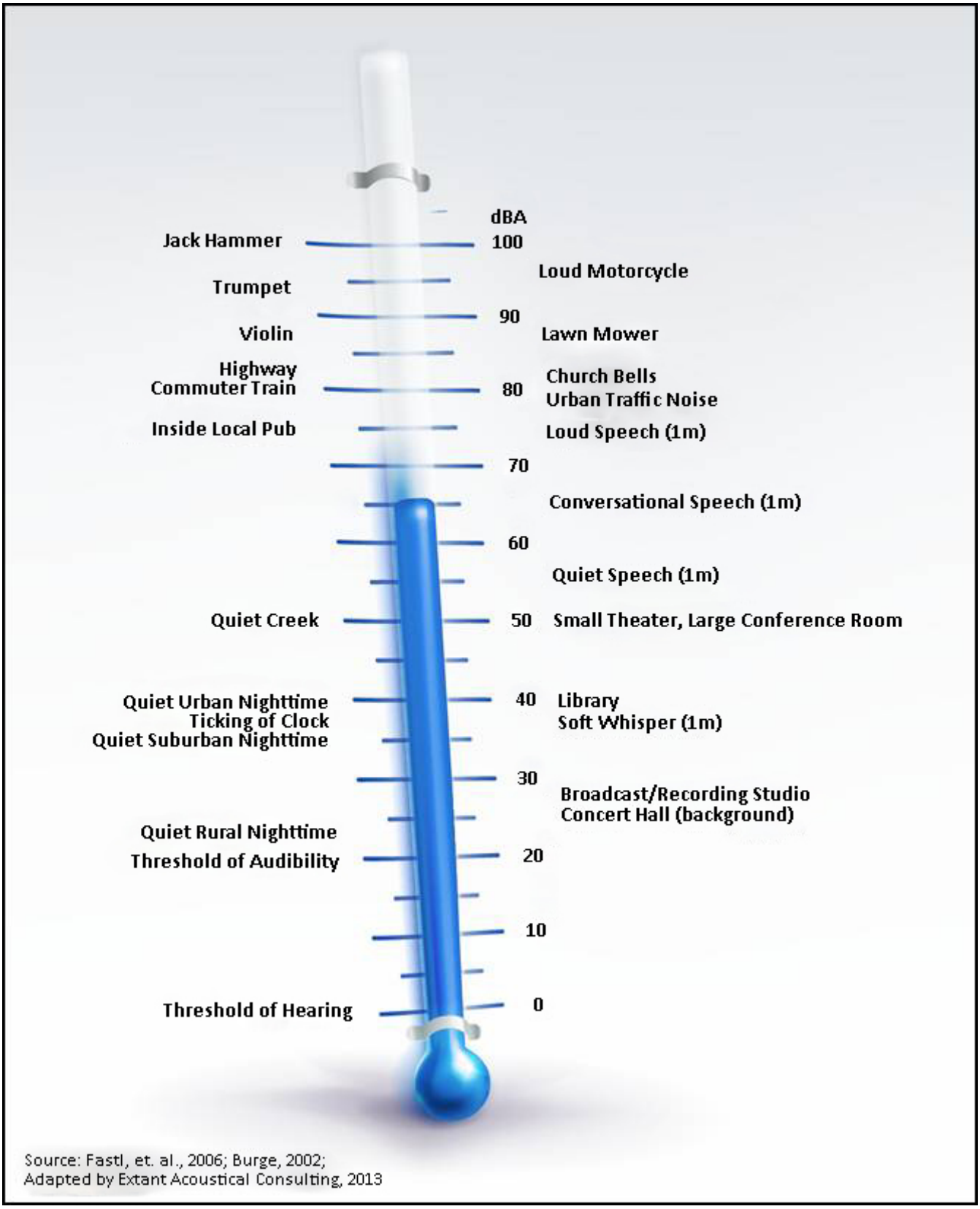
Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as noise; consequently, the perception of sound is subjective in nature, and can vary substantially from person to person. Common sources of environmental noise and noise levels are presented in Exhibit 3.9-1.

A sound wave is initiated in a medium by a vibrating object (e.g., vocal chords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in hertz (Hz); 1 Hz is equivalent to one complete cycle per second.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and have a more useable numbering system, the decibel (dB) scale was introduced. A sound level expressed in decibels is the logarithmic ratio of two like pressure quantities, with one pressure quantity being a reference sound pressure. The use of the decibel is a convenient way to handle the million-fold range of sound pressures to which the human ear is sensitive. A decibel is logarithmic; it does not follow normal algebraic methods and cannot be directly added. For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a 100-fold increase in acoustical energy.

The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. The human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. The standard weighting networks are identified as A through E. There is a strong correlation between the way humans perceive sound and A-weighted sound levels (dBA). For this reason, the dBA can be used to predict community response to noise from the environment, including noise from transportation and stationary sources.

Noise can be generated by various sources, including mobile sources (transportation noise) such as automobiles, trucks, and airplanes and stationary sources (non-transportation noise) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (decrease) depending



Source: Fastl, et. al., 2006; Burge, 2002;
Adapted by Extant Acoustical Consulting, 2013

Exhibit 3.9-1 Common Noise Sources and Levels

on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers (e.g., walls, building façades, berms). Noise generated from mobile sources generally attenuate at a rate of three dBA (typical for hard surfaces, such as asphalt) to 4.5 dBA (typical for soft surfaces, suchas grasslands) per doubling of distance, depending on the intervening ground type. Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6–7.5 dBA per doubling of distance for hard and soft sites, respectively.

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic feature, or intervening building façade) between the source and the receptor can provide substantial attenuation of noise levels at the receiver. The amount of noise level reduction or "shielding" provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural barriers such as berms, hills, or dense woods, and human-made features such as buildings and walls, may be used as noise barriers.

NOISE DESCRIPTORS

The intensity of environmental noise fluctuates over time, and several different descriptors of time-averaged noise levels can be used. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment. The noise descriptors most often used to describe environmental noise are defined below.

- ***L_{max} (Maximum Noise Level):*** The maximum instantaneous noise level during a specific period of time. The L_{max} may also be referred to as the "peak (noise) level."
- **L_{min} (Minimum Noise Level):** The minimum instantaneous noise level during a specific period of time.
- **L_X (Statistical Descriptor):** The noise level exceeded X percent of a specific period of time. For example, L_{50} is the median noise level, or level exceeded 50 percent of the time.
- **L_{eq} (Equivalent Noise Level):** The average noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the L_{eq}. In noise environments determined by major noise events, such as aircraft over-flights, the L_{eq} value is heavily influenced by the magnitude and number of single events that produce the high noise levels.
- **L_{dn} (Day-Night Average Noise Level):** The 24-hour L_{eq} with a 10-dBA "penalty" for noise events that occur during the noise-sensitive hours between 10 p.m. and 7 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours, and this generates a higher reported noise level when determining compliance with noise standards. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.
- **CNEL (Community Noise Equivalent Level):** The CNEL is similar to the L_{dn} described above, but with an additional 5-dBA "penalty" added to noise events that occur during the noise-sensitive hours between 7 p.m. and 10 p.m., which are typically reserved for relaxation, conversation, reading, and television. When the same 24-hour noise data are used, the reported CNEL is typically approximately 0.5 dBA higher than the L_{dn}.
- **SEL (Sound Exposure Level):** The cumulative exposure to sound energy over a stated period of time.

Community noise is commonly described in terms of the ambient noise level which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level L_{eq} which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a

given time period (usually 1 hour). The L_{eq} is the foundation of the composite noise descriptors such as L_{dn} and CNEL, as defined above, and shows very good correlation with community response to noise.

ADVERSE EFFECTS OF NOISE ON HUMANS

Excessive and chronic exposure to elevated noise levels can result in auditory and non-auditory effects on humans. Auditory effects of noise on people are those related to temporary or permanent hearing loss caused by loud noises. Non-auditory effects of exposure to elevated noise levels are those related to behavioral and physiological effects. The non-auditory behavioral effects of noise on humans are associated primarily with the subjective effects of annoyance, nuisance, and dissatisfaction, which lead to interference with activities such as communications, sleep, and learning. The non-auditory physiological health effects of noise on humans have been the subject of considerable research attempting to discover correlations between exposure to elevated noise levels and health problems, such as hypertension and cardiovascular disease. The mass of research indicates that noise-related health issues are predominantly the result of behavioral stressors and not a direct noise-induced response. The extent to which noise contributes to non-auditory health effects remains a subject of considerable research, with no definitive conclusions.

The degree to which noise results in annoyance and interference is highly subjective and may be influenced by several non-acoustic factors. The number and effect of these non-acoustic environmental and physical factors vary depending on individual characteristics of the noise environment such as sensitivity, level of activity, location, time of day, and length of exposure. One key aspect in the prediction of human response to new noise environments is the individual level of adaptation to an existing noise environment. The greater the change in the noise levels that are attributed to a new noise source, relative to the environment an individual has become accustomed to, the less tolerable the new noise source will be to the individual.

With respect to how humans perceive and react to changes in noise levels, a 1-dBA increase is imperceptible, a 3-dBA increase is barely perceptible, a 6-dBA increase is clearly noticeable, and a 10-dBA increase is subjectively perceived as approximately twice as loud (Egan 1988: 21). These descriptions of subjective reactions to changes in noise levels were developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. This information is probably most applicable to noise levels in the range of 50–70 dBA, as this is the usual range of voice and interior noise levels. For these reasons, a noise level increase of three dBA or more is typically considered substantial in terms of the degradation of the existing noise environment.

VIBRATION

Vibration is similar to noise in that it is a pressure wave traveling through an elastic medium, such as air; however, vibration relates to the excitation of a structure or surface, such as buildings or the ground. As is the case with airborne noise, structural and groundborne vibrations can be described according to amplitude and frequency content. The vibratory motion can be depicted in terms of displacement, velocity, or acceleration. Human and structural response to different vibration levels is influenced by various factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous (e.g., operating factory machinery) or transient (e.g., explosions) in nature. Vibration levels can be depicted in terms of amplitude and frequency relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a

vibration signal, or the quantity of displacement measured from peak to trough of the vibration wave. Root-mean-square is defined as the positive and negative statistical measure of the magnitude of a varying quantity. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a period of 1 second. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (Federal Transit Administration [FTA] 2006: 7-1 – 7-8, California Department of Transportation [Caltrans] 2004: 5-7). PPV and RMS vibration velocity are normally described in inches per second (in/sec).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. The response of the human body to vibration relates well to average vibration amplitude; therefore, vibration impacts on humans are evaluated in terms of RMS vibration velocity. Similar to airborne sound, vibration velocity can be expressed in decibel notation as vibration decibels (VdB). The logarithmic nature of the decibel serves to compress the broad range of numbers required to describe vibration.

Typical outdoor sources of perceptible groundborne vibration include construction equipment, steel-wheeled trains, and traffic on rough roads. Although the effects of vibration may be imperceptible at low levels, effects may result in detectable vibrations and slight damage to nearby structures at moderate and high levels, respectively. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in damage to structural components. The range of vibration that is relevant to this analysis occurs from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings (FTA 2006: 8-1–8-8).

EXISTING NOISE ENVIRONMENT

The existing noise environment in the vicinity of the CMF/SOL Infill Site is influenced primarily by transportation noise on the local roadway network, aircraft overflights, and activities associated with the existing CMF/SOL correctional facilities. The primary transportation noise source in the vicinity of the CMF/SOL Infill Site is local vehicular traffic on area roadways (Peabody Road and California Drive). Principal traffic noise contributions at the infill site are from Peabody Road, which travels north-south approximately 250 feet east of the boundary of the CMF/SOL Infill Site. Additional transportation-related noise sources in the vicinity include traffic along California Drive, along with occasional aircraft overflights associated with operations at Travis Air Force Base southeast of the infill site and the Nut Tree Airport to the north. Existing CMF/SOL daily operational activities consist of vehicle trips on the facility access road, mechanical system operations, public address loudspeaker announcements, and inmate recreational activities, and these activities influence the noise environment within the immediate vicinity of the infill site.

EXISTING NOISE-SENSITIVE LAND USES

Noise-sensitive land uses are generally considered to include those uses for which noise exposure could result in health-related risks to individuals, as well as uses for which quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Schools, health care facilities, places of worship, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The nearest onsite noise-sensitive land use to the CMF/SOL Infill Site is primarily institutional, and the nearest onsite noise-sensitive institutional receptor is the northernmost inmate housing unit (SOL Pod 4), located approximately 250 feet south of the infill site boundary; additionally, the southernmost housing unit/wing of CMF is located approximately 400 feet north of the northern boundary of the infill site.

Source: Ascent Environmental 2013

Exhibit 3.9-2

Noise Monitoring Locations

Offsite noise-sensitive uses in the vicinity of the CMF/SOL Infill Site include single-family and multi-family residential uses and the Irene Larsen Center. Residential noise-sensitive uses are located east of and adjacent to Peabody Road, approximately 400 feet east of the infill site boundary. Additional single-family residences are located along California Drive, approximately 2,000 feet north of the infill site boundary. The Irene Larsen Center, located approximately 2,000 feet north of the infill site adjacent to California Drive, is a special education center that primarily services children, from birth to five years of age, with special needs.

AMBIENT NOISE SURVEY

An ambient noise survey was conducted by Ascent on January 24, 2013, to document the existing noise environment at various locations in the vicinity of the infill site. Noise level measurements were taken in accordance with American National Standards Institute (ANSI) standards at four locations using Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters (SLMs). The SLMs were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the ANSI for Type 1 SLMs (ANSI S1.4-1983 [revised 2006]). Survey locations are shown in Exhibit 3.9-2. The L_{eq} and L_{max} values taken at each location are presented in Table 3.9-1.

Average daytime hourly noise levels measured during the survey ranged from approximately 52 to 69 dBA L_{eq}, with maximum noise levels that ranged from 71 to 82 dBA L_{max}. The primary noise source influencing noise measurement locations was vehicular traffic on area roadways in the vicinity of the infill site (Peabody Road, California Drive and Foxboro Parkway). Noise generated by daily activities associated with the existing CMF/SOL facilities was also audible during the measurement period; this noise could include onsite generators, pumps, lift stations, mechanical noise, firing range, and loudspeakers. Meteorological conditions during the measurement period were favorable, with clear skies, temperatures ranging from 49 degrees Fahrenheit (°F) to 60°F, and a breeze from the northeast at 9 miles per hour (mph).

Table 3.9-1 Summary of Results of the Short-Term Daytime Community Noise Survey, January 24, 2013

Time	Noise Sources	A-Weighted Sound Level (dBA)	
		L_{eq}	L_{max}
1 – Center of the existing SOL facility's eastern boundary			
11:20–11:35 a.m.	Trucks idling, traffic	52.4	71.1
2 – Center of existing parking lot south of California Drive			
9:30–9:45 a.m.	Cars beeping, doors slamming	54.8	77.4
3 – Peabody Road – between Morning Glory Drive and Foxboro Parkway			
12:00–12:15 p.m.	Yard maintenance equipment, traffic	69.3	82.7
4 – Keating Park adjacent to California Drive			
12:20–12:35 p.m.	Traffic	63.0	76.9

Notes: dBA = A-weighted decibels; L_{eq} = equivalent noise level; L_{max} = maximum noise level.
Source: Ascent Environmental 2013.

EXISTING TRAFFIC NOISE

Existing traffic noise levels were calculated for roadway segments in the vicinity of the infill site using the Federal Highway Administration's (FHWA's) Traffic Noise Model (TNM) prediction methodologies (FHWA 1998) and on traffic data provided in the traffic impact study prepared for the contemplated development (Fehr & Peers 2013). The FHWA TNM incorporates state-of-the-art sound emissions and

sound propagation algorithms, based on well-established theory or on accepted international standards. The acoustical algorithms contained within the FHWA TNM have been validated with respect to carefully conducted noise measurement programs and show excellent agreement in most cases for sites with and without noise barriers. The noise modeling accounted for such factors as traffic volume, vehicle speed, roadway configuration, receiver distance, and propagation over different types of ground (acoustically soft and hard ground). Truck usage and speeds on study area roadways were estimated from field observations, vehicle mixes indicative of roadway types, and truck count data where available.

Table 3.9-2 summarizes the modeled levels of existing traffic noise at a representative distance of 100 feet from the centerline of each major roadway in the vicinity of the infill site and lists distances from roadway centerlines to the 60-dBA, 65-dBA, and 70-dBA L_{dn} traffic noise contours. Traffic noise modeling results are based on existing average daily traffic (ADT) volumes. As shown in Table 3.9-2, the location of the 60-dBA L_{dn} traffic noise contour along the local roadway network ranges from 154 feet to 252 feet from the centerline of the modeled roadways. The extent to which existing land uses in the vicinity of the infill site are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise. Refer to Appendix 5C in this volume of this DEIR for complete modeling inputs and results.

Table 3.9-2 Summary of Modeled Existing Traffic Noise Levels

Roadway	Segment		L_{dn} (dBA), 100 feet	Distance (feet) from Roadway Centerline to L_{dn} Contour		
				70 dBA	65 dBA	60 dBA
Alamo Drive	Davis Street	Alamo Lane	63	35	75	163
Alamo Drive	Alamo Lane	Mariposa Avenue	66	54	117	252
Alamo Drive	Mariposa Avenue	Peabody Road	66	54	115	249
Peabody Road	Elmira Road	Cliffside Drive	64	37	80	172
Peabody Road	Cliffside Drive	Hume Way–Berryessa Drive	64	37	81	174
Peabody Road	Hume Way–Berryessa Drive	Marshall Road	63	34	74	160
Peabody Road	Marshall Road	Alamo Drive	63	33	72	154
Peabody Road	Alamo Drive	California Drive	64	36	78	169
Peabody Road	California Drive	Caldwell Drive	64	36	78	167
Peabody Road	Caldwell Drive	Morning Glory Drive	64	36	77	166
Peabody Road	Morning Glory Drive	Foxboro Parkway	64	35	76	164
Peabody Road	Foxboro Parkway	CSP/Solano Driveway	64	35	76	163

Notes: dBA = A-weighted decibels; L_{dn} = day-night average noise level; SR = State Route.
Source: Data modeled by Extant Acoustical 2013. Traffic data provided by Fehr & Peers 2013.

EXISTING AIRCRAFT NOISE

The Nut Tree Airport is located more than 2.5 nautical miles north of the infill site. Based on the 2010 airport noise contours presented in the Nut Tree Airport Master Plan working paper, the infill site is located approximately two nautical miles outside of the airports 60 dBA CNEL noise contour (Solano County 2010).

Travis Air Force Base is located more than 4 nautical miles southeast of the infill site. Based on the noise contours contained in the Travis Air Force Base Land Use Compatibility Plan (Solano County

2002), the infill site is located approximately 2 nautical miles outside of the 60 dBA CNEL noise contour.

Although noise due to aircraft traffic in the vicinity of the infill site has a potential to contribute to the noise environment, no aircraft-related noise was experienced during the noise monitoring survey. Aircraft overflights are known to occur in the vicinity of the infill site; however, they are not considered major contributors to the overall ambient noise environment due to their limited occurrence and the distance to nearby airport noise contours.

EXISTING FIRING RANGE NOISE

The California Department of Corrections and Rehabilitation (CDCR) currently operates and maintains a firing range, located to the southwest of the existing CMF/SOL facility, approximately 2,000 feet southwest of the infill facility. The existing firing range is approximately 25 yards wide and 100 yards long. The firing range backs up to and is partially cut into a hillside that serves as a natural berm; the range is oriented east–west, with shooters firing west into the hillside berm. Multiple law enforcement agencies in the vicinity of the site use the facility to satisfy their training and certification requirements.

During the ambient noise survey, the firing range was not available for observation or measurement. As a result, this analysis uses empirical noise measurement data performed on similar facilities at other CDCR locations. Firing range operations vary from day to day but are assumed to be similar to other CDCR firing ranges currently in operation. Similar CDCR facilities elsewhere are available for operation from 7:00 a.m. to 7:00 p.m. and are not expected to operate during nighttime hours. Officers most frequently use .38 and 9mm pistols, shotguns, Mini-14 or AR-15 style rifles and 40mm launchers (used for riot control rounds and chemical dispersion arms).The firing range would be most heavily used during quarterly and annual officer qualification courses. Based on typical qualifications days at similar facilities, a maximum-use day would include five courses of fire by 30 officers per course (150 courses total). Each course consists of 36 rounds of .38 or 9mm pistol and 25 rounds of 0.223 rifle ammunition (Mini-14/AR-15) fired per officer (approximately 61 total rounds per officer). This results in an approximate maximum of 9,150 rounds per day that could be fired (61 rounds per officer x 5 courses x 30 officers per course) (Jones 2010). While other types of firing and training occur at the firing range, it is assumed for this analysis that the loudest noise levels would be generated during qualification days because of the intensity of use during these days.

Noise levels from the firing range were modeled within the SoundPLAN three-dimensional noise simulation model based on reference noise level data obtained from previous CDCR projects and noise level data from the Small Arms Range Noise Assessment Model v2.6 (SARNAM2). SARNAM2 was developed by the U.S. Army Corps of Engineers for assessment of noise impacts created by firing ranges (USACE 2003). Predicted exposure of onsite noise-sensitive receptors in the vicinity of the CMF/SOL Infill Site to existing firing range noise levels was modeled based on the assumptions outlined above (Table 3.9-3).

Table 3.9-3 Modeled Existing Firing Range Noise Levels

Description	Exterior Noise Levels (dBA)		Interior Noise Levels (dBA)	
	L_{eq}	L_{max}	L_{eq}	L_{max}
Onsite Receivers				
CMF Level 1	46	52	21	27
CMF-01	36	42	11	17
CMF-02	48	54	23	29
CHCF	48	55	23	30
SOL Pod 1	37	44	12	19
SOL Pod 2	51	58	26	33
SOL Pod 3	40	47	15	22
SOL Pod 4	33	39	8	14
Offsite Receivers				
R-01	42	48	17	23
R-02	40	46	15	21
R-03	41	47	16	22
R-04	40	46	15	21
R-05	40	46	15	21
R-06	38	44	13	19
R-07	38	44	13	19
R-08	37	43	12	18
R-09	38	44	13	19
R-10	39	45	14	20
R-11	44	51	19	26
S-01 – Irene Larsen Center	38	44	13	19
P-01 – Al Patch Park	39	45	14	20
P-02 – John Arlington Park	40	46	15	21
P-03 – Keating Park	41	48	16	23

Notes: dBA = A-weighted decibels; L_{eq} = equivalent noise level; L_{max} = maximum noise level.
Source: Extant Acoustical Consulting 2013.

3.9.2 REGULATORY CONSIDERATIONS

Various private and public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and other adverse physiological and social effects associated with noise. A list of the applicable federal, state, and local plans, policies, regulations, laws, and ordinances is provided below. Complete summaries of the federal and state regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

- Federal Noise Control Act of 1972 - The Federal Noise Control Act was issued by the U.S. Environmental Protection Agency (EPA) in 1972 and established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

- Title 24 – Title 24 of the California Code of Regulations, also known as the California Building Standards Code, establishes acoustical regulations and standards for both exterior and interior sound levels and insulation.

LOCAL PLANS, POLICIES, AND ORDINANCES

Because CDCR, a state agency, is the project proponent, compliance with local standards is not required. However, CDCR considers local noise standards as they relate to the compatibility between the contemplated development and various land uses adjacent to the infill site. Local noise standards are used as guidelines for what CDCR considers acceptable noise levels in noise-sensitive areas.

CITY OF VACAVILLE GENERAL PLAN NOISE ELEMENT

The goal of the noise element is to ensure that City of Vacaville residents are not subjected to noise beyond acceptable levels. One of the objectives of the noise element is to protect existing noise-sensitive development from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels. In its noise element, the City of Vacaville identifies maximum allowable noise exposure for land use compatibility. Residential land uses are considered “normally acceptable” when exposed to noise levels less than approximately 60 dBA L_{dn}/CNEL, “conditionally acceptable” between approximately 60 and 75 dBA L_{dn}/CNEL, and “normally unacceptable” at levels exceeding 75 dBA L_{dn}/CNEL. The following relevant policies are considered in this EIR.

Guiding Policies

10.6-G 2: Reduce outdoor noise levels in existing residential areas where economically and aesthetically feasible.

10.6-G 3: Ensure that noise does not exceed interior noise levels of 45 L_{dn} for residential, transient lodging, hospital and nursing/convalescent structures from transportation or fixed-point noise sources.

10.6-G 4: Minimize vehicular noise sources and noise emanating from transportation activities; control noise at its source to maintain existing noise levels, and in no case exceed acceptable noise levels as established in the Noise and Land Use Compatibility Guidelines, Table 10-1 [reprinted as Table 3.9-4 of this document].

10.6-G 6: Limit truck traffic in residential areas to designated truck routes.

10.6-G 8: Encourage other agencies to reduce noise levels generated by roadways, railways, airports and other facilities.

10.6-G 9: Noise created by transportation noise sources shall be mitigated so as not to exceed the interior and exterior noise level standards of Table 10-1 [Table 3.9-4].

10.6-G10: Noise created by non-transportation noise sources shall be mitigated so as not to exceed the interior and exterior noise level standards of Table 10-4 [reprinted as Table 3.9-5 of this document].

10.6-G11: Allow minor exceptions to the noise level design standards (Tables 10-1 and 10-4 of the GP [Tables 3.9-4 and 3.9-5 of the DEIR]) in circumstances where impractical mitigation requirements are not consistent with City standards and policies.

Table 3.9-4 Noise and Land Use Compatibility Policy for Transportation[1]

Land Use Category	Noise Standard (L_{dn})		Community Noise Exposure Unmitigated Day/Night Average Noise Level (L_{dn}) in Decibels (dB)								
			Noise Contour								
	Interior	Exterior	40	45	50	55	60	65	70	75	80
Residential	45	60[2]									
Transient Lodging Motels, Hotels	45	--[3]									
Hospitals, Nursing Homes	45	60[4]									
Other Uses[5]	--	--									

Normally Acceptable with typical conditions of approval (setbacks, walls, fences and standard building practices).

Conditionally Acceptable - subject to noise study to demonstrate noise can be reduced to normally acceptable levels with acceptable mitigation.

Normally Unacceptable - regardless of measures implemented to reduce noise.

Notes:
1 This table establishes the maximum transportation noise levels that persons should be exposed to and helps determine the type of review necessary when land uses are proposed within existing noise contours. For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations and aircraft in flight.
2 In multi-family/attached unit projects, applies to courtyards, patios, private areas and activity areas.
3 Areas designed for outdoor activity should be located away from noise sources.
4 Applies to courtyards, patios, private areas and activity areas.
5 Other uses are subject to federal and state OSHA noise exposure standards.
Source: City of Vacaville General Plan Noise Element, Table 10-1

Table 3.9-5 Airport/Land Use Noise Compatibility Criteria

Land Use Category	CNEL, dBA					
	50	55	60	65	70	75
Residential						
Schools, Libraries, Hospitals, Nursing Homes						
Churches, Auditoriums, Concert Halls						
Transportation, Parking, Cemeteries						
Offices, Retail Trade						
Service Commercial, Wholesale Trade, Warehousing, Light Industrial						
Extractive Industrial, General Manufacturing, Utilities						
Cropland						
Livestock Breeding						
Playgrounds, Parks, Zoos						
Golf Courses, Riding Stables, Water Recreation						
Outdoor Spectator Sports						
Amphitheaters						

Table 3.9-5 Airport/Land Use Noise Compatibility Criteria

	CLEARLY ACCEPTABLE The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
15	**NORMALLY ACCEPTABLE** Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities
35	**MARGINALLY ACCEPTABLE** The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
35	**NORMALLY UNACCEPTABLE** Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
15	**CLEARLY UNACCEPTABLE** Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

Land Use Category	Noise Level Descriptor	Exterior Noise Levels [1,2,3,4,5]		Interior Noise Levels [1,2,3,4,5]	
		Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Residential	Hourly L_{eq}, dBA	50[6]	45[6]	45	35
	Maximum Level, dBA	70[6]	65[6]	--	--
Transient Lodging	Hourly L_{eq}, dBA	--[7]	--[7]	45	35
Hospital, Nursing Homes	Hourly L_{eq}, dBA	50[8]	45[8]	45	35
Other [9]	Hourly L_{eq}, dBA	--	--	--	--
	Maximum Level, dBA	--	--	--	--

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

Notes:

1 This table establishes the maximum non-transportation noise levels that persons should be exposed to. For the purposes of the Noise Element, non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, construction equipment, etc.

2 Compliance with the noise level standards is to be measured at the affected location of the land use category.

3 If the existing noise levels exceed that of a proposed noise generator, these standards would not be applied to the new noise source unless the additional noise generated would increase the projected, combined noise levels a minimum of three decibels.

4 These standards are applicable to land use determinations and entitlements. They are not applicable for nuisance abatement within residential areas.

5 Exceptions to the standards may be approved for public parks or playgrounds upon a finding that the facility has been designed in a manner that practically limits the noise impact upon other land uses.

6 In multi-family/attached unit projects, applies to courtyards, patios, private areas and activity areas.

7 Areas designed for outdoor activity should be located away from noise sources.

8 Applies to courtyards, patios, private areas and activity areas.

9 Other uses are subject to federal and state OSHA noise exposure standards.

Source: City of Vacaville General Plan Noise Element, Tables 10-1 and 10-4

CITY OF VACAVILLE MUNICIPAL CODE

The following regulations in the *City of Vacaville Municipal Code* related to potential noise impacts are applicable to development at the infill site.

NOISE ORDINANCE

The only regulations in the Noise Ordinance that are applicable to potential development of the infill site relate to non-transportation sources (Table 3.9-6).

Table 3.9-6 Maximum Noise Exposure and Generation Levels – Non-transportation Sources

Land Use Category	Noise Level Descriptor	Exterior Noise Levels		Interior Noise Levels	
		Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Residential	Hourly L_{eq}, dBA	50	45	45	35
	Maximum Level, dBA	70	65	--	--
Transient Lodging	Hourly L_{eq}, dBA	--	--	45	35
Hospital, Nursing Homes	Hourly L_{eq}, dBA	50	45	45	35
Other	Hourly L_{eq}, dBA	--	--	--	--
	Maximum Level, dBA	--	--	--	--

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.
Source: City of Vacaville Municipal Code, Noise Ordinance

4. Non-Transportation Sources. Non-transportation noise sources include noise from activities or uses such as industrial operations, outdoor recreation facilities, loading docks, and construction equipment. Two standards apply to non-transportation noise sources: the hourly L_{eq}, dBA, which is an hourly average sound level, and the maximum level, dBA. Table 14.09.127.04 of the Municipal Code (Table 3.9-6 of the DEIR) shows the maximum hourly average and the peak daytime and nighttime noise standards for non-transportation sources when located near sensitive land uses. All uses shall comply with these standards.

   The noise standards for non-transportation sources shall not apply in the following situations:

   a. To new uses if the ambient noise levels exceed the hourly L_{eq} or the maximum level of the proposed noise generator, unless the additional noise generated would increase the projected, combined noise levels a minimum of three decibels;

   b. To public parks or public playgrounds upon a finding by the decision-maker that the location of the facilities within the park or playground reasonably limits the noise impacts upon other land uses;

   c. To construction activity related to public improvement projects where the Director has determined that full compliance with these standards cannot practically be achieved. (Ord. 1680, Amended, 01/10/2003)

VIBRATION REGULATIONS

The California Environmental Quality Act (CEQA) states that the potential for excessive groundborne noise and vibration levels must be analyzed; however, it does not define the term “excessive” vibration. Numerous public and private organizations and governing bodies have provided guidelines to assist in the analysis of groundborne noise and vibration; however, federal and State agencies have yet to establish specific groundborne noise and vibration requirements. Publications of FTA and Caltrans are two of the seminal works for the analysis of groundborne noise and vibration relating to transportation and construction-induced vibration. Caltrans guidelines recommend that a standard of 0.2 in/sec PPV not be exceeded for the protection of normal residential buildings, and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2004: 17). With respect to human response within residential uses (i.e., annoyance), FTA recommends a maximum acceptable vibration standard of 80 VdB (FTA 2006: 7-5–7-8).

3.9.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State CEQA Guidelines, a level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact related to noise if it would do any of the following:

- expose persons to or generate noise levels in excess of relevant standards (e.g., exterior and interior noise level standards from the *City of Vacaville General Plan* and *City of Vacaville Noise Ordinance* as presented above in Section 3.9.2, "Regulatory Considerations");
- result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, as listed in Tables 3.9-1 and 3.9-2;
- result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, as listed in Tables 3.9-1 and 3.9-2;
- expose people residing or working in the area to excessive noise levels, for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport;
- expose people residing or working in the project area to excessive noise levels, for a project within the vicinity of a private airstrip; or
- expose persons to or generate excessive groundborne vibration or groundborne noise levels in excess of applicable as presented above in Section 3.9.2, "Regulatory Considerations," and Caltrans' recommended standard of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable vibration standard of 80 VdB with respect to human response i.e., annoyance at nearby vibration-sensitive land uses [i.e., residential]).

The State CEQA Guidelines (Section 15064.5) define a "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

Generally, a project may have a significant effect on the environment with regard to noise if it would substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been implemented. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local planning criteria or ordinances, or substantially increase noise levels at noise-sensitive land uses.

METHODOLOGY

For this analysis, the significance of anticipated noise effects is based on a comparison between predicted noise levels and noise criteria defined by the City of Vacaville. Noise impacts are considered significant if existing or future noise-sensitive land uses would be exposed to noise levels in excess of the *City of Vacaville General Plan* Noise Element or City of Vacaville Noise Ordinance standards as described above (see Section 3.9.2, "Regulatory Considerations"), or if implementation of the contemplated development would result in an increase in ambient noise levels at noise sensitive land uses in excess of those identified by the City of Vacaville.

Data included in Chapter 2, "Project Description," and obtained during onsite noise surveys were used to determine potential locations of sensitive receptors and potential noise- and vibration-generating land uses associated with the development of a level II infill correctional facility at the infill site. Noise-sensitive land uses and major noise sources near the infill sites were identified based on existing documentation and site reconnaissance data.

Traffic noise modeling was conducted based on average daily traffic volumes obtained from the traffic analysis prepared by Fehr & Peers for the contemplated development, as discussed in Section 3.11, "Transportation," of this volume. Predicted traffic noise levels along affected roadways in the vicinity of the infill site were modeled based on the FHWA TNM modeling program. The infill facility's contribution to the existing traffic noise levels along area roadways was determined by comparing the predicted noise levels at a reference distance of 100 feet from the roadway centerline, for the baseline, existing plus approved projects, and cumulative (2020) conditions with and without development-generated traffic.

The SoundPLAN® computer noise model was used for computing short-term construction-related and long-term operational sound levels.

To assess the impacts of potential short-term construction noise on sensitive receptors, the sensitive receptors and their relative exposure to construction noise were identified (considering intervening building façades and distance). The construction noise that would be generated by the contemplated development was predicted by using the Federal Transit Administration Noise and Vibration Impact Assessment methodology (FTA 2006: 12-1 – 12-15). The emission noise levels referenced and the usage factors were based on the Federal Highway Administration Roadway Construction Noise Model. The noise levels of the specific construction equipment that would be used and the resulting noise levels where sensitive receptors are located were calculated.

Potential noise impacts from long-term (operation-related) stationary sources were assessed based on existing documentation (e.g., equipment noise levels) and site reconnaissance data. This analysis also included an evaluation of the contemplated development's noise-generating uses that could affect noise-sensitive receptors near the infill site.

To assess the land use compatibility of the infill correctional facility with existing on- and offsite noise levels, predicted traffic noise contours were used to determine if development of the infill site would exceed the relevant noise criteria.

Groundborne vibration impacts were qualitatively assessed based on existing documentation (*e.g.*, vibration levels produced by specific construction equipment operations) and the distance of sensitive receptors from the given source.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.9-1: Short-term Construction-generated Noise Levels

Construction noise levels in the vicinity of the infill site would fluctuate depending on the particular type, number, and duration of usage of the various pieces of equipment. The effects of construction noise depend largely on the types of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment in the vicinity of the receiver. Construction generally occurs in several discrete stages, with the equipment mix and associated noise characteristics varying for each operation. These stages alter the characteristics of the noise environment generated at the infill site and in the surrounding area for the duration of the construction process. It is assumed that the construction equipment fleet mixes and utilization would occur in four separate phases of construction (described in further detail in Chapter 3, "Project Description," of Volume 1 of this DEIR); demolition and site preparation (Phase 1), grading (Phase 2), utilities (Phase 3) and construction (Phase 4). Construction at the CMF/SOL infill facility would begin in spring 2014 and would be completed by spring 2016.

Phase 2, grading, is anticipated to generate the most substantial noise levels due to onsite equipment associated with grading, compacting, and excavation operations. Grading and site preparation equipment typically includes backhoes, bulldozers, and loaders; excavation equipment such as graders and scrapers; and compaction equipment. Erecting large structural elements and mechanical systems,

as occurs in the construction phase (Phase 4), could require the use of a crane for placement and assembly tasks, which may also generate substantial noise. Table 3.9-7 lists the noise levels typically generated by various types of construction equipment.

Table 3.9-7 Noise Emission Levels from Construction Equipment

Equipment Type	Typical Noise Level (dBA) at 50 feet
Air Compressor	78
Asphalt Paver	77
Backhoe	78
Compactor	83
Concrete Pump	81
Crane, Mobile	81
Dozer	82
Front-End Loader	79
Generator	81
Grader	85
Pneumatic Tools	85
Rock Drill	81
Scraper	84
Trucks	74–81
Water Pump	81

Notes: dBA = A-weighted decibels.
All equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacturer specified noise levels for each piece of heavy construction equipment.
Source: FHWA RCNM 2008, FTA 2006

To assess noise levels associated with the various equipment types and operations, construction equipment can be considered to operate in two modes, mobile and stationary. Mobile equipment sources move around a construction site performing tasks in a recurring manner (e.g., loaders, graders, dozers). Stationary equipment operates in a given location for an extended period of time to perform continuous or periodic operations. Thus, it is necessary to determine the location of stationary sources during specific phases, or the effective acoustical center of operations for mobile equipment during various phases of the construction process. Operational characteristics of heavy construction equipment are additionally typified by short periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions. These characteristics are accounted for through the application of typical usage factors to the reference noise levels.

Based on the reference noise levels, usage rates, fleet mixes, and operational characteristics discussed above, overall hourly average noise levels attributable to construction activities at the infill site were predicted at existing onsite and offsite noise-sensitive receptors. Construction noise levels were predicted using reference noise emission data and operational parameters contained in the FHWA Roadway Construction Noise Model and Federal Transit Authority guidance manuals. These reference noise levels were used as inputs to the computerized noise simulation model, accounting for anticipated operational areas, usage factors of individual pieces of equipment, topographical shielding and absorption effects.

Onsite noise-sensitive receptors at the existing CMF/SOL correctional facility are primarily institutional (inmate housing) receptors. Distances from the approximate acoustical center of construction activities for the infill site, to onsite noise-sensitive institutional receptors at the CMF/SOL facility, range from 700 feet to approximately 3,000 feet.

The nearest offsite noise-sensitive receptor in the vicinity of the infill site is the single-family residential community approximately 800 feet east of the acoustical center of the construction activities for the CMF/SOL Infill Site, adjacent to Peabody Road (receivers R-01–R-07). Additional offsite noise-sensitive residential uses in the vicinity of the infill site are located north of the site, adjacent to California Drive (receivers R-08–R-10); located approximately 2,400 feet or greater to the north of the acoustical center of construction operation of the infill site. The nearest offsite noise-sensitive institutional receptor is the previously mentioned school located on the northern side of California Drive, The Irene Larsen Learning Center (receiver S-01), approximately 2,600 feet northwest of the acoustical center of construction operations.

As indicated in Table 3.9-7, operational noise levels for typical construction activities would range from 74 to 85 dBA at a distance of 50 feet. Table 3.9-8 shows the predicted hourly average noise levels that would be attributable to construction activities of the considered infill site at existing onsite and offsite noise sensitive receptors when accounting for the usage factor of individual pieces of equipment, topographical shielding, and absorption effects.

Table 3.9-8 Predicted Single Facility Construction Noise Levels by Phase

Prediction Location	Noise Level (L_{eq}, dBA)			
	Phase 1	Phase 2	Phase 3	*Phase 4*
Onsite Receptors				
CMF Level 1	55	57	53	*56*
CMF-01	57	59	55	*58*
CMF-02	56	59	55	*58*
SOL Pod 1	51	53	49	*52*
SOL Pod 2	44	46	42	*45*
SOL Pod 3	46	47	44	*46*
SOL Pod 4	58	60	56	*59*
Offsite Receptors				
R-01	44	46	42	*45*
R-02	46	48	45	*47*
R-03	**52**	**53**	50	***53***
R-04	**52**	**53**	50	***52***
R-05	49	**51**	47	*50*
R-06	45	47	43	*46*
R-07	43	44	41	*43*
R-08	41	42	39	*41*
R-09	44	46	43	*45*
R-10	42	44	40	*43*
R-11	39	40	37	*39*
S-01 – Irene Larsen Learning Center	43	45	41	*44*
P-01 – Al Patch Park	47	49	45	*48*
P-02 – John Arlington Park	45	47	44	*46*
P-03 – Keating Park	38	40	36	*39*

Bold – Exceeding applicable criteria.
Notes: dBA = A-weighted decibels.
All predicted noise levels presented are exterior noise levels. Additional noise level attenuation would be provided by building façades.
Source: Extant Acoustical Consulting LLC 2013

As presented in Section 3.9.2, “Regulatory Considerations,” Title 24 regulations establish interior criteria of 70 dBA L_{eq} during active hours and 45 dBA L_{eq} during sleeping hours within noise-sensitive institutional uses. Building façades constructed with a wood frame and a stucco or wood sheathing exterior typically provide a minimum exterior-to-interior noise reduction of 25 dBA with windows closed, whereas a building constructed of a steel or concrete frame, a curtain wall or masonry exterior wall, and fixed plate-glass windows of ¼-inch thickness typically provides an exterior-to-interior noise reduction of 30–40 dBA with windows closed (Paul S. Veneklasen & Associates 1973, cited in Caltrans 2002).

As shown in Table 3.9-8, construction operations and related activities during Phase 2 are predicted to generate maximum exterior hourly noise levels of 60 dBA L_{eq} at the nearest onsite noise-sensitive institutional receiver, SOL Pod 4. Assuming an average exterior-to-interior noise reduction of 25 dBA (with windows closed; prison windows are not operable), interior noise levels would not exceed the Title 24 criteria of 70 dBA L_{eq} onsite or noise-sensitive institutional receptors during Phase 2.

In consideration of local noise control ordinances for the evaluation of potential impacts, state agencies like CDCR are not required to comply with the ordinances but may use them as an indicator of significance. Maximum exterior hourly noise levels predicted to be generated by construction operations and related activities are anticipated to be approximately 53 dBA L_{eq} at the nearest offsite noise-sensitive receptors, R-03 and R-04, which are residences. As such, noise levels from construction sources have the potential to exceed the City of Vacaville Code exterior noise level criteria at nearby offsite noise-sensitive receptors, which are primarily single-family residential structures (50 dBA L_{eq}; see Table 3.9-6).

Construction activities would result in a substantial temporary or periodic increase in ambient noise levels in the vicinity of the CMF/SOL Infill Site, at offsite locations. Because construction activities at the infill site would be located in proximity to offsite residences and could generate noise levels at those residences in excess of exterior noise level criteria established by the City of Vacaville, this impact would be considered significant.

Mitigation Measures

Mitigation Measure 3.9-1

CDCR will implement the following mitigation measures to reduce noise levels generated by onsite construction equipment:

- Construction equipment will be properly maintained per manufacturers’ specifications and fitted with the reasonable noise suppression devices (e.g., mufflers, silencers, wraps). All impact tools will be shrouded or shielded and all intake and exhaust ports on power equipment will be muffled or shielded.
- Construction equipment will not be idled for extended periods (e.g., 20 minutes or longer) of time in the vicinity of noise-sensitive receptors.
- Fixed/stationary equipment (such as generators, compressors, rock crushers, and cement mixers) will be located as far as possible from noise-sensitive receptors.
- CDCR’s mitigation monitor representative or other appropriate representative will appropriately notify nearby sensitive receptors of proposed noise-generating construction activities. The coordinator will manage any complaints resulting from the construction noise.
- Noise-generating construction and related activities will occur between 7 a.m. and 6 p.m.
- CDCR will establish a visual buffer/noise curtain between construction activities and the sensitive noise receptors to further reduce noise from the site.

- If construction operations and related activities occur during more sensitive evening and nighttime hours (6 p.m. to 7 a.m.), CDCR will notify the offsite residences in the vicinity of the infill site 48 hours in advance of nighttime construction activities. Additionally, all nighttime construction activities will be maintained at or below the City of Vacaville Municipal Code nighttime noise level limits for non-transportation noise sources; or a variance will be obtained by the Director, per City of Vacaville policy.

Significance after Mitigation

Implementation of the above mitigation measures and attaining consistency with the provisions of the City of Vacaville Municipal Code would reduce construction-generated noise levels by 5–10 dB at noise-sensitive receptors in the vicinity of the infill site and would not result in a substantial temporary or periodic increase in ambient noise levels in the vicinity of the infill site above levels existing without the contemplated development. As a result, this impact would be reduced to a **less-than-significant** level.

Impact 3.9-2: Groundborne Noise and Vibration Levels at Sensitive Receptors from Construction Activities

Construction activities for the single, level II infill correctional facility on the CMF/SOL Infill Site may result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and operations involved. Groundborne vibration levels caused by various types of construction equipment are summarized in Table 3.9-9.

Table 3.9-9 Representative Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet (in/sec)[1]	Approximate Lv (VdB) at 25 feet[2]
Large Bulldozer	0.089	87
Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Notes: Lv = RMS velocity expressed in vibration decibels (VdB), assuming a crest factor of 4; PPV = peak particle velocity.
Source: Federal Transit Administration 2006

To evaluate vibration impacts at nearby residential receptors, the construction activity generating the highest PPV (large bulldozer) was analyzed. The distance from grading activities to the nearest onsite sensitive receptor would be approximately 250 feet. The resulting groundborne vibration levels resulting from construction activities are predicted to be approximately 0.003 in/sec PPV at the nearest onsite residential receptor. Groundborne vibration levels resulting from construction activities are predicted to be completely attenuated before reaching the nearest onsite or offsite residential receivers. Therefore, groundborne vibration levels attributable to construction activities would not exceed the Caltrans recommended threshold of significance of 0.2 PPV in/sec for exposure of residential uses to vibration PPV from construction.

*Implementation of the infill facility at the CMF/SOL Infill Site would not expose sensitive receptors to groundborne noise and vibration levels that could exceed the Caltrans-recommended threshold of significance. This would be a **less-than-significant** impact.*

Mitigation Measures

No mitigation measures are required.

Impact 3.9-3: Long-term Increase in Traffic Noise Levels at Existing Noise-sensitive Receptors

Long-term operation of the single, level II infill correctional facility at the CMF/SOL Infill Site would result in an increase in ADT volumes on the local roadway network and, consequently, an increase in noise levels from traffic sources along affected segments. To examine the traffic noise impacts, traffic noise levels associated with the infill facility were modeled for roadway segments in the vicinity of the infill site. Traffic noise was modeled based on the FHWA TNM vehicle noise level emissions and sound propagation algorithms. Traffic noise levels were evaluated under the following conditions: existing, existing plus infill facility, existing plus approved projects (EPAP), existing plus approved projects (EPAP) plus infill facility, cumulative (2020), and cumulative (2020) plus infill facility. ADT volumes and distributions of those volumes were obtained from the transportation impact analysis prepared for this contemplated development (Fehr & Peers 2013). Vehicle speeds and truck volumes on local area roadways were determined from field observations conducted on January 24, 2013.

Tables 3.9-10 through 3.9-12 summarize modeled L_{dn} noise levels at a reference distance of 100 feet from the roadway centerline for affected roadway segments in the vicinity of the infill site under modeled conditions, with and without implementation of the single infill correctional facility at the CMF/SOL Infill Site. Actual traffic noise exposure levels at noise-sensitive receptors in the vicinity of the infill site would vary depending on a combination of factors such as variations in daily traffic volumes, relative distances between sources and receiver locations, shielding provided by existing and proposed structures, and meteorological conditions. Refer to Appendix 5C in this volume for complete modeling inputs and results.

It should be noted that existing modeled noise levels for all roadway segments exceed the transportation noise level limit of 60 dBA L_{dn}, established by the City of Vacaville General Plan. Traffic noise levels remained essentially consistent with and without implementation of the infill correctional facility at the CMF/SOL Infill Site, which shows that development of the infill facility at the CMF/SOL Infill Site would not be the cause of traffic noise levels exceeding the 60 dBA L_{dn} General Plan Noise Element criteria.

Table 3.9-10 Predicted Traffic Noise Levels – Existing Conditions and Existing Conditions plus Single Facility

Roadway	Segment Location		L_{dn} at 100 Feet, dBA			
			Existing*	Existing Plus Infill Facility	Net Change	Significant Impact?
Alamo Drive	Davis Street	Alamo Lane	63.3	63.3	<1	No
Alamo Drive	Alamo Lane	Mariposa Avenue	66.1	66.2	<1	No
Alamo Drive	Mariposa Avenue	Peabody Road	66.0	66.1	<1	No
Peabody Road	Elmira Road	Cliffside Drive	63.9	63.9	<1	No
Peabody Road	Cliffside Drive	Hume Way-Berryessa Drive	64.0	64.1	<1	No
Peabody Road	Hume Way-Berryessa Drive	Marshall Road	63.4	63.5	<1	No
Peabody Road	Marshall Road	Alamo Drive	63.2	63.3	<1	No
Peabody Road	Alamo Drive	California Drive	63.8	63.9	<1	No
Peabody Road	California Drive	Caldwell Drive	63.7	63.9	<1	No
Peabody Road	Caldwell Drive	Morning Glory Drive	63.7	63.8	<1	No
Peabody Road	Morning Glory Drive	Foxboro Parkway	63.6	63.7	<1	No
Peabody Road	Foxboro Parkway	CSP-Solano Driveway	63.6	63.7	<1	No

Notes: dBA = A-weighted decibels; L_{dn} = Day night noise level.
* Traffic noise levels are predicted at a standard distance of 100 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.
Source: Data modeled by Extant 2013

Table 3.9-11 Predicted Traffic Noise Levels – Existing plus Approved Project (EPAP) Conditions and EPAP Conditions plus Single Facility

Roadway	Segment Location		CNEL at 100 Feet, dBA			
			EPAP No Infill Facility	EPAP Plus Infill Facility	Net Change	Significant Impact?
Alamo Drive	Davis Street	Alamo Lane	64.2	64.3	<1	No
Alamo Drive	Alamo Lane	Mariposa Avenue	66.9	67.0	<1	No
Alamo Drive	Mariposa Avenue	Peabody Road	67.0	67.0	<1	No
Peabody Road	Elmira Road	Cliffside Drive	64.1	64.1	<1	No
Peabody Road	Cliffside Drive	Hume Way-Berryessa Drive	64.4	64.5	<1	No
Peabody Road	Hume Way-Berryessa Drive	Marshall Road	64.0	64.1	<1	No
Peabody Road	Marshall Road	Alamo Drive	64.0	64.1	<1	No
Peabody Road	Alamo Drive	California Drive	64.5	64.6	<1	No
Peabody Road	California Drive	Caldwell Drive	64.6	64.7	<1	No
Peabody Road	Caldwell Drive	Morning Glory Drive	64.5	64.6	<1	No
Peabody Road	Morning Glory Drive	Foxboro Parkway	64.5	64.6	<1	No
Peabody Road	Foxboro Parkway	CSP-Solano Driveway	64.2	64.3	<1	No

Notes: dBA = A-weighted decibels; L_{dn} = Day night noise level.
* Traffic noise levels are predicted at a standard distance of 100 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.
Source: Data modeled by Extant 2013

Table 3.9-12 Predicted Traffic Noise Levels – Cumulative (2020) Condition and Cumulative (2020) Condition plus Single Facility

Roadway	Segment Location		L_{dn} at 100 Feet, dBA			
			Cumulative	Cumulative Plus Infill Facility	Net Change	Significant Impact?
Alamo Drive	Davis Street	Alamo Lane	64.3	64.3	<1	No
Alamo Drive	Alamo Lane	Mariposa Avenue	67.1	67.1	<1	No
Alamo Drive	Mariposa Avenue	Peabody Road	67.2	67.2	<1	No
Peabody Road	Elmira Road	Cliffside Drive	64.3	64.3	<1	No
Peabody Road	Cliffside Drive	Hume Way-Berryessa Drive	64.6	64.7	<1	No
Peabody Road	Hume Way-Berryessa Drive	Marshall Road	64.2	64.2	<1	No
Peabody Road	Marshall Road	Alamo Drive	64.0	64.1	<1	No
Peabody Road	Alamo Drive	California Drive	64.4	64.5	<1	No
Peabody Road	California Drive	Caldwell Drive	64.7	64.8	<1	No
Peabody Road	Caldwell Drive	Morning Glory Drive	64.7	64.8	<1	No
Peabody Road	Morning Glory Drive	Foxboro Parkway	64.6	64.8	<1	No
Peabody Road	Foxboro Parkway	CSP-Solano Driveway	64.5	64.6	<1	No

Notes: dBA = A-weighted decibels; L_{dn} = Day night noise level.
* Traffic noise levels are predicted at a standard distance of 100 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.
Source: Data modeled by Extant 2013

As shown in Tables 3.9-10 through 3.9-12, the largest increase in roadway noise associated with the development of the infill facility at the CMF/SOL Infill Site would be less than 1 dBA on any affected road segment, which would barely be perceptible. Development of the infill facility at the CMF/SOL Infill Site would not result in a significant increase in traffic noise levels. Furthermore, development would not cause traffic noise levels to exceed the City of Vacaville exterior noise level criteria of 60 dBA L_{dn} for the roadway segments shown in Tables 3.9-10 through 3.9-12.

While implementation of the single, level II infill correctional facility at the CMF/SOL Infill Site could result in an increase of average daily vehicle trips in the facility's vicinity, the increased traffic volumes would not result in a significant (3–5 dBA or greater) increase in traffic noise along roadways in the vicinity of the CMF/SOL Infill Site and would not cause an exceedance of the City of Vacaville noise level criteria. This would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

Impact 3.9-4: Long-term Increase in Onsite Noise Levels from Operation of Stationary Noise Sources

Development of an infill correctional facility at the CMF/SOL Infill Site could introduce several onsite stationary noise sources associated with support and operation of the facility. Stationary noise sources associated with operations of similar CDCR facilities often include heating, ventilation, and air conditioning (HVAC) equipment; mechanical equipment; emergency electrical generators; and loading dock operations. Correctional facilities generally incorporate outdoor public address (PA) systems, multiple alarms, and outdoor recreation facilities for inmates. The noise levels associated with operation of these sources are described separately below.

Support infrastructure for the single facility that are typically handled at a central plant, such as HVAC, mechanical systems, emergency generators, and utility distribution areas, would be facilitated through the existing infrastructure support of CMF/SOL. As such, this analysis does not incorporate further discussion or evaluation of noise levels typically associated with the operation of a central utility plant or associated infrastructure support services.

Public Address System

Development of the infill correctional facility at the infill site would include the installation of a PA system throughout the facility. The number and orientation of PA system components have not yet been determined. Based on reference noise measurements conducted at similar correctional facilities, noise levels for outdoor PA systems can reach intermittent levels of approximately 70–90 dBA L_{max} at 50 feet. Operation of PA systems is generally intermittent and limited in nature (i.e., less than 1 minute in duration), typically involving announcements, daily instructions or other communications necessary for the safety of inmates and correctional staff.

Inmates and personnel within the infill correctional facility are the intended audience for information distributed over the PA system when it is in use, and PA system sound levels will be loud enough to allow clear intelligibility and effective communication. Because inmates and personnel within the infill correctional facility are considered the intended audience and users of the PA system, onsite receptors within the infill facility are not considered to be "noise sensitive" with respect to this noise source, just as inmates at the existing CMF/SOL facilities are not considered "sensitive" to existing PA system noise levels.

Offsite noise-sensitive residential land uses nearest the CMF/SOL Infill Site are located approximately 800 feet east (represented by R-03 and R-04) of the acoustical center of the PA system. The nearest offsite noise-sensitive institutional receptor is the previously mentioned school located on the northern side of California Drive, The Irene Larsen Learning Center, approximately 2,600 feet northwest of the acoustical center of construction operations. Modeled PA system noise levels at these noise-sensitive receptors in the vicinity of the infill site are presented in Table 3.9-13.

Table 3.9-13 Modeled Public Address System Noise Levels

Description	Noise Levels (dBA)	
	L_{eq}	L_{max}
Offsite Receptors		
R-01	36	49
R-02	36	48
R-03	41	53
R-04	40	53
R-05	39	53
R-06	36	50
R-07	34	48
R-08	29	41
R-09	36	47
R-10	34	47
R-11	33	46
S-01 – Irene Larsen Learning Center	35	47
P-01 – Al Patch Park	37	49
P-02 – John Arlington Park	40	52
P-03 – Keating Park	32	45

Notes: dBA = A-weighted decibels; L_{eq} = equivalent noise level; L_{max} = maximum noise level.
All predicted noise levels presented are exterior noise levels. Additional noise level attenuation would be provided by building façades.
Source: Extant Acoustical Consulting 2013.

As presented in Table 3.9-13,exterior noise levels associated with the operation of a PA system at the infill correctional facility are anticipated to range from 29 to 41 dBA L_{eq} and 41 to 53 dBA L_{max} at nearby offsite residential receivers (R-01 through R-11). As such, offsite residential PA system noise levels associated with the development of an infill correctional facility at the CMF/SOL Infill Site are not anticipated to exceed the City of Vacaville exterior, hourly noise level criteria of 50 dBA L_{eq} and 45 dBA L_{eq} for residential uses during daytime (7:00 a.m. to 10:00 p.m.) or nighttime (10:00 p.m. to 7:00 a.m.) hours, respectively.

Parking Lot Activities

Development of the infill correctional facility at the CMF/SOL Infill Site would require additional parking for staff and visitors of the infill facility. Parking would be located southeast of the infill facility, adjacent to Peabody Road with an access road connecting the parking lot to the CSP/SOL access road.

Reference noise level measurements have been collected previously of parking lot activities, including average SEL associated with a single parking event (consisting of vehicle arrival, limited idling, occupants exiting the vehicle, door closures, conversations among passengers, occupants entering the vehicle, startup, and departure of the vehicle). Based on those measurements, average SEL associated with a single parking event are approximately 71 dB SEL at a distance of 50 feet.

As described in detail in Section 3.11, “Transportation,” the single facility is anticipated to have an estimated staff of 193 personnel. The number of parking spaces planned for the contemplated development is based on the total number of staff for the second and third watches; additional spaces are included for weekend visitation, assumed for 15 percent of the inmate population. Therefore, the infill facility is planned to include approximately 205 parking stalls. These assumptions were used as input to the SoundPLAN noise simulation model created for the contemplated development. The resultant parking lot noise levels at noise-sensitive uses in the vicinity are shown in Table 3.9-14.

Exterior noise levels generated from the parking operations at the CMF/SOL infill correctional facility would result in average hourly noise levels ranging from less than 15 dBA to 36 dBA L_{eq} and maximum noise levels of less than 32 dBA up to 55 dBA L_{max} at onsite institutional land uses. Based on the ambient noise levels recorded during the ambient noise level survey, exterior parking lot noise levels would likely be at or below ambient noise levels experienced at the noise prediction receiver locations. Assuming an average exterior-to-interior noise reduction of 25 dBA (with windows closed; prison windows are not operable), interior noise levels would not exceed the Title 24 regulations of 70 dBA L_{eq} during active hours or 45 dBA L_{eq} during sleeping hours at onsite noise-sensitive institutional receptors.

Exterior noise levels at offsite residential receptors generated from parking operations at the infill correctional facility are anticipated to be considerably less than those reported above and would be largely dominated by the existing ambient noise at the nearest offsite residential land use. Noise levels are not be anticipated to approach or exceed the City of Vacaville Code exterior, hourly noise level criteria of 50 dBA L_{eq} and 45 dBA L_{eq} for residential uses during daytime (7:00 a.m. to 10:00 p.m.) or nighttime (10:00 p.m. to 7:00 a.m.) hours, respectively.

Table 3.9-14 Modeled Parking Lot Noise Levels

Description	Noise Levels (dBA)	
	L_{eq}	L_{max}
Onsite Receptors		
CMF Level 1	23	*37*
CMF-01	20	*32*
CMF-02	22	*35*
CHCF	--[1]	--[1]
SOL Pod 1	--[1]	--[1]
SOL Pod 2	--[1]	--[1]
SOL Pod 3	27	*40*
SOL Pod 4	36	*52*
Offsite Receptors		
R-01	27	*41*
R-02	32	*48*
R-03	29	*45*
R-04	25	*38*
R-05	21	*34*
R-06	--[1]	--[1]
R-07	--[1]	--[1]
R-08	--[1]	--[1]
R-09	--[1]	--[1]
R-10	--[1]	--[1]
R-11	--[1]	--[1]
S-01 – Irene Larsen Learning Center	--[1]	--[1]
P-01 – Al Patch Park	--[1]	--[1]
P-02 – John Arlington Park	25	*38*
P-03 – Keating Park	--[1]	--[1]

Notes: dBA = A-weighted decibels; L_{eq} = equivalent noise level; L_{max} = maximum noise level.
[1] Parking operation noise levels at this location are predicted to well below, and will be dominated by the ambient noise environment; as such, they are not reported.
All predicted noise levels presented are exterior noise levels. Additional noise level attenuation would be provided by building façades.
Source: Extant Acoustical Consulting 2013.

Other Stationary Noise Sources

Additional intermittent noise sources attributable to operation of the infill site include the opening and closing of entries, adult voices, varied mechanical equipment, and the use of maintenance equipment. Such noise-generating activities occur infrequently and are generally intermittent. Because of the infrequent and intermittent nature of these noise sources, it is not feasible to address the individual noise impacts. Such noise events occur infrequently and would be similar to noise events and noise levels already occurring in the vicinity of the infill site; therefore, noise level exceeding the City of Vacaville noise criteria are not predicted and are would not be expected to result in significant noise level increases (3–5 dBA or greater) at nearby noise-sensitive receptors

Operation of the infill correctional facility at the CMF/SOL Infill Site would result in additional onsite stationary-source noise being introduced in the vicinity of the infill site. Operational and stationary noise sources would not result in a noticeable (3 dBA or greater) increase in noise levels in the vicinity of the CMF/SOL Infill Site, and would not cause of an exceedance of the City of Vacaville stationary- source noise level criteria. This would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

Impact 3.9-5: Potential for Incompatibility of Proposed Onsite Land Uses with the Ambient Noise Environment

Development of an infill correctional facility at the CMF/SOL Infill Site would include construction of new noise-sensitive institutional receptors (infill housing units). The state has established noise compatibility standards for prisons and institutional land uses within Title 24 of the California Code of Regulations. The section states: “Housing areas (for inmates) shall be designed and constructed so that the average noise level does not exceed 70 decibels during periods of activity and 45 decibels during sleeping hours.” (Part 1, Title 24, CCR 2001)

Based on the noise monitoring conducted in the vicinity of the CMF/SOL Infill Site, average daytime ambient noise levels currently range from approximately 52 to 69 dBA L_{eq} (refer to Table 3.9-1). Therefore, development of the infill correctional facility at the CMF/SOL Infill Site would not be expected to cause the exposure of new noise-sensitive receptors on the infill site to existing ambient noise levels exceeding Title 24 interior noise level regulations of 70 dBA L_{eq} during active hours or 45 dBA L_{eq} during sleeping hours at onsite noise-sensitive institutional receptors.

Existing traffic noise level exposure at the infill site was modeled using the same methodology and background information as outlined previously under Impact 3.9-3. Modeling of existing traffic noise level exposure at the infill correctional facility was based on existing plus single infill facility conditions as presented in Table 3.9-14. Modeled L_{dn} noise levels were propagated to the nearest boundary of the infill site. Resulting noise levels for existing traffic noise exposure at the infill facility would be approximately 56 dBA L_{eq}, peak-hour and 55 dBA L_{dn}, due to vehicular traffic on Peabody Roadway. Based on the traffic noise modeling and assuming an exterior-to-interior noise level reduction of 25 dB, development of the infill correctional facility at the CMF/SOL Infill Site is not anticipated to cause the exposure of new noise-sensitive receptors at the infill site to existing traffic noise levels exceeding Title 24 interior noise level regulations of 70 dBA L_{eq} during active hours or 45 dBA L_{eq} during sleeping hours at onsite noise-sensitive institutional receptors.

Development of the infill correctional facility at the infill site would not affect the location, configuration or operation of the existing firing range. It is expected that operations of the existing firing range would continue during and following the development of the infill facility. As such, exposure of existing onsite noise-sensitive receptors to firing range noise would remain consistent with existing conditions.

Modeled firing range noise levels at the infill facility would range from 39 to 46 dBA L_{eq} and 45 to 52 dBA L_{max} at the exterior building facades of the inmate housing units. Assuming an average exterior-to-interior noise reduction of 25 dBA, interior noise levels would not be anticipated to exceed the Title 24 regulations of 70 dBA L_{eq} during active hours or 45 dBA L_{eq} during sleeping hours at onsite noise-sensitive institutional receptors within the infill correctional facility.

*Implementation of a level II infill correctional facility at the CMF/SOL Infill Site would not result in the exposure of onsite noise-sensitive land uses to noise levels exceeding applicable criteria. This would be a **less-than-significant** impact.*

Mitigation Measures

No mitigation measures are required.

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3.10 PUBLIC SERVICES

This section describes the existing public services provided to the California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site, including police services, fire protection services, emergency medical services, schools, and parks. Impacts are evaluated in relation to increased demand for public services associated with the development of a single, level II infill correctional facility at the CMF/SOL Infill Site, and actions needed to provide increased services that could lead to physical environmental effects. Public utilities at CMF/SOL (i.e., water supply, wastewater treatment and disposal, solid waste disposal, and electricity and natural gas systems) are discussed in Section 3.12, "Utilities," of this volume of the draft environmental impact report (DEIR).

3.10.1 ENVIRONMENTAL SETTING

POLICE SERVICES

The California Department of Corrections and Rehabilitation (CDCR) staffs CMF and SOL with correctional officers who are equipped to manage security at the facilities. CMF currently employs 724 rotating custody staff and maintains an appropriate number of correctional officers on duty throughout the day (CDCR 2010a). There are 775 custody employees at SOL (CDCR 2010b). CDCR handles most law enforcement needs at its facilities and rarely requires assistance from outside police service providers. If necessary, outside police services are provided to CMF/SOL by the Vacaville Police Department (VPD) and the Solano County Sheriff's Department.

CMF/SOL, including the infill site, is in the jurisdiction of the VPD, which has a staff of more than 100 sworn officers at the VPD's Merchant Street Station, approximately 1.5 miles from CMF/SOL at 660 Merchant Street. Beyond general CDCR assistance requests, services requested may include calls associated with suspicious circumstances in the area or illicit alcohol possession.

The Solano County Sheriff's Department is responsible for providing law enforcement for the unincorporated areas of Solano County. Situations where the sheriff's department might be deployed to CMF/SOL include responding to suspicious individuals in the unincorporated land around the prison facilities or mutual aid requests for the explosive detection canine unit. Similar to the VPD, the sheriff's department provides assistance as needed to CMF/SOL in accordance with the department's standard mutual aid agreement for government agencies.

FIRE PROTECTION

Fire suppression, hazardous material incident response, and emergency medical and ambulance transport services for the CMF/SOL Infill Site are provided by the onsite CMF Fire Department (CMF-FD) and the Vacaville Fire Department (VFD). Emergency access to the CMF/SOL Infill Site is provided by either Foxboro Parkway or Peabody Road.

CMF FIRE DEPARTMENT

The CMF-FD firehouse was built in 1955 to serve CMF; it accommodates one fire truck, four inmates, one full-time fire chief, and one part-time paid firefighter. In 1955, CMF housed approximately 1,500–2,000 patients. The CMF-FD currently is responsible for serving an average of 9,500 inmates, and 3,500 staff. Resources assigned to the firehouse now include a fire chief, fire service training specialist, hazardous materials specialist, two fire captains, 16 inmate firefighters, and six firefighting vehicles. The department operates 24 hours a day.

During normal working hours (i.e., 7:30 a.m. to 3:30 p.m., Monday through Friday), on-duty CMF-FD staffing consists of the fire chief, fire training specialist, hazardous materials specialist, one to two fire captains, and several inmate firefighters. Staffing after normal working hours (i.e., after 3:30 p.m.), on weekends, and on holidays consists of one to two fire captains and several inmate firefighters. Fire captains are responsible for a variety of duties in addition to emergency response.

VACAVILLE FIRE DEPARTMENT

The VFD provides fire suppression, rescue, hazardous materials response, and non-fire emergency response services in the City of Vacaville. The VFD also provides code enforcement, fire and life safety public education, and fire investigation services for the city. Citywide, VFD has a staff of 85 providing services 24-hours per day.

The VFD currently has four stations located throughout the City: Station 71 on South Orchard Avenue in the northwest, Station 72 on Ulatis Drive in the east, Station 73 on Eubanks Court in the Interchange Business Park, and Station 74 on Alamo Drive in the south. Located less than 0.5 mile from the infill site, Station 74 (1850 Alamo Drive) is the nearest fire station. The station consists of five personnel, one fire engine, and one ambulance.

All engines are Class A pumpers capable of pumping 1,500 gallons per minute. Other emergency vehicles prepared to combat fire include one grass unit, four brush units, one 3,000-gallon water tender, one medium rescue squad unit, one tiller truck, and two inflatable boats. The VFD has established an emergency response standard of arriving at critical fire and medical calls within seven minutes, 90 percent of the time.

EMERGENCY SERVICES

Emergency medical services are provided to the infill site by CMF-FD and VFD. CMF-FD emergency response services include code 3 (i.e., emergency response) ambulance escorts. CMF-FD also provides emergency response assistance to other jurisdictions in the local area on a mutual aid basis.

The VFD currently provides emergency medical service and ambulance transport services to CMF and SOL. A total of 73 emergency response personnel, including two division chiefs and the fire chief, work on a three-shift schedule. The shifts have a minimum daily shift staffing of 21 emergency response personnel, with five personnel at each of the four fire stations, plus one battalion chief. VFD can dispatch one medic unit to all reported incidents, with additional units sent when needed. VFD maintains the same response standard (within 7 minutes, 90 percent of the time) for EMS as it does to fire-related emergencies.

SCHOOLS

There are two public school districts serving all school grades in Vacaville and several school districts serving the adjacent cities of Fairfield, Sacramento, and Elk Grove. The Vacaville Unified School District (VUSD) operates 10 elementary schools, two middle schools, and four high schools. As of March 2013, district enrollment was 12,583 (Poei 2013). District capacity is 13,838students (Bradanini 2013). The Travis Unified School District (TUSD) provides educational services to approximately 5,400 students in and adjacent to Vacaville and is made up of five elementary schools, one middle school, one high school, an alternative high school, and a community day school (TUSD 2012ab). As of 2011, district enrollment exceeded capacity by more than 260 students (TUSD 2012b).

Fairfield-Suisun Unified School District serves the cities of Fairfield and Suisun. The district has an enrollment of approximately 22,000 kindergarten through grade 12 students, and comprises five high schools, five middle schools, and 20 elementary schools (FSUSD n.d.). The district projects that 270

new students would be generated by development in the next 10–12 years, but that overall enrollment will decline. High school enrollment alone is expected drop by 300 students in the next 6 years (FSUSD 2013).

Sacramento City Unified School District serves nearly 48,000 students on 81 campuses (SCUSD 2013). District enrollment is at 56 percent of capacity and projections for future enrollment show continued declines (Sacramento Bee 2013). Elk Grove Unified School District serves more than 61,500 students at more than 60 schools. The district has seen a decline in enrollment in recent years and currently has capacity to accommodate new students (Pierce 2013).

PARKS

There are several parks in the immediate vicinity of the CMF/SOL Infill Site. These include Arlington Park west of Peabody Road, Al Patch Park immediately north of the infill site, and Keating Park northwest of the infill site. The 18-acre Arlington Park includes a group picnic area with 12 tables, a playground, four backstops, four ball fields, two football fields, restrooms, a concession building, and parking that can accommodate 200 cars. Al Patch Park is equipped with three lighted softball fields, one lighted football field, an all-purpose track, concessions, restrooms, and water stations. The 20-acre Keating Park includes 10 picnic tables, seven backstops, two restrooms, concession stand, seven baseball diamonds, a scoreboard, three grandstands, and storage areas. The park also has multi-purpose fields for youth ball, major ball, and softball (City of Vacaville 2013).

3.10.2 REGULATORY CONSIDERATIONS

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal regulations or laws related to police services, fire services, emergency services, schools, or parks apply to the development of level II infill correctional facilities at CMF/SOL.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

A list of the applicable state plans, policies, regulations, laws, and ordinances is provided below. Complete summaries of the federal and state regulations are provided in Volume 1, Appendix 1B.

- Fire Safe Regulations (California Code of Regulations Title 14 and Title 19) - Title 14 establishes minimum wildfire protection standards in conjunction with building construction and development in the State Responsibility Area. Title 19 contains regulations that have been developed by the State Fire Marshal for the purpose of establishing additional fire protection for group occupancies, such as places of assembly, schools, high rise buildings, hospitals and organized camps.
- California Building Standards Code - Title 24 Part 9, the California Fire Code, is based on the International Fire Code, with the express purpose of prescribing regulations governing the safeguarding of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises.
- California Emergency Services Act - The California Emergency Services Act of 1970 established authority for the preparation of an emergency preparedness plan for prisons. All institutions are required to ensure preparedness in dealing with disasters such as earthquakes, fires, and floods.
- Senate Bill 50 - Senate Bill 50 instituted a new school facility program by which school districts can apply for state construction and modernization funds. This legislation imposed limitations on the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development. It also provided the authority for school districts to levy fees at three different levels.

- California Education Code - Section 17620 authorizes school districts to levy a fee, charge, dedication, or other requirement against any development project for the construction or reconstruction of school facilities, provided that the district can show justification for levying of fees.
- California Government Code - Section 65995 limits the fee to be collected by school districts under the Education Code to the statutory fee unless a school district conducts a Facility Needs Assessment and meets certain conditions.

No state regulations or laws related to police services or parks apply to the development of level II infill correctional facilities at CMF/SOL.

LOCAL PLANS, POLICIES, AND ORDINANCES

The CMF/SOL Infill Site is located on land that is owned or controlled by the State. As a state agency, CDCR is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

SOLANO COUNTY GENERAL PLAN

The Public Facilities and Services Element of the Solano County General Plan (Solano County 2008) establishes county policy to provide an effective and responsive level of police protection (including facilities, personnel, and equipment) through the Solano County Office of the Sheriff and in coordination with city police departments (PF.P-40). The General Plan also includes policies to ensure accessible and cost-effective fire service throughout the county, and to facilitate coordination among city and county fire agencies and districts to improve response times, increase services levels, provide additional training, and obtain essential equipment (PF.P-38). In addition, the Solano County General Plan includes policies to ensure accessible and cost-effective emergency medical service throughout the county. Policies to ensure necessary financing for provision of new school facilities are also presented in the plan (PF.P-44).

CITY OF VACAVILLE GENERAL PLAN

The City of Vacaville General Plan (City of Vacaville 2007) includes the following policies to inform school districts of projects that may affect the provision of educational facilities and to plan educational facilities with sufficient permanent capacity to meet the needs of projected enrolment:

- **2.2-I 10:** Require new development to pay capital improvement fees for public facilities as necessary to maintain adequate resources and service levels. Adequate public facilities should be provided for new urban development, and new developments should bear their "fair share" cost of providing such facilities. In order to make reasonable provision for these new public facilities, the City of Vacaville has established public facilities fees which are applied to all new development. The fees are intended to provide for facilities that are required in addition to the normal onsite and offsite development improvements. Such fees are established to implement the policy of the General Plan and may include charges for connection to the water system, connection to the sanitary sewer system, parkland and improvements, school facilities, drainage improvements, and other capital improvements such as streets, bridges, traffic signals, and public buildings. The City Council may enact other public facilities fees if it finds that such fees are required to implement the policy of the General Plan.

3.10.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State of California Environmental Quality Act (CEQA) Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact relating to public services if it would do any of the following:

- result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or in 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;
- impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan;
- 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; or
- include recreational facilities, or require the construction or expansion of recreational facilities, that might have an adverse physical effect on the environment.

The State CEQA Guidelines (Section 15064.5) define a “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Recreational facilities: As described in Section 3.4, “Employment, Population, and Housing,” of this volume of this DEIR, new staff at CMF/SOL would reside primarily in Solano and Sacramento Counties and would be distributed among several cities and unincorporated communities in these counties. Any increase in the use of recreational facilities that may occur as a result of new employees would be minimal and dispersed such that they would not be expected to cause substantial deterioration of any one facility, or would require the construction of new facilities. Further, development of the infill site would not affect any adjacent park facilities. Therefore, no significant recreational impacts would occur and this issue is not discussed further.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: Impacts on Police Services

Development of single, level II infill correctional facility at the CMF/SOL Infill Site would increase in the number of employees on the CDCR property by approximately 193 staff, 104 of whom would be correctional officers. These new correctional officers, along with the existing police and correctional officers at the existing CMF/SOL facilities, would provide police protection at the potential level II infill correctional facility. To provide additional police presence when support is needed, CDCR would continue mutual aid agreements with the Solano County Sheriff’s Department and Vacaville Police Department.

As described in Section 3.4, “Employment, Population, and Housing,” of this volume, the additional employee population would be expected to come largely from the existing regional workforce. In the event that some of these new employees are new residents to the area, they would likely be dispersed throughout the surrounding communities, and would not cause a substantial increase in demand for police protection services. Further, there is no known connection between prisons and increased crime rates in the surrounding communities. Therefore, demand on police services in the neighboring communities is not expected to increase substantially as a result of the development of level II infill correctional facilities at CMF/SOL.

Development of the single, level II infill correctional facility at the CMF/SOL Infill Site would not create substantial demand for new police protection facilities in any one community; would provide for onsite security needs through the employment of 104 new correctional officers; and would result in a relatively small increase in the volume of calls to the Solano County Sheriff's Department or Vacaville Police Department. No new police facilities or personnel would be required. This impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.10-2: Impacts on Fire Services

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in an increase in the number of employees at the prison site of up to 193 staff. As described in Section 3.4, "Employment, Population, and Housing," of this volume, the additional employee population would not generate a substantial number of new residents or concentrate new residents within any one community. New staff would be distributed throughout Vacaville, Sacramento, Elk Grove, Fairfield, and other jurisdictions. Therefore, the infill site would not create substantial demand for new fire protection service facilities in any one community, and adverse physical impacts associated with such facilities would not occur.

On the infill site, fire protection would continue to be provided by CMF-FD and supplemented by VFD through a mutual aid agreement. Further, to limit the potential for fire and wildfires from adjacent lands, CDCR would design the infill site to meet state building standards; it would contain water sprinkler systems sufficient to handle most fire emergencies, in addition to providing an adequate number of fire suppression systems. CDCR will consult with the State Fire Marshall to ensure structures are designed to be resistant to wildfire, including proper landscaping practices, construction standards and techniques, adequate emergency water supply needs, and access. Therefore, it is not anticipated that the development of level II infill correctional facilities at CMF/SOL would substantially affect the ability of fire departments to continue to provide adequate levels of fire protection services to the CMF/SOL Infill Site or surrounding areas.

Implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site would not create substantial demand for new fire facilities in any one community; would generate few calls for offsite fire protection services; and would be designed consistent with State fire regulations. Therefore, no new fire facilities or personnel would be required. This impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.10-3: Impacts on Emergency Services

The California Emergency Services Act of 1970 established authority for the preparation of an Emergency Preparedness Plan for prisons. Each CDCR institution must assign an emergency coordinator to implement this plan and must prepare an Emergency Preparedness Plan for submission to the Director of Corrections for review and approval and must assign an emergency coordinator to implement this plan. In accordance with the act, such a plan was developed for CMF/SOL according to the requirements of the California Office of Emergency Services and organized according to the specific site needs for this institution. All institutions are required to ensure preparedness in dealing with disasters such as earthquakes, fires, and floods. The emergency plan for CMF/SOL includes contingency plans to respond to the following types of emergency situations: war, flood, civil disturbance, pollution, earthquake, fire, and industrial accident transportation. The plan provides detailed routes of egress to more secure buildings and/or areas in the event of an emergency

evacuation of buildings and/or other areas within CMF/SOL. Employees are trained to follow specific instructions and precautionary measures for emergencies, and in the use of emergency equipment and medical aids. Development of the level II infill correctional facility at CMF/SOL would not interfere with plan compliance. Following the existing Emergency Preparedness Plan for CMF/SOL would address any potential impairment to the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan.

The CMF-FD provides emergency response services to CMF/SOL, emergency response ambulance escorts for VFD, and emergency response assistance to the local area on a mutual aid basis. The VFD also provides emergency medical and ambulance transport services to CMF and SOL through mutual aid agreement. As discussed above for fire protection services, these facilities would be capable of supporting the infill site.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in increased emergency service requirements that could not be handled by CMF-FD or the VFD or physically interfere with or impair implementation of the emergency response plan. This impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.10-4: Impacts on Schools

Employees of the existing CMF and SOL, and their families, reside throughout adjacent and outlying communities, primarily in Solano and Sacramento Counties. Based on the current distribution of CMF employees in the region (refer to Section 3.4, “Employment, Population, and Housing,” in this volume), up to approximately 30 percent of development-related staff members and their families would likely reside in Vacaville, while between 8 percent and 13 percent of staff members would likely reside in Sacramento, Elk Grove, and Fairfield. To the degree that employees would reside in new housing in areas, this housing would be subject to school impact fees. Although these fees are not typically sufficient to fully fund construction costs, California Government Code Section 65996 has deemed that payment of school fees is full mitigation of school impacts under CEQA. In addition to school impact fees, school districts have a variety of other funding sources that offset the construction of new schools, including matching state funds and various local bond fund opportunities.

Using the existing employee geographic distribution, approximately 58 (30 percent) of the 193 people would reside in the City of Vacaville; the remaining employees and their families would be distributed throughout other adjacent and outlying cities. Assuming, conservatively, that all 58 new CDCR employees relocate to the City of Vacaville as a result of the contemplated level II infill correctional facilities, and that the average household in the area includes one school-age child, the development of level II infill correctional facilities at CMF/SOL could result in approximately 58 new students enrolled in VUSD and TUSD schools. This would amount to a small (less than 1 percent) increase in enrollment across these two districts.

Further, in accordance with Assembly Bill (AB) 900 and California Government Code Section 15819.403, local mitigation costs will be provided by CDCR to local government and school districts as required by California Penal Code Section 7005.5 (c) and (d) (these local mitigation costs are unrelated to CEQA requirements). Under this section of the penal code, CDCR would provide $800 per bed being constructed as part of the Level II Infill Correctional Facility Project. Of this, CDCR will pay $400 per bed directly to the Solano County superintendent of schools for allocation among affected local education agencies. CDCR would pay the remaining $400 per bed to the City of Vacaville and Solano County upon receipt of resolutions adopted by the governing bodies indicating agreement by these entities regarding the specific allocations to each entity.

A concentrated increase in school-age children is not anticipated as a result of the employment opportunity presented by the development of a single, level II infill correctional facility at the CMF/SOL Infill Site. Increases in population resulting from the new positions created by the infill facilities would be accommodated in the existing planned housing within the surrounding communities. New housing developments would be required to pay school impact fees. Further, for direct impacts on schools, California Government Code Section 65996 has deemed that payment of school fees by residential developers is full mitigation of school impacts under CEQA. In accordance with AB 900 and California Government Code Section 15819.403, CDCR would also contribute $317,200 to the superintendent of Solano County schools for distribution to school districts affected by implementation of the single, level II infill correctional facility at the CMF/SOL Infill Site. School impacts would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

3.11 TRANSPORTATION

This section describes the existing circulation patterns in the vicinity of the California Medical Facility/California State Prison, Solano (CMF/SOL) in Vacaville, California and evaluates transportation impacts due to construction and operation of a single, level II infill correctional facility based on a traffic analysis conducted by Fehr & Peers (2013) (included as Appendix 5D in this volume [Volume 5] of this draft environmental impact report [DEIR]). The analyses in this section are based on traffic volume data collected in January 2013; site visits conducted in January 2013; and incorporation, where appropriate, of data from local and regional transportation studies. This section also evaluates two potential access options for a single, level II infill correctional facility at CMF/SOL. The first access option would involve connection, internal to the CDCR property, to SOL's existing main entrance. The second access option would involve a new entrance to the CDCR property at the intersection of Peabody Road and Foxboro Parkway. Impacts related to potential hazards due to the aircraft operations are addressed in Section 3.6, "Hazards and Hazardous Materials," of this volume of the DEIR.

3.11.1 ENVIRONMENTAL SETTING

EXISTING ROADWAY NETWORK

Exhibit 3.11-1 illustrates the existing street system serving the study area. Interstate 80 (I-80) provides primary regional access to the study area. Peabody Road would provide access to the CMF/SOL Infill Site. Brief descriptions, including physical characteristics of principal roads and highways serving the study area, are detailed below.

Interstate 80 (I-80) is an east-west interstate highway that passes through Vacaville, California. I-80 provides regional access to San Francisco to the west and Sacramento to the east. Through Vacaville, I-80 is an eight-lane separated facility with a posted speed limit of 65 mph.

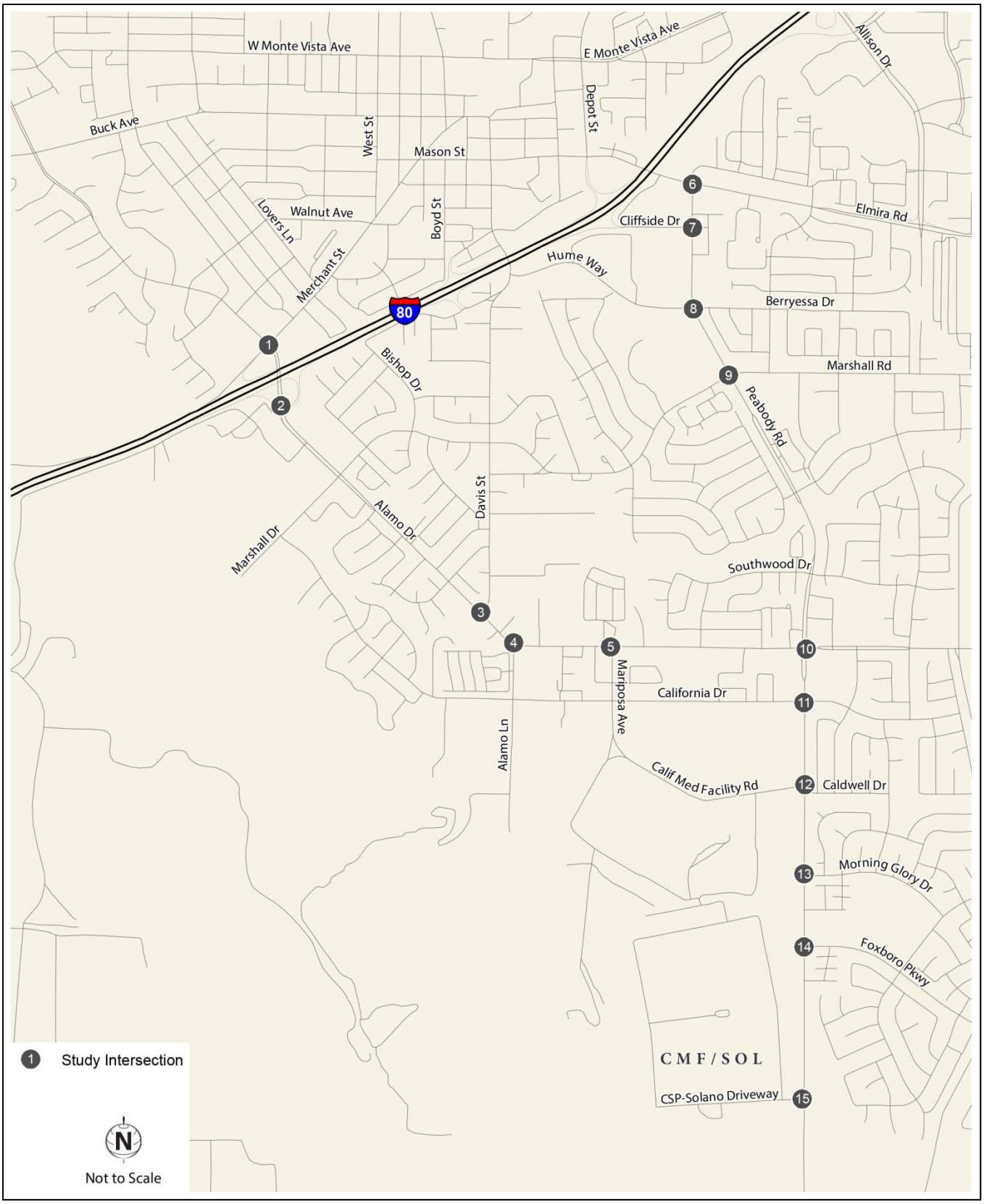
Alamo Drive is generally an east-west arterial roadway that connects to Peabody Road and Leisure Town Road. Alamo Drive is a six-lane arterial from I-80 to Marshall Road, and a four-lane arterial west of Marshall Road. A two-way left-turn lane exists from Marshall Road to Mariposa Avenue, and east of Rosewood Drive. The posted speed limit on Alamo Drive between I-80 and Peabody Road varies from 30 to 35 mph.

Peabody Road is a north-south arterial roadway that connects to Elmira Road and I-80 to the north and Solano County to the south. North of the SOL Driveway, Peabody Road is mostly four lanes with sections that have a two-way left-turn lane. South of the SOL Driveway, Peabody Road is a two-lane facility. The posted speed limit on Peabody Road varies from 35 to 45 mph.

EXISTING TRANSIT FACILITIES

City Coach provides fixed route transit service in the City of Vacaville, which includes six routes throughout the City. Service is provided Monday through Friday, from approximately 6:00 a.m. to 6:30 p.m. Saturday service is provided from approximately 8:00 a.m. to 6:00 p.m. Route 5 provides service along Alamo Drive between Merchant Street and Nut Tree Road, east of Peabody Road. Route 8 provides service on Peabody Road north of California Drive. City Coach also provides Dial-a-Ride paratransit service.

Yolobus Route 220 provides regional connections between Vacaville, Winters, and Davis. Weekday westbound service is provided from 8:00 a.m. 3:30 p.m., and eastbound service is provided from 9:30 a.m. to 4:30 p.m. Saturday service is provided 8:00 a.m. 3:30 p.m. for the westbound route, and from 9:15 a.m. to 5:00 p.m. for the eastbound route. Sunday and holiday service is not provided.



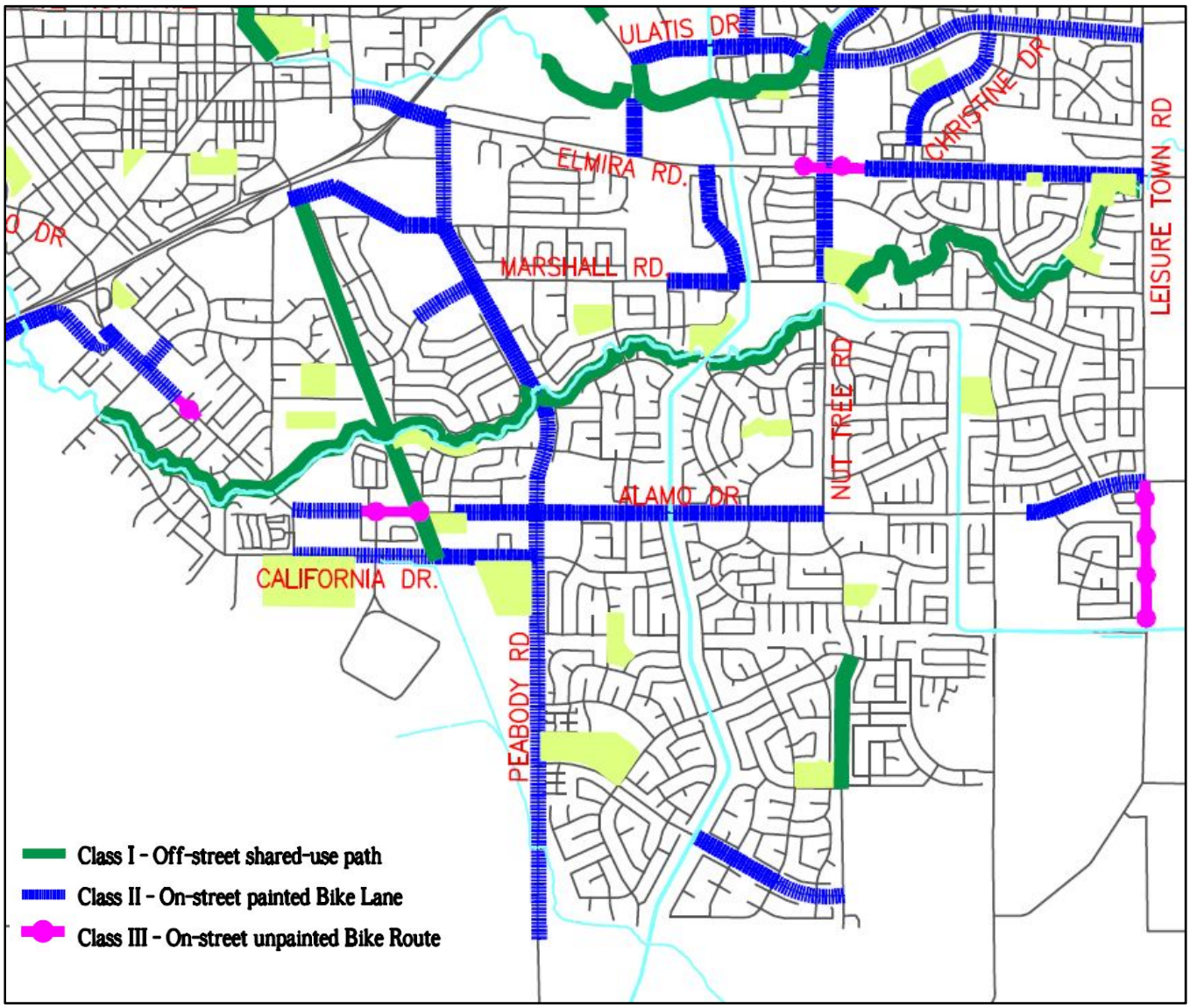
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-1 Existing CMF/SOL Roadway Network and Traffic Study Locations

EXISTING BICYCLE AND PEDESTRIAN FACILITIES

The City of Vacaville has a system of bicycle facilities including bike lanes on Peabody Road, California Drive, and sections of Alamo Drive near CMF/SOL. The Southside Bikeway is a north-south Class I bike path that connects California Drive to the Davis Street and Hume Way intersection south of I-80. The Alamo Creek Bike Trail is an east-west Class I bike path that connects Marshall Road near California Drive to Elmira Road at Patwin Park. Exhibit 3.11-2 below shows the existing bicycle facilities near CMF/SOL.

Sidewalks exist on Alamo Drive from I-80 to east of Peabody Road, and on Peabody Road from Elmira Road to California Drive. South of California Drive, sidewalks are only present on the east side of Peabody Road.



Source: City of Vacaville Bike Paths, www.cityofvacaville.com, 2010.

Exhibit 3.11-2 City of Vacaville Bicycle Facilities in the Vicinity of CMF/SOL

PROPOSED PROJECT TRAFFIC ELEMENTS

The single, level II infill correctional facility would be located on the eastern portion of the existing CMF/SOL site. Two options for access to this infill site are being considered, but only one access would be used by the single, level II infill correctional facility:

- **Access Option 1** would provide access at the existing SOL Driveway on Peabody Road. This access driveway would serve traffic to the existing SOL and the CMF/SOL infill facility.
- **Access Option 2** would provide access at Foxboro Parkway, creating a new west leg of the existing intersection on Peabody Road. This access driveway would only serve traffic for the CMF/SOL infill facility.

The extent of the analysis in this transportation section was determined based on an evaluation of the area within which traffic generated by construction and operation of a level II infill correctional facility at CMF/SOL may be sufficient to cause traffic conditions to degrade. The trip generation associated with a new single, level II infill correctional facility at the CMF/SOL Infill Site is based on the number of new employees, their corresponding shift times, and the anticipated increase in delivery and service vehicle trips to the site.

EMPLOYEE TRAFFIC

The development of a level II infill correctional facility at the CMF/SOL Infill Site would include new custody and support staff (non-custody or administrative) employees. Custody staff generally works in three shifts:

- First Watch - 10:00 p.m. to 6:00 a.m.
- Second Watch - 6:00 a.m. to 2:00 p.m.
- Third Watch - 2:00 p.m. to 10:00 p.m.

Most support staff generally works a second-watch shift from 8:00 a.m. to 5:00 p.m. A small number of support staff work a first- or third-watch shift. For analysis purposes, it was assumed that the first- and third-watch support staff would work from 10:00 p.m. to 6:00 a.m. and from 2:00 p.m. to 10:00 p.m., respectively. The first- and third-watch staff would not work an 8:00 a.m. to 5:00 p.m. shift, and therefore would not generate a.m. and p.m. peak hour trips. By assuming that these trips are made in conjunction with the first and third watches of the custody employees, the trips are accounted for in the daily trip generation estimates.

The single, level II infill correctional facility would employ 193 additional weekday staff:

- 16 new custody employees during the first watch (10:00 p.m. to 6:00 a.m.),
- 57 new custody employees during the second watch (6:00 a.m. to 2:00 p.m.),
- 31 new custody employees during the third watch (2:00 p.m. to 10:00 p.m.),
- 2 new support staff employees during the first watch (10:00 p.m. to 6:00 a.m.),
- 81 new support staff employees during the second watch (8:00 a.m. to 5:00 p.m.), and
- 6 new support staff employees during the third watch (2:00 p.m. to 10:00 p.m.).

The staffing spreadsheets provided by the California Department of Corrections and Rehabilitation (CDCR) are provided in Appendix 5D of this volume.

Estimates of potential trips generated by these employees were developed using the following key assumptions:

- All employees would arrive within one hour of the beginning of their shift and leave within one hour of the end of their shift only (i.e., all employees arrive/leave within one hour of the other employees on their watch).
- All employees would make two trips per day (i.e., one trip to work and one trip from work).
- All employees would arrive to the site individually by personal vehicle.

INMATE TRANSFERS

The operation of level II infill correctional facilities at CMF/SOL would generate a negligible number of inmate transfer trips (i.e., less than five per day). The transfer of inmates would be conducted in accordance with CDCR's existing inmate transfer system and, therefore, is not considered a part of the proposed project requiring evaluation under CEQA. Therefore, the trip generation estimates of the infill facility do not include these trips.

VISITOR TRAFFIC

Visiting hours are limited to weekends and holidays; therefore, these trips would not affect the weekday, a.m. and p.m. peak hour study periods.

DELIVERY AND SERVICE VEHICLES

Based on the projected increase in inmate population, a total of five additional service and delivery vehicles have been projected for a typical weekday during peak operating conditions. Since each vehicle would generate two daily trips (one inbound and one outbound), a total of ten additional daily trips would be generated by the operation of a single, level II infill correctional facility at the CMF/SOL Infill Site. It was assumed that the deliveries would be spaced out throughout the day. Therefore, to present a conservative analysis, it was assumed that three service/delivery trips would occur during the a.m. peak hour and three trips would occur during the p.m. peak hour.

ANALYSIS METHODOLOGY

This transportation section assesses the operation of street segments, key intersections, and freeway ramps in the project study area, based on the anticipated distribution of traffic related to the construction and operation of a single, level II infill correctional facility at CMF/SOL.

TRANSPORTATION STUDY LOCATIONS

Exhibit 3.11-1 shows the study intersections. Intersection operations were evaluated to determine if there would be any potential impacts on the surrounding roadway network with the development of a single, level II infill correctional facility at the CMF/SOL Infill Site. The following intersections were selected for analysis based on past studies in the area and consultation with staff from the City of Vacaville (City):

- Alamo Drive and Merchant Street
- Alamo Drive and I-80 EB Ramps
- Alamo Drive and Davis Street
- Alamo Drive and Alamo Lane
- Alamo Drive and Mariposa Avenue
- Peabody Road and Elmira Road
- Peabody Road and Cliffside Drive
- Peabody Road and Hume Way/Berryessa Drive
- Peabody Road and Marshall Road
- Peabody Road and Alamo Drive
- Peabody Road and California Drive
- Peabody Road and Caldwell Drive
- Peabody Road and Morning Glory Drive
- Peabody Road and Foxboro Parkway
- Peabody Road and SOL Driveway

LEVEL OF SERVICE

The quality of roadway facility operations is described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined, with LOS A representing the least congested operating conditions (minimal vehicular congestion) and LOS F representing the most congested operating conditions (substantial vehicular congestion). LOS E represents "at-capacity" operations. When traffic volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F. Two methods were used to evaluate the study intersections: one method for the signalized intersections and another method for the unsignalized intersections, as described below.

Signalized Intersections

For signalized intersections, the LOS methodology described in Chapter 16 of the Transportation Research Board's (TRB) *Highway Capacity Manual* (HCM) (TRB 2000) was applied. (This reference is commonly referred to as the *HCM 2000.*) This methodology determines the LOS by comparing the average control delay for all vehicles approaching the intersection to the delay thresholds in Table 3.11-1.

Table 3.11-1 Intersection Level of Service Definitions

Level of Service	Description	Signalized Intersection Average Delay per Vehicle (seconds)	Unsignalized Intersection Average Delay per Vehicle (seconds)
A	Represents free flow. Individual users are virtually unaffected by others in the traffic stream.	≤ 10.0	< 10.0
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.	10.1 to 20.0	> 10.0 to 15.0
C	Stable flow, but the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	20.1 to 35.0	> 15.0 to 25.0
D	Represents high-density, but stable flow.	35.1 to 55.0	> 25.0 to 35.0
E	Represents operating conditions at or near the capacity level.	55.1 to 80.0	> 35.0 to 50.0
F	Represents forced or breakdown flow.	> 80.0	> 50.0

Source: *Highway Capacity Manual* TRB 2000

Unsignalized Intersections

Operations of the unsignalized (i.e., stop-sign controlled) study intersections were evaluated using the methodology contained in Chapter 17 of the *HCM 2000*. The LOS rating is based on the average control delay expressed in seconds per vehicle. At all-way stop-controlled intersections, LOS is based on the average delay experienced on all approaches. At side-street stop-controlled intersections, LOS is calculated for the stopped movements and the left-turn movement from the major street. Typically, the movement (or lane if more than one movement occurs in a lane) with the worst LOS rating is reported. Table 3.11-1 shows the LOS thresholds for unsignalized intersections.

Level of Service Standards

The City of Vacaville *General Plan* (2007) provides the following LOS policies:

- **6.1 G-1** Strive to maintain LOS C as the minimum standard at all intersections, interchanges, and road links. Design improvements to provide LOS C in the Year 2025 based on the City's development forecast.
- **6.1 G-2** LOS D, for a particular intersection, interchange, or road link, shall be allowed by a decision maker on a project as an interim level of service where improvements are programmed by the City which will improve the level of service to LOS C or better. D may also be approved by the City as an allowable standard by the City Council or designee for infill areas or situations where existing development or other practical considerations limit improvements.
- **6.1 G-3** LOS E or LOS F for a particular intersection, interchange, or road link may be allowed by the City Council on the basis of one of the following findings:

  Finding 1
  - The interchange, intersection, or road link that will experience the projected lower level of service is an infill or isolated area; and
  - There is no practical and feasible way to mitigate the lower level of service; and
  - The project resulting in the lower level of service is of clear, overall public benefit.

  Finding 2
  - A capital improvement project is reasonably scheduled to be completed which will improve the projected level of service to LOS D or better; and
  - The interim impact of the projected traffic congestion is offset by the public benefits of the project.

  Finding 3
  - The City has entered into a development agreement which legally commits the City to approve the proposed project.

The City of Vacaville's *Land Use & Development Code, Division 14.13 Traffic Impact Mitigation*, provides the following definitions and standards:

- **Definitions**
  - "Special Mitigation Improvements" means improvements which are necessary to improve the level(s) of service projected by the traffic impact analysis for a project to LOS "D" or better which is a volume/capacity ratio of .90 or less. They shall not include the normal and customary street improvements and right-of-way dedication associated with the subject project or related offsite improvements that are necessary to accommodate the localized traffic impact of the project not related to the traffic impact analysis.
  - "Road Network Affected by the Project" means any arterial or collector road link or intersection or a freeway interchange for which the base condition volume to capacity ratio is degraded a total of .02 or greater by the project.
- **Standards**
  - If the traffic impact analysis indicates that the project impact will result in levels of service of LOS "D" or better, which is a volume/capacity ratio of .90 or less, the project may be approved and no special mitigation improvements shall be required.

For purposes of this study, LOS C is the minimum acceptable LOS for City roadway facilities.

EXISTING TRAFFIC VOLUMES AND LEVELS OF SERVICE

Existing Traffic Volumes

Weekday a.m. (7:00 a.m. to 9:00 a.m.) and p.m. (4:00 to 6:00 p.m.) peak period intersection turning movement counts were provided by the City of Vacaville for the study intersections. Count data was collected from February 2010 to October 2012. Because count data was collected on different days for each intersection, traffic volumes were balanced between intersections where appropriate. Exhibit 3.11-2 displays the existing peak hour intersection turning movement volumes and lane configurations at the study intersections. The raw traffic counts are presented in Appendix 5D of this volume.

Existing Intersection Levels of Service

The existing a.m. and p.m. peak hour intersection delay and LOS was determined using Synchro 7 analysis software, which utilizes *HCM 2000* methodology. The analysis is based on traffic signal timings provided by the City, lane configurations, and field observations. Intersection peak hour factors (PHF) were determined based on the count data collected at each study intersection. Heavy vehicles were assumed to be at least two percent of vehicular traffic. Table 3.11-2 summarizes the existing LOS at the study intersections. The technical calculations are provided in Appendix 5D of this volume.

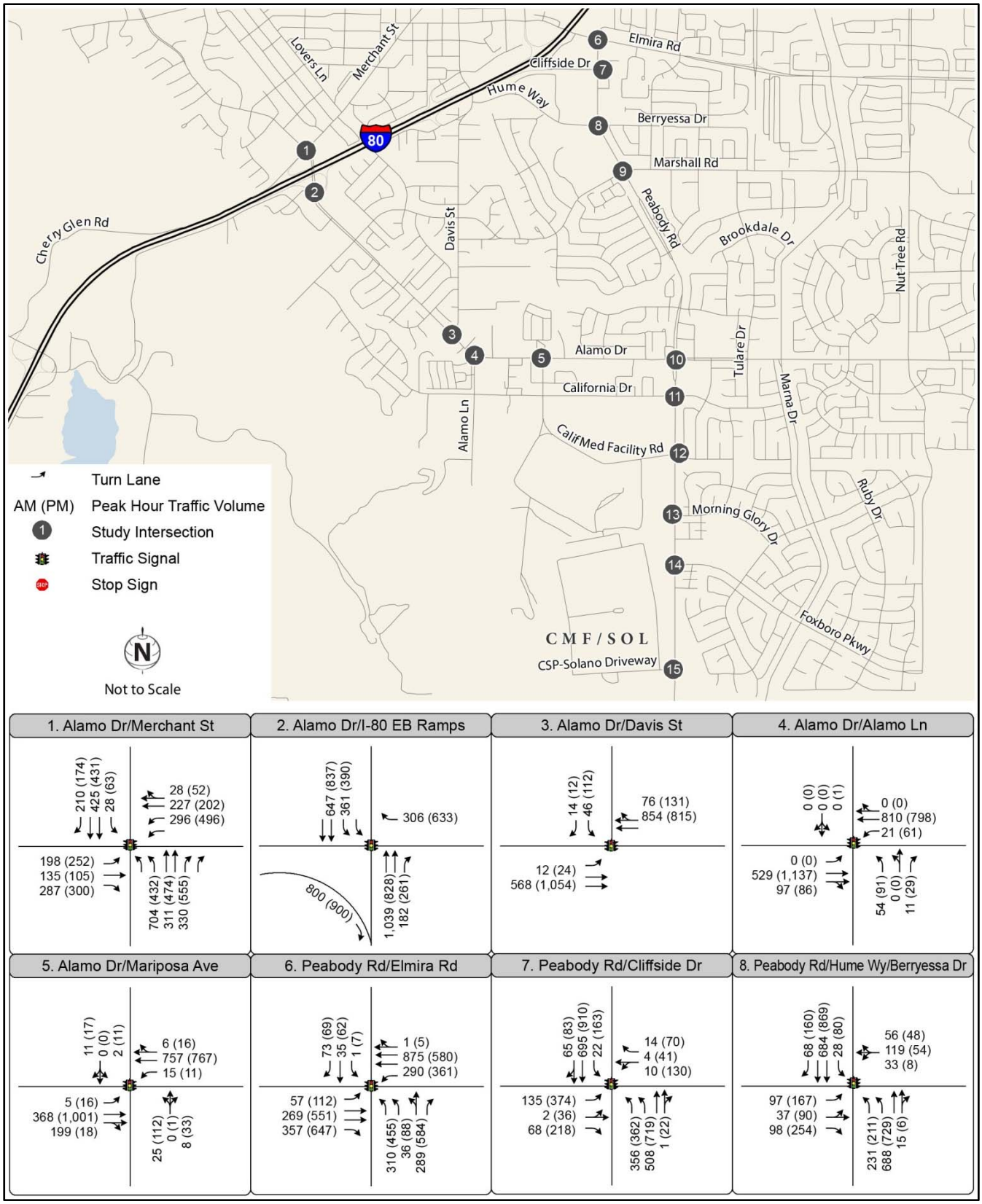
As indicated in Table 3.11-2, the following study intersections operate at an unacceptable LOS under existing conditions:

- Alamo Drive and Merchant Street (a.m. and p.m. peak hours)
- Peabody Road and Elmira Road (a.m. and p.m. peak hours)
- Peabody Road and Cliffside Drive (p.m. peak hour)
- Peabody Road and Marshall Road (a.m. and p.m. peak hours)
- Peabody Road and Alamo Drive (a.m. and p.m. peak hours)
- Peabody Road and Morning Glory Drive (p.m. peak hour)

Table 3.11-2 Intersection Level of Service Results – Existing Conditions

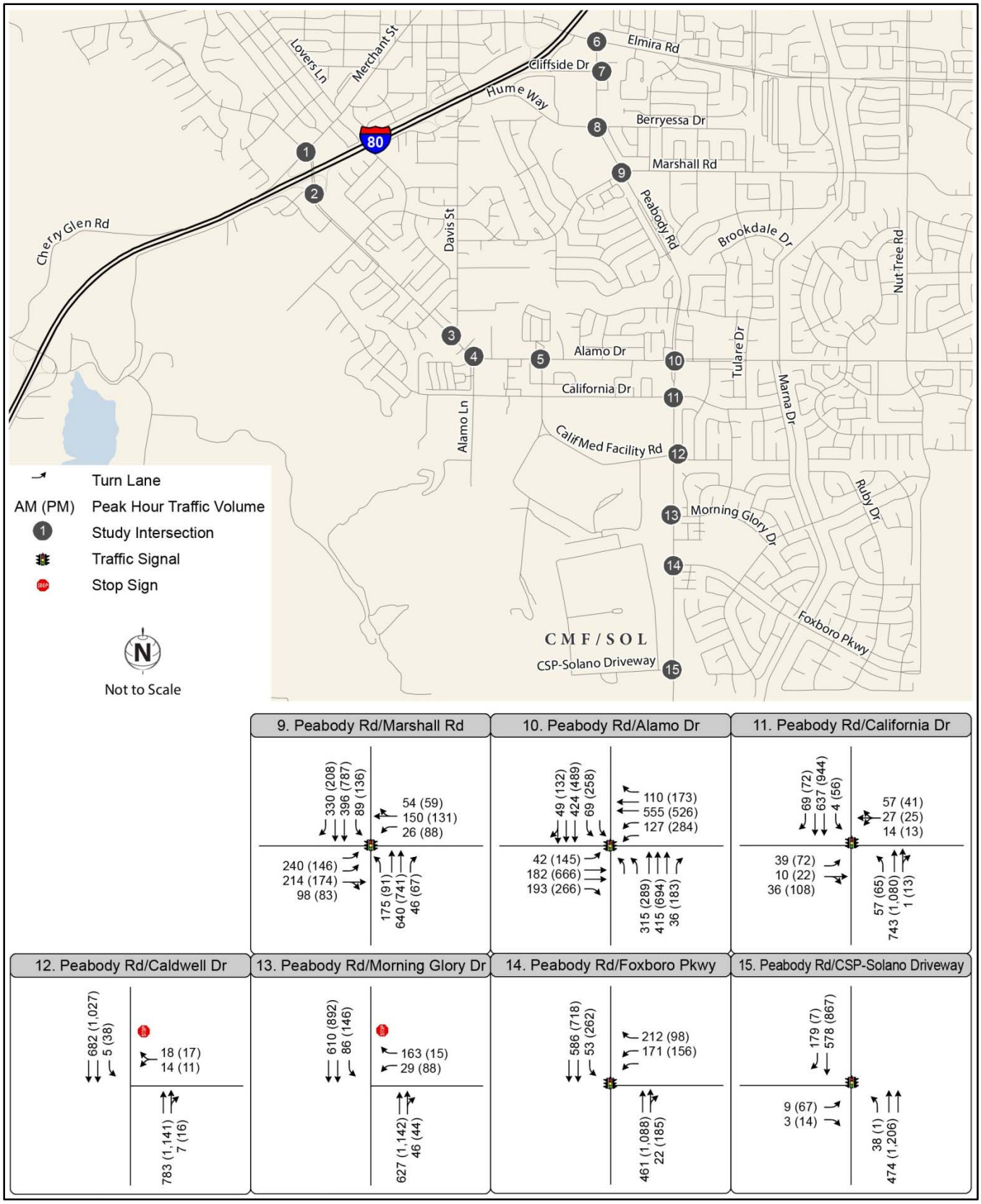
Intersection	Traffic Control[1]	AM Peak[2]		PM Peak[2]	
		Delay[3]	LOS	Delay[3]	LOS
1. Alamo Drive and Merchant Street	Signal	**53.1**	**D**	**50.4**	**D**
2. Alamo Drive and I-80 EB Ramps	Signal	7.6	A	6.2	A
3. Alamo Drive and Davis Street	Signal	4.5	A	7.7	A
4. Alamo Drive and Alamo Lane	Signal	5.6	A	10.6	B
5. Alamo Drive and Mariposa Avenue	Signal	7.3	A	17.9	B
6. Peabody Road and Elmira Road	Signal	**35.2**	**D**	**53.5**	**D**
7. Peabody Road and Cliffside Drive	Signal	26.0	C	**43.7**	**D**
8. Peabody Road and Hume Way/Berryessa Drive	Signal	28.2	C	26.1	C
9. Peabody Road and Marshall Road	Signal	**86.9**	**F**	**65.8**	**E**
10. Peabody Road and Alamo Drive	Signal	**39.7**	**D**	**37.5**	**D**
11. Peabody Road and California Drive	Signal	28.4	C	25.8	C
12. Peabody Road and Caldwell Drive	SSSC	0.3 (14.6)	A (B)	0.4 (18.8)	A (C)
13. Peabody Road and Morning Glory Drive	SSSC	2.0 (16.3)	A (C)	1.8 **(28.6)**	A **(D)**
14. Peabody Road and Foxboro Parkway	Signal	22.0	C	30.2	C
15. Peabody Road and SOL Driveway	Signal	6.4	A	14.8	B

Notes: Unacceptable operations are highlighted in **bold** text.
[1] SSSC = Side-Street Stop Control
[2] The a.m. peak hour is between 7:00 a.m. and 9:00 a.m. The p.m. peak hour is between 4:00 p.m. to 6:00 p.m.
[3] Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the overall intersection (worst movement) for side-street stop-controlled intersections.
Source: Fehr & Peers 2013.



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-2 Existing Traffic Volumes at CMF/SOL (1 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-2 Existing Traffic Volumes at CMF/SOL (2 of 2)

3.11.2 REGULATORY CONSIDERATIONS

A list of the applicable federal, state and local plans, policies, regulations, laws, and ordinances is provided below. Complete summaries of the federal and state regulations are provided in Appendix 1B of Volume 1.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, regulations, or laws related to transportation are applicable to the construction and operation of level II infill correctional facilities at CMF/SOL.

STATE AND REGIONAL PLANS, POLICIES, REGULATIONS, AND LAWS

- California Department of Transportation (Caltrans) *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2002) – The Caltrans Guide for the Preparation of Traffic Impact Studies provides guidance on the evaluation of traffic impacts to State highway facilities. The document outlines when a traffic impact study is needed and what should be included in the scope of the study.

LOCAL PLANS, POLICIES, AND ORDINANCES

The CMF/SOL Infill Site is located on land that is owned or controlled by the State. As a state agency, CDCR is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CITY OF VACAVILLE GENERAL PLAN

The City of Vacaville *General Plan* is in the process of being updated, with formal adoption anticipated to occur in 2013. The General Plan "embodies policies for land use, circulation, community facilities, and environmental resource management. General Plan policies are designed to address [development] issues by establishing *Guiding Policies* that state the City's philosophy and *Implementing Policies* that represent its commitment to action."

CITY OF VACAVILLE MUNICIPAL CODE

The City of Vacaville *Municipal Code* "consists of all the regulatory and penal ordinances and certain of the administrative ordinances of the city." The Municipal Code provides a section on Traffic Impact Mitigation which establishes a procedure to evaluate and mitigate the impacts of land development projects on the circulation system.

3.11.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Based on the State of California Environmental Quality Act (CEQA) Guidelines Appendix G and the criteria developed for Fehr & Peers' transportation impact analysis, the level II infill correctional facilities at the CMF/SOL Infill Site would result in a significant impact relating to transportation or traffic if it would do any of the following:

- cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);
- exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;

- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

The specific criteria used to determine whether an impact would be significant are described below.

The State CEQA Guidelines (Section 15064.5) define a "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

TRAFFIC OPERATIONS

Intersections

The following thresholds of significance are based on the City's General Plan, Land Use and Development Code, and direction from City staff. The development of a level II infill correctional facility at the CMF/SOL Infill Site would cause a significant impact at a study intersection if it would:

- cause the LOS to degrade from an acceptable LOS (LOS A, B, or C) to an unacceptable LOS (LOS D, E, or F), or
- increase the average delay by two seconds or more at an intersection that operates (or is projected to operate) at an unacceptable LOS D, E, or F without the development of the infill facility.

Intersection LOS was determined based on methodology contained in the *HCM 2000*.

Caltrans Facilities

The development of a single, level II infill correctional facility at the CMF/SOL Infill Site would cause a significant impact to a Caltrans facility if it would:

- generate more than 100 peak hour trips assigned to a State highway facility, and causes the LOS of the highway facility to degrade from an acceptable LOS (LOS A, B, or C) to an unacceptable LOS (LOS D, E, or F);
- generate 50 to 100 peak hour trips assigned to a State highway facility that is approaching unstable traffic flow conditions (LOS C or D); or
- generate 1 to 49 peak hour trips assigned to a State highway facility that is experiencing unstable or forced traffic flow conditions (LOS E or F).

The Caltrans facilities in the study area are the ramp terminal intersections at the I-80 and Alamo Road/Merchant Street interchange. The intersection LOS is determined based on the methodology contained in the *HCM 2000*.

Construction Traffic

The development of a single, level II infill correctional facility at the CMF/SOL Infill Site would cause a significant impact if intersection or roadway LOS would temporarily degrade from an acceptable LOS (LOS A, B, or C) to an unacceptable LOS (LOS D, E, or F) because of the presence of construction traffic. Construction impacts are addressed qualitatively.

ISSUES NOT DISCUSSED FURTHER

Bicycle, pedestrian, and transit facilities: Development of a level II infill correctional facility at CMF/SOL could generate some demand for pedestrian and bicycle facilities. Based on employee zip code data used to develop the infill facility's trip distribution, approximately 20 percent of the new employees would be expected to live within the City of Vacaville. Given the location of the access driveway to the CMF/SOL Infill Site (on Peabody Road, where vehicle speeds are high and compatible land uses are not located nearby), development of a new level II infill correctional facility is anticipated to generate minimal pedestrian demand, if any. In addition, sidewalks are currently provided on the east side of Peabody Road adjacent to CMF/SOL; therefore, any potential pedestrian demand would be served. Bicycle facilities are also provided on Peabody Road, California Drive, and portions of Alamo Drive adjacent to CMF/SOL; therefore, any potential demand for bicycle facilities would be served. Furthermore, development of a level II infill correctional facility at the CMF/SOL Infill Site would not conflict with any existing or planned pedestrian or bicycle facilities. Therefore, these issues are not discussed further.

Although existing transit service is provided regionally in Solano County and locally within the City of Vacaville, no public transit service exists or is planned along Peabody Road to serve the CDCR property. However, development of the infill site would remain internal to existing CDCR property and would not extend outside of CMF/SOL such that potential conflicts with existing alternative transportation opportunities or the plans, policies, or programs designed to promote alternative transportation could occur. Further, due to the type of development contemplated at the CMF/SOL Infill Site, the potential for substantial increase in demand for alternative transportation is considered minimal. No impact would occur and this issue is not discussed further.

Emergency vehicle access: Under Access Option 1, vehicle access, including primary emergency vehicle access, would be provided via the existing site entry point at the CMF/SOL driveway from Peabody Road. This existing access point can accommodate large emergency vehicles (i.e., fire trucks) and provides adequate turning radii. Secondary emergency vehicle access could also be accommodated via the primary entrance to CMF. Under Access Option 2, two emergency vehicle access points would be provided to the infill site: one via the existing site entry point at the CMF/SOL driveway from Peabody Road and a second at Foxboro Parkway from Peabody Road. As with the existing CMF/SOL driveway, the Foxboro Parkway driveway would be designed to accommodate large emergency vehicles (i.e., fire trucks) and provide adequate turning radii. Therefore, these access driveways would accommodate large emergency vehicles in the event of an emergency and this issue is not discussed further.

Hazardous design features: As noted above, development of the infill site would involve construction of a level II infill correctional facility internal to existing CDCR property and would not modify the existing roadway network at CMF/SOL. As such, the infill facility would not be expected to substantially increase hazards due to a design feature under either Access Option 1 or 2. Operations at CMF/SOL would continue as they currently do with respect to internal circulation. The contemplated level II infill correctional facility would have its own internal circulation and roadway network contained within the limits of the infill site. Onsite driveways under either Access Option 1 or 2 would be designed to meet current design standards and would not include any sharp curves or other dangerous design features. No impact is anticipated, and this issue is not discussed further as part of this volume of the DEIR.

Airport hazards: Impacts related to potential hazards due to the continued operation of Nut Tree Airport, located approximately 3.5 miles north of the infill site, and Travis Air Force Base, located approximately 4 miles south of the infill site, are addressed in Section 3.6, "Hazards and Hazardous Materials," of this volume of the DEIR.

PROJECT IMPACTS AND MITIGATION MEASURES

This section presents an analysis of the following project scenarios:

- Existing plus Single Facility
- Existing plus Approved Projects
- Existing plus Approved Projects plus Single Facility
- Cumulative
- Cumulative plus Single Facility

Detailed descriptions of each scenario are provided below. It should be noted that the number and types of scenarios analyzed in this volume may differ from the evaluations of the other infill sites contained in Volumes 2, 3, 4, and 5. This is due to preferences expressed by the local agency responsible for managing local traffic volumes, which have been accommodated by CDCR in the EIR analysis to the extent practicable and feasible.

TOTAL PROJECT TRIP GENERATION

The daily, a.m., and p.m. peak hour trip generation estimates for the infill facility are summarized in Table 3.11-3.

The development of the infill facility is projected to generate a total of 396 daily trips, with 84 trips occurring during the a.m. peak hour of adjacent street traffic and 84 trips occurring during the p.m. peak hour of adjacent street traffic. During the p.m. peak hour of the generator (i.e., the peak hour in which the infill facility generates the most traffic, 1:30 p.m. to 2:30 p.m.), the infill facility is expected to generate 94 trips.

TRIP DISTRIBUTION

Development-generated traffic was distributed to the external roadway network and study intersections based on existing employee zip code data and traffic counts at the driveway of the existing CMF/SOL facility. The following distribution was used:

- 15 percent travels to/from west on I-80,
- 40 percent travels to/from east on I-80,
- 10 percent travels to/from east on Alamo Drive,
- 15 percent travels to/from south on Peabody Road, and
- 20 percent stay within the City of Vacaville.

Exhibit 3.11-3 shows the a.m. and p.m. peak hour trip distribution and assignment for Access Option 1. Exhibit 3.11-4 shows the a.m. and p.m. peak hour trip distribution and assignment for Access Option 2.

TRAFFIC OPERATIONS IMPACTS

To evaluate the potential impacts of construction and operation of a single, level II infill correctional facility at CMF/SOL on the local roadway system, development-generated traffic volumes were added to the existing traffic volumes for existing plus level II infill correctional facility conditions analysis. Exhibit 3.11-5 shows the existing plus level II infill correctional facility intersection turning movement volumes.

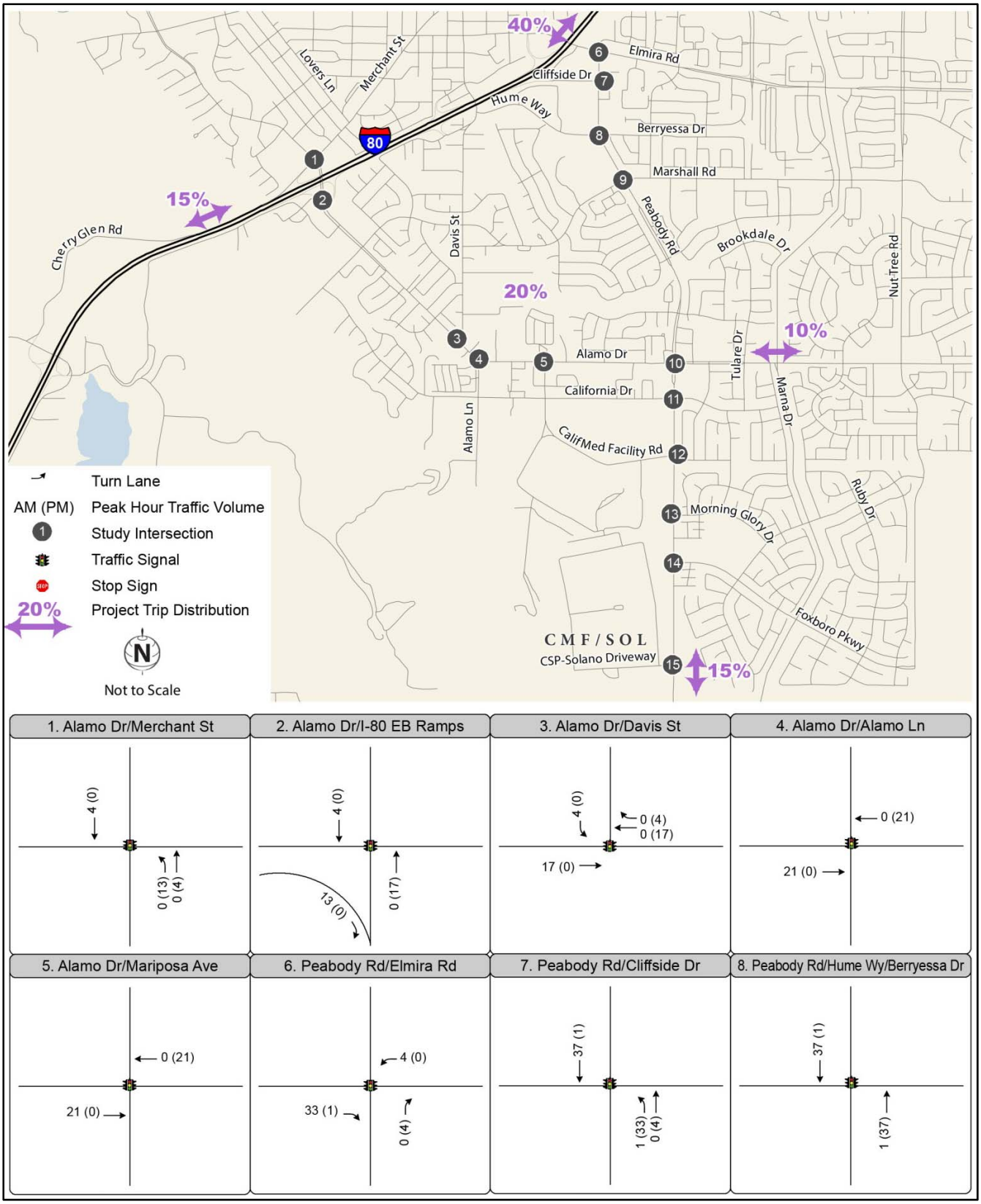
EXISTING PLUS LEVEL II INFILL CORRECTIONAL FACILITY CONDITIONS

To evaluate the potential impacts of construction and operation of a level II infill correctional facility CMF/SOL on the local roadway system, traffic generated by the infill facility was added to the existing traffic volumes for existing plus level II infill correctional facility conditions analysis.

Table 3.11-3 Estimated Trip Generation – Single, Level II Infill Correctional Facility at CMF/SOL

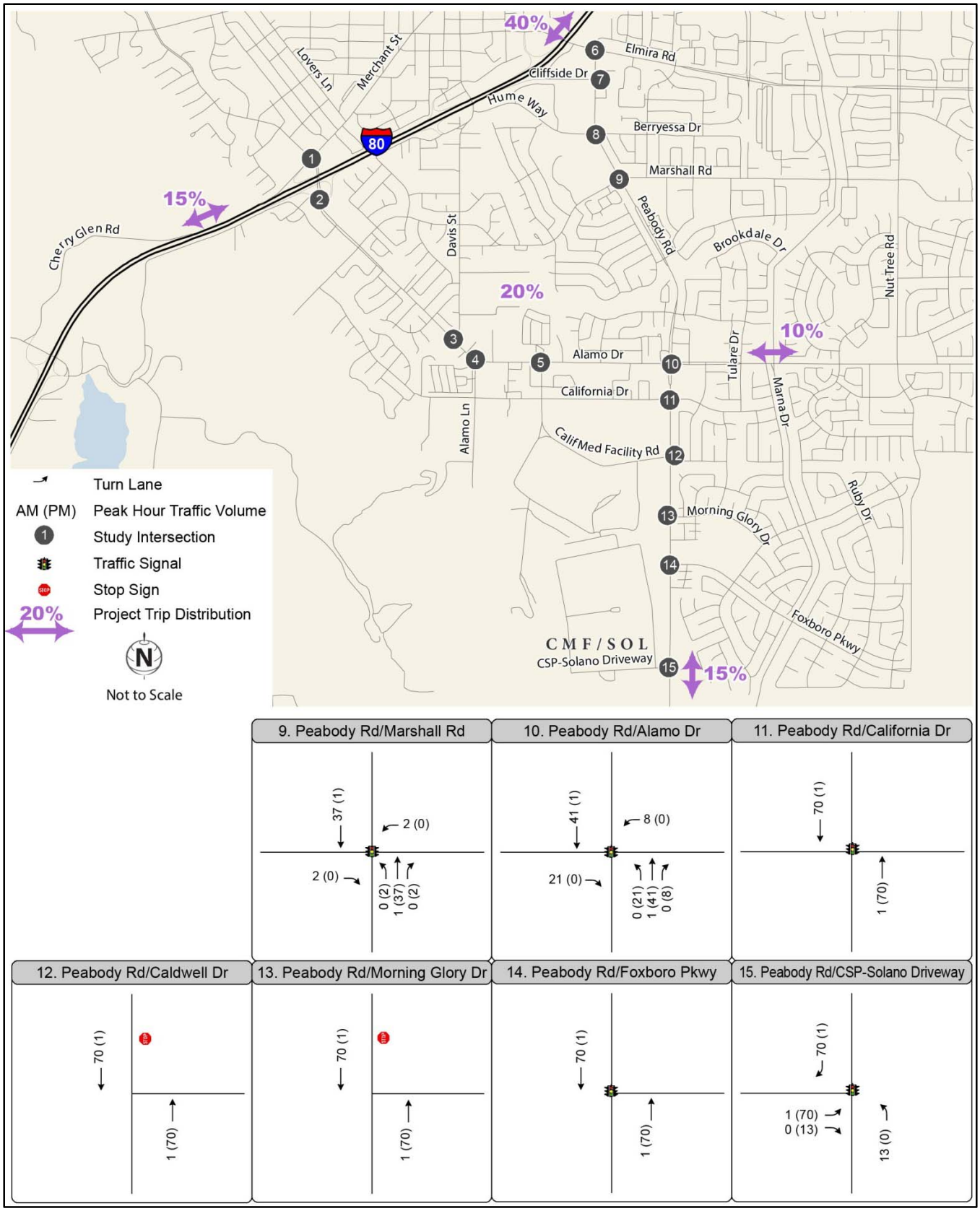
Trip Type	Number of People	Number of Vehicles	Daily Trips	5:30 a.m. to 6:30 a.m.			AM Peak Hour of Adjacent Street Traffic[1]			1:30 p.m. to 2:30 p.m.			PM Peak Hour of Adjacent Street Traffic[1]		
				Trips In	Trips Out	Total Trips	Trips In	Trips Out	Total Trips	Trips In	Trips Out	Total Trips	Trips In	Trips Out	Total Trips
Employee Trips															
Custody Employees															
1st Watch (10p.m.-6a.m.)	16	16	32	0	16	16	0	0	0	0	0	0	0	0	0
2nd Watch (6a.m.-2p.m.)	57	57	114	57	0	57	0	0	0	0	57	57	0	0	0
3rd Watch (2p.m.-10p.m.)	31	31	62	0	0	0	0	0	0	31	0	31	0	0	0
Custody Subtotal	*104*	*104*	*208*	*57*	*16*	*73*	*0*	*0*	*0*	*31*	*57*	*88*	*0*	*0*	*0*
Support Staff Employees															
1st Watch (10p.m.-6a.m.)	2	2	4	0	2	2	0	0	0	0	0	0	0	0	0
2nd Watch (6a.m.-2p.m.)	81	81	162	0	0	0	81	0	81	0	0	0	0	81	81
3rd Watch (2p.m.-10p.m.)	6	6	12	0	0	0	0	0	0	6	0	6	0	0	0
Support Staff Subtotal	*89*	*89*	*178*	*0*	*2*	*2*	*81*	*0*	*81*	*6*	*0*	*6*	*0*	*81*	*81*
Employee Trip Total	***193***	***193***	***386***	***57***	***18***	***75***	***81***	***0***	***81***	***37***	***57***	***94***	***0***	***81***	***81***
Delivery/Service Vehicle Trips															
Delivery/Service Trucks	--	5	10	0	0	0	2	1	3	0	0	0	1	2	3
Delivery/Service Trip Total	***--***	***5***	***10***	***0***	***0***	***0***	***2***	***1***	***3***	***0***	***0***	***0***	***1***	***2***	***3***
Total CMF/SOL Infill Facility Trips			**396**	**57**	**18**	**75**	**83**	**1**	**84**	**37**	**57**	**94**	**1**	**83**	**84**

Notes:
[1] The a.m. and p.m. peak hours of adjacent street traffic corresponds with the morning and evening commute peak hours and fall between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. For analysis purposes it was assumed that all employees that arrive during the a.m. and p.m. peak hours arrive within one hour of each other.
Source: Fehr & Peers 2013



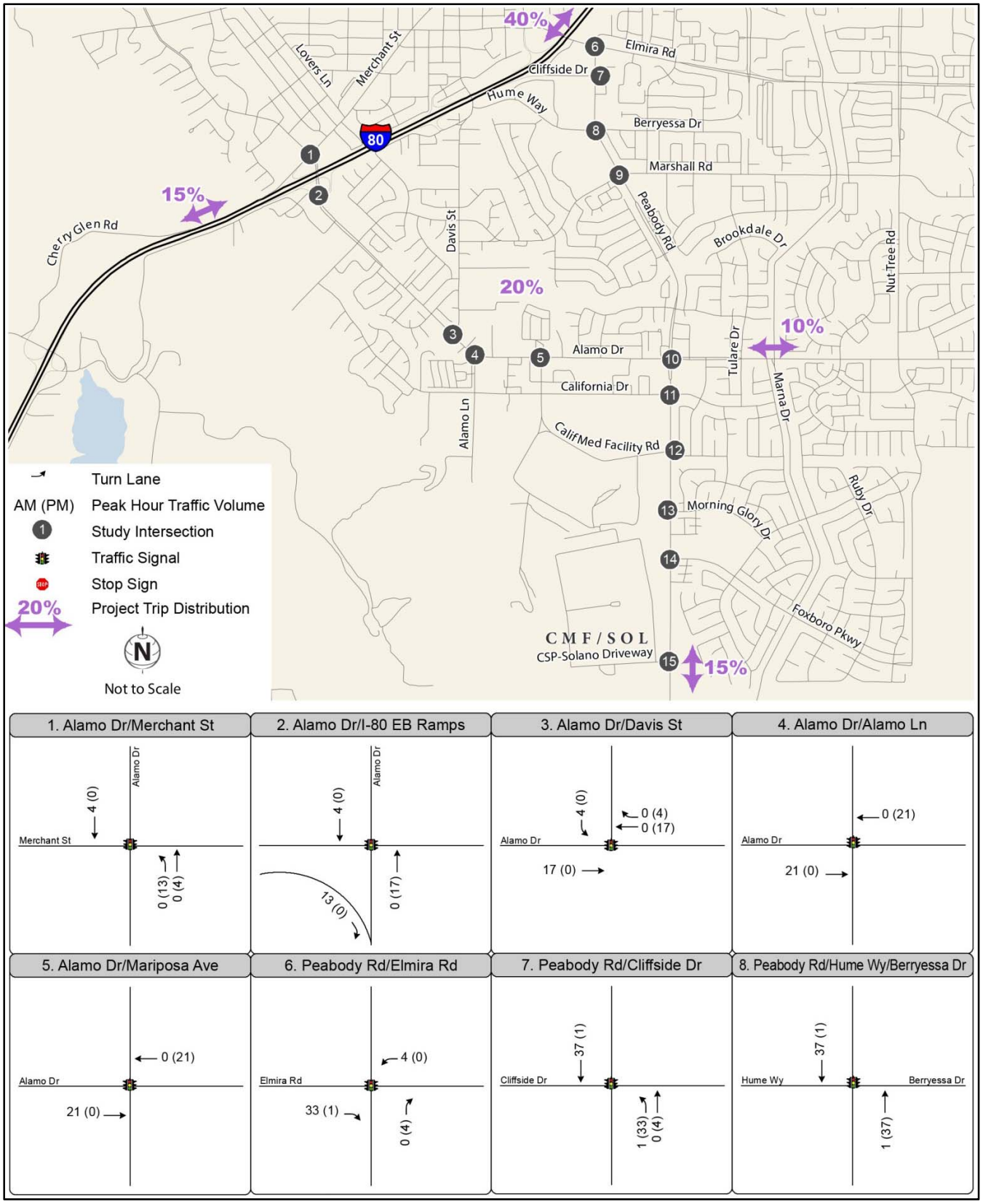
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-3 Trip Distribution and Assignment – Access Option 1 (1 of 2)



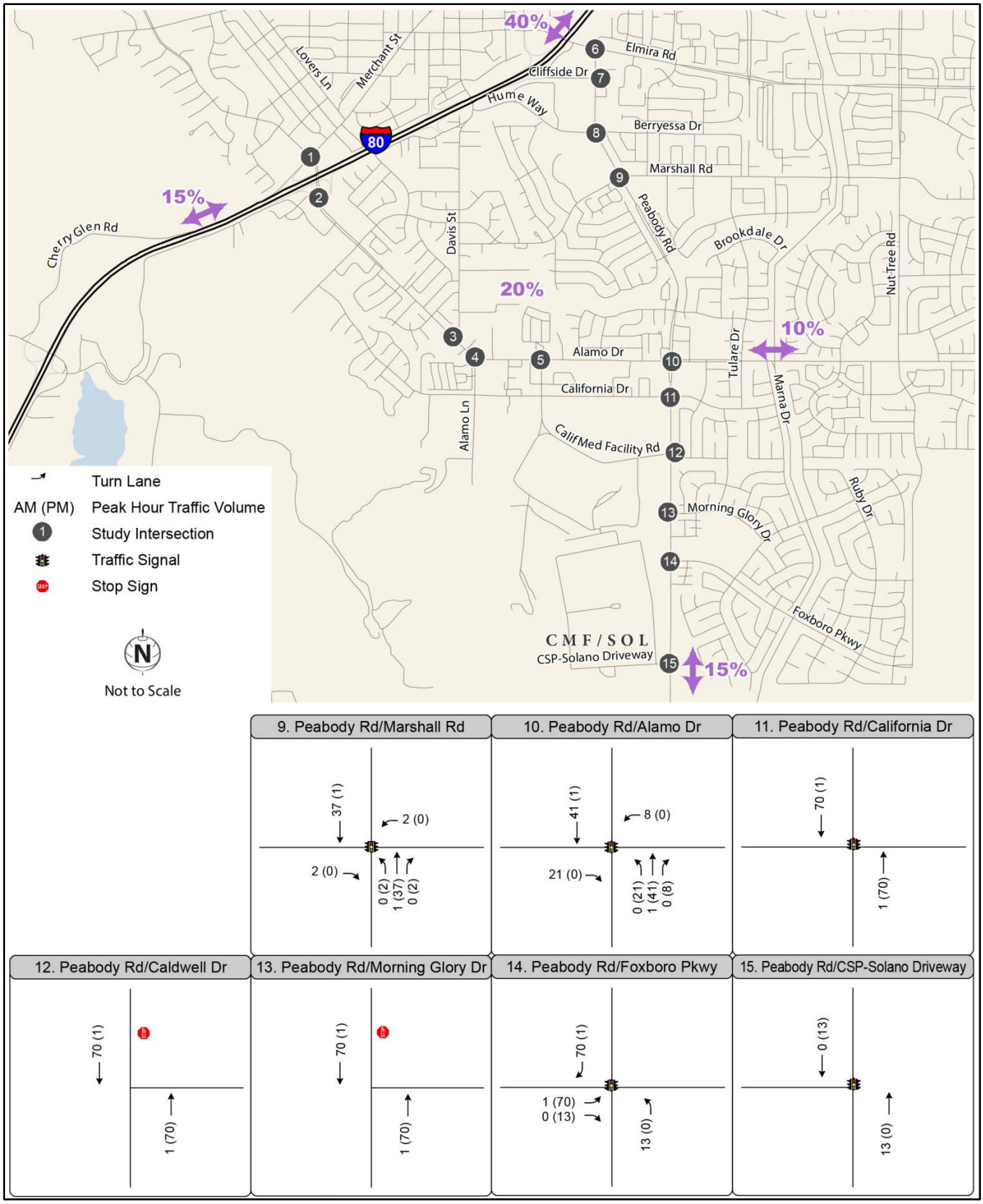
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-3 Trip Distribution and Assignment – Access Option 1 (2 of 2)



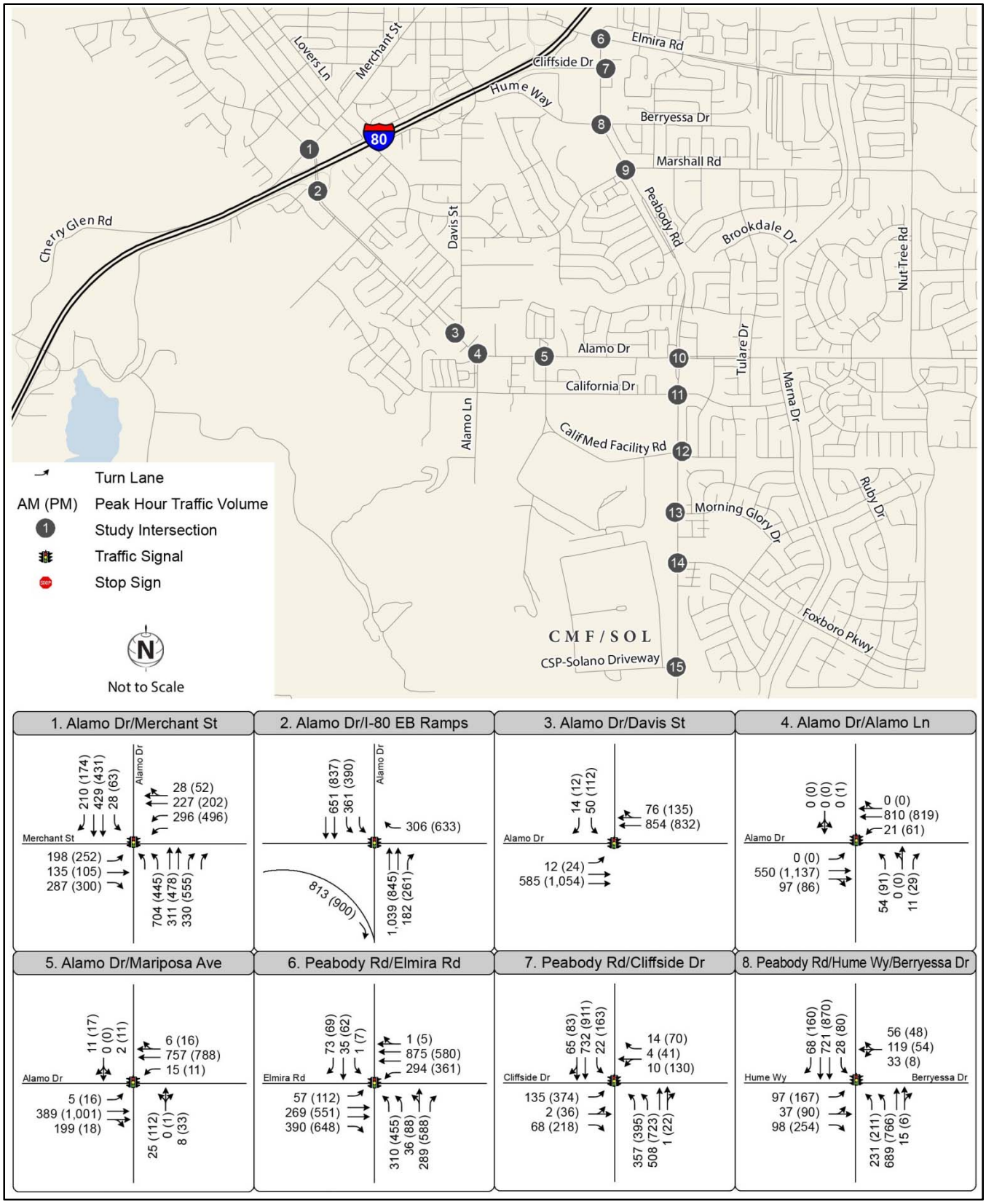
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-4 Trip Distribution and Assignment – Access Option 2 (1 of 2)



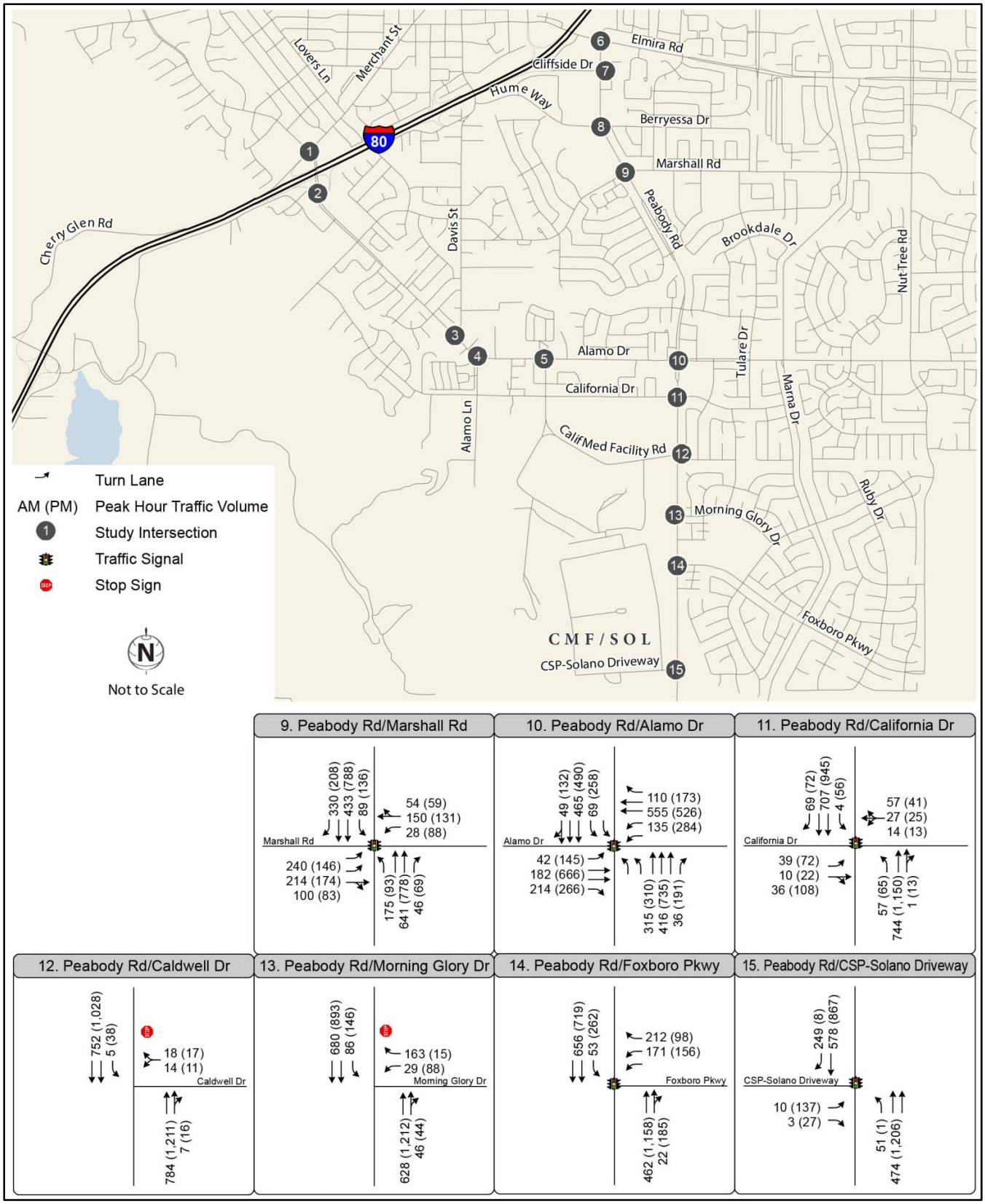
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-4 Trip Distribution and Assignment – Access Option 2 (2 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-5 Existing plus Level II Infill Correctional Facility Traffic Volumes – Access Option 1 (1 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-5 Existing plus Level II Infill Correctional Facility Traffic Volumes – Access Option 1 (2 of 2)

Impact 3.11-1: Impacts on Intersection Operations – Access Options 1 and 2

The intersection LOS analysis for existing plus level II infill correctional facility conditions was performed using Synchro 7 software, which utilizes *HCM 2000* methodology. Exhibit 3.11-5 shows the existing plus level II infill correctional facility intersection turning movement volumes for Access Option 1. Exhibit 3.11-6 shows the existing plus level II infill correctional facility intersection turning movement volumes for Access Option 2. Table 3.11-4 shows the existing plus level II infill correctional facility LOS at the study intersections.

Intersection operations were projected under existing plus level II infill correctional facility conditions to determine the potential impacts of the development of a level II infill correctional facility at the CMF/SOL Infill Site. Under existing conditions, the Alamo Drive/Merchant Street, Peabody Road/Elmira Road, Peabody Road/Marshall Road, Peabody Road/Alamo Drive, and Peabody Road/Morning Glory Drive intersections operate at unacceptable LOS. The traffic generated by the development of a single, level II infill correctional facility would not increase the delay at these intersections by more than two seconds; therefore, the level II infill correctional facility at CMF/SOL would not create a significant impact at these locations. However, the traffic generated by the development of a single level II infill correctional facility at CMF/SOL would increase the delay at the Peabody Road and Cliffside Drive intersection by more than two seconds during the p.m. peak hour. This is considered a significant impact.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in the unacceptable degradation of intersection operations during the p.m. peak hour at the Peabody Road/Cliffside Drive intersection. This would be a significant impact.

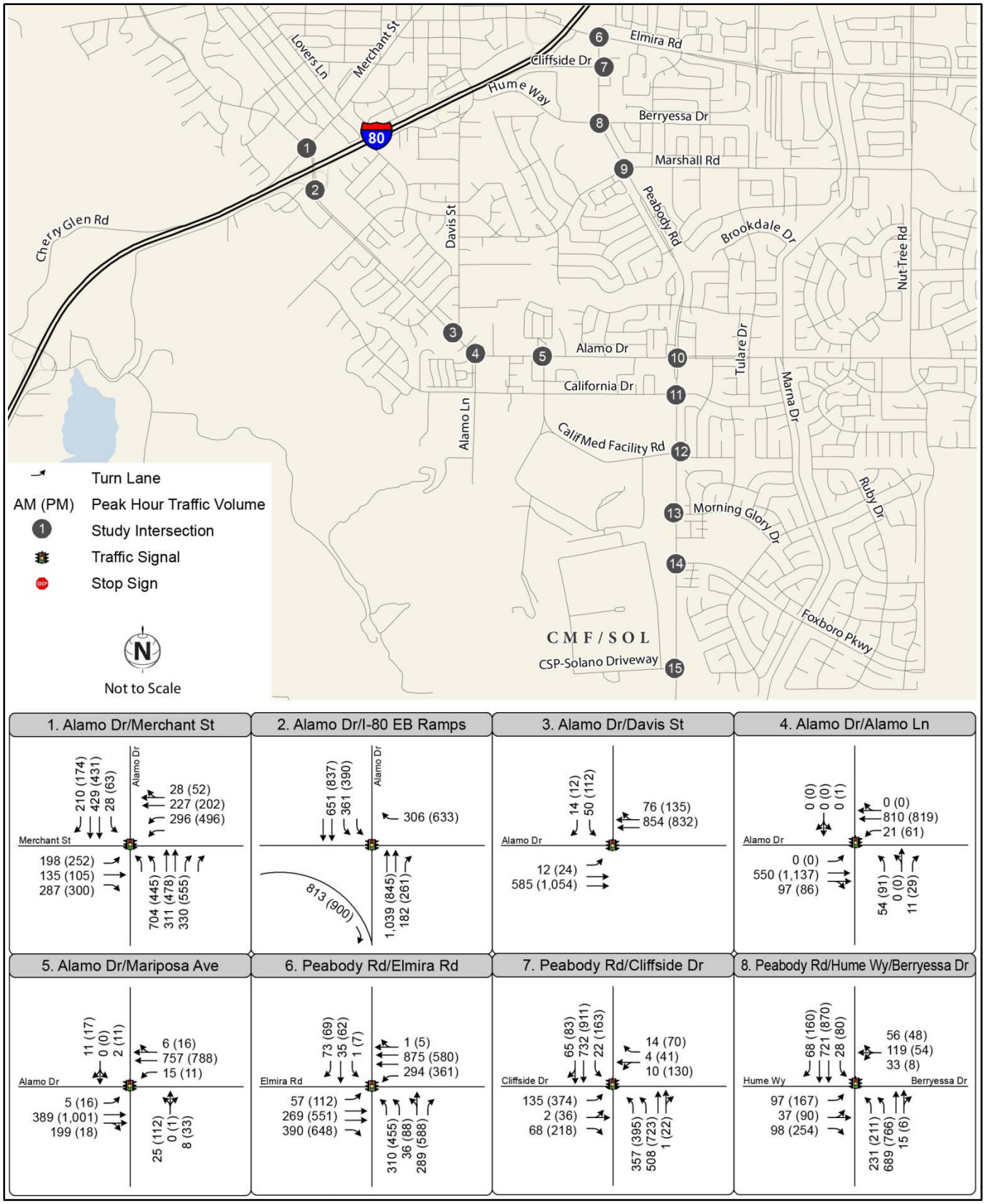
Mitigation Measures

Mitigation Measure 3.11-1

CDCR will coordinate with the City of Vacaville and arrange for optimization of signal timings at the intersection of Peabody Road and Cliffside Drive during the p.m. peak hour. This mitigation measure will be implemented prior to occupancy or earlier if specified by the construction transportation management plan (see Mitigation Measure 3.11-4).

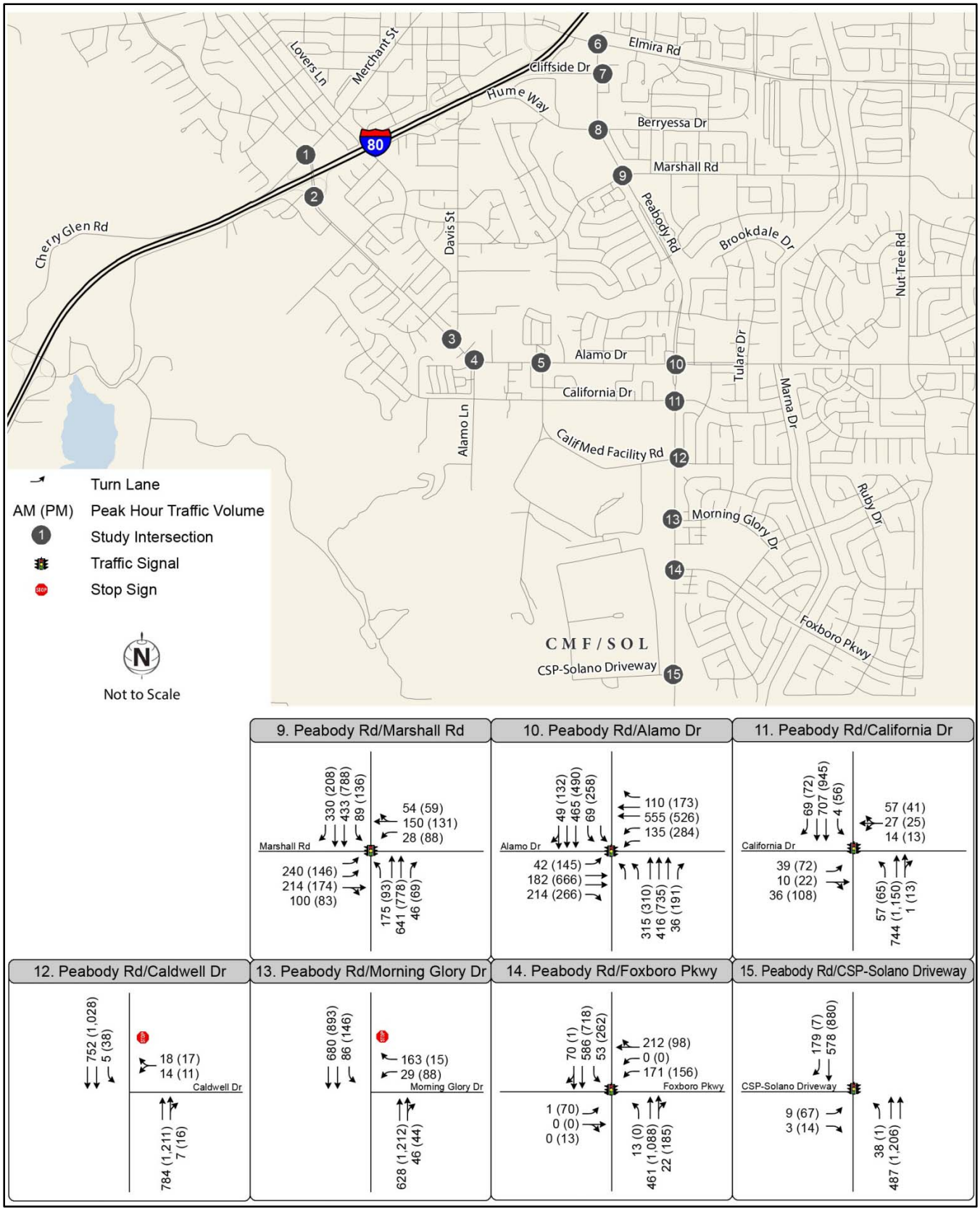
Significance after Mitigation

With implementation of Mitigation Measure 3.11-1, impacts would be less than significant because the mitigation measure would reduce the delay of the overall intersection to less than pre-development conditions. The intersection would operate at LOS D with and average delay of 42 seconds, which is less than existing conditions. However, implementation of the mitigation measure is within the responsibility and jurisdiction of other public agencies and not CDCR. The City of Vacaville has indicated that this mitigation measure is acceptable to mitigate this impact. Therefore, the impact at this intersection would be **less-than-significant** with mitigation.



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-6 Existing plus Level II Infill Correctional Facility Traffic Volumes – Access Option 2 (1 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-6 Existing Plus Level II Infill Correctional Facility Traffic Volumes – Access Option 2 (2 of 2)

Table 3.11-4 Intersection Level of Service Results – Existing plus Level II Infill Correctional Facility Conditions

Intersection	Traffic Control[1]	Existing				Access Option[4]	Existing Plus Single Facility			
		AM Peak[2]		PM Peak[2]			AM Peak[2]		PM Peak[2]	
		Delay[3]	LOS	Delay[3]	LOS		Delay[3]	LOS	Delay[3]	LOS
1. Alamo Drive & Merchant Street	Signal	**53.1**	**D**	**50.4**	**D**	1 and 2	**53.1**	**D**	**49.9**	**D**
2. Alamo Drive & I-80 EB Ramps	Signal	7.6	A	6.2	A	1 and 2	7.6	A	6.2	A
3. Alamo Drive & Davis Street	Signal	4.5	A	7.7	A	1 and 2	4.5	A	7.7	A
4. Alamo Drive & Alamo Lane	Signal	5.6	A	10.6	B	1 and 2	5.7	A	10.5	B
5. Alamo Drive & Mariposa Avenue	Signal	7.3	A	17.9	B	1 and 2	7.3	A	17.8	B
6. Peabody Road & Elmira Road	Signal	**35.2**	**D**	**53.5**	**D**	1 and 2	**35.2**	**D**	**53.5**	**D**
7. Peabody Road & Cliffside Drive	Signal	26.0	C	**43.7**	**D**	1 and 2	25.9	C	**45.8**	**D**
8. Peabody Road & Hume Way/Berryessa Drive	Signal	28.2	C	26.1	C	1 and 2	27.9	C	26.0	C
9. Peabody Road & Marshall Road	Signal	**86.9**	**F**	**65.8**	**E**	1 and 2	**86.6**	**F**	**65.0**	**E**
10. Peabody Road & Alamo Drive	Signal	**39.7**	**D**	**37.5**	**D**	1 and 2	**41.0**	**D**	**37.7**	**D**
11. Peabody Road & California Drive	Signal	28.4	C	25.8	C	1 and 2	27.5	C	26.1	C
12. Peabody Road & Caldwell Drive	SSSC	0.3 (14.6)	A (B)	0.4 (18.8)	A (C)	1 and 2	0.3 (14.7)	A (B)	0.5 (20.1)	A (C)
13. Peabody Road & Morning Glory Drive	SSSC	2.0 (16.3)	A (C)	1.8 **(28.6)**	A **(D)**	1 and 2	1.9 (16.7)	A (C)	1.8 **(28.9)**	A **(D)**
14. Peabody Road & Foxboro Parkway	Signal	22.0	C	30.2	C	1	21.2	C	33.1	C
						2	20.9	C	34.7	C
15. Peabody Road & SOL Driveway	Signal	6.4	A	14.8	B	1	7.0	A	26.7	C
						2	6.3	A	15.6	B

Notes: Unacceptable operations are highlighted in **bold** text. Shaded text indicates a potentially significant impact.
[1] SSSC = Side-Street Stop Control
[2] The a.m. peak hour is between 7:00 a.m. and 9:00 a.m. The p.m. peak hour is between 4:00 p.m. and 6:00 p.m.
[3] Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the overall intersection (worst movement) for side-street stop-controlled intersections.
[4] Under Access Option 1, the project access driveway would be at the existing SOL Driveway. Under Access Option 2, a new driveway would be constructed at the Peabody Road/ Foxboro Parkway intersection. Access Option 2 would only be used by employees of the CMF/SOL infill facility.
Source: Fehr & Peers 2013.

Impact 3.11-2: Impacts on Caltrans Facility Operations

According to the Caltrans *Guide for the Preparation of Traffic Impact Studies* (2002), analysis of development-related impacts is not required for intersections that operate at LOS D or better without the development, if the development would generate fewer than 49 trips on the Caltrans facilities. The level II infill correctional facility at CMF/SOL would add 17 a.m. and 17 p.m. peak hour trips to the I-80 and Alamo Drive/Merchant Street interchange ramp terminal intersections, which operate at LOS D or better under existing conditions. Freeway segments were not analyzed due to the low number of vehicle trips expected to use the freeway. Refer to Appendix 5D in this volume for technical calculations.

*Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not exceed the screening criteria for nearby Caltrans facilities. This would be a **less-than-significant** impact.*

Mitigation Measures

No mitigation measures are required.

Impact 3.11-3: Impacts on Parking

A parking accumulation analysis was performed to determine the maximum parking demand for a level II infill correctional facility at the CMF/SOL Infill Site. The parking demand calculations consider the anticipated parking demand of each shift for the facility, accounting for overlap in the shift schedule. Table 3.11-5 shows the hourly parking demand for a typical weekday. The parking demand was calculated based on the following assumptions:

- This correctional facility is unlike other types of land use for which published parking demand rates are available.
- Because of overlapping shifts, the analysis must account for the presence of employees from multiple shifts at the same time.
- Employees do not arrive for their shift exactly when it begins. It is assumed that employees arrive several minutes before their shift begins.
- Employees also do not depart immediately when their shift ends. For purposes of this analysis, it is assumed that employees depart within the one hour period after their shift ends.

As shown in Table 3.11-5, the maximum parking demand for a single, level II infill correctional facility at CMF/SOL on a typical weekday would be 175 spaces.

Table 3.11-5 Estimated Weekday Parking Demand

Hour Beginning	Hour Ending	Watch1	Watch 2	Watch 3	Watch 2 (Support Staff)	Total
12:00 a.m.	1:00 a.m.	18				18
1:00 a.m.	2:00 a.m.	18				18
2:00 a.m.	3:00 a.m.	18				18
3:00 a.m.	4:00 a.m.	18				18
4:00 a.m.	5:00 a.m.	18				18
5:00 a.m.	6:00 a.m.	18	57			75
6:00 a.m.	7:00 a.m.	18	57			75
7:00 a.m.	8:00 a.m.		57		81	138
8:00 a.m.	9:00 a.m.		57		81	138
9:00 a.m.	10:00 a.m.		57		81	138
10:00 a.m.	11:00 a.m.		57		81	138
11:00 a.m.	12:00 p.m.		57		81	138
12:00 p.m.	1:00 p.m.		57		81	138
1:00 p.m.	2:00 p.m.		57	37	81	**175**
2:00 p.m.	3:00 p.m.		57	37	81	**175**
3:00 p.m.	4:00 p.m.			37	81	118
4:00 p.m.	5:00 p.m.			37	81	118
5:00 p.m.	6:00 p.m.			37	81	118
6:00 p.m.	7:00 p.m.			37		37
7:00 p.m.	8:00 p.m.			37		37
8:00 p.m.	9:00 p.m.			37		37
9:00 p.m.	10:00 p.m.	18		37		55
10:00 p.m.	11:00 p.m.	18		37		55
11:00 p.m.	12:00 a.m.	18				18

Notes: Watch 1 = 10:00 p.m. to 6:00 a.m., Watch 2 = 6:00 a.m. to 2:00 p.m., Watch 3 = 2:00 p.m. to 10:00 p.m., Watch 2 (Support Staff) = 8:00 a.m. to 5:00 p.m.
Source: Fehr & Peers 2013

Chapter 2, "Project Description," of this volume states that the infill facility would include no fewer than 295 parking spaces, which is more than the peak demand on a typical weekday.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in inadequate parking supply to support anticipated demand. This would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

Impact 3.11-4: Construction-Related Traffic Impacts

Traffic generated during construction of a single, level II infill correctional facility at CMF/SOL would be attributable to trucks and construction workers' trips to and from the infill site. Construction would include four general phases in the following order: demolition/site preparation, grading, utilities, and building construction. Each phase would take place concurrently with the previous and following phase for some period of time. Construction traffic trip generation was estimated based on the following assumptions:

- The number of daily employees during each phase was calculated based on data provided by CDCR regarding construction activities at the California Health Care Facility (CHCF) site in Stockton, California, which is currently under construction. Construction traffic was scaled based on the relative sizes of projects.
- The number of truck trips during demolition/site preparation and grading were calculated based on the cubic yards of material to be moved to/from the site.
- The number of truck trips during utilities and building construction were assumed to be 20 one-way trips per day.

Table 3.11-6 shows the estimated trip generation during each phase of construction, including concurrent phases (phases that partially overlap), based on the number of expected construction employees and the number of truck trips.

Table 3.11-6 Estimated Construction Trip Generation

Construction Phase	Employee Trips per Day[1]	Truck Trips per Day[2]	Daily Trips		Notes
			Single Phase	Concurrent Phase	
Demolition/Site Preparation	186	12	198	578	Demolition = 2 months; 1 month concurrent with grading
Grading	364	16	380	442	Grading = 3 months; 1 month concurrent with demolition; 1 month concurrent with utilities
Utilities	42	20	62	744	Utilities = 8 months; 1 month concurrent with grading; 6 months concurrent with building construction
Building Construction	662	20	682		Building Construction = 23months; 6 months concurrent with utilities

Notes:
[1] Based on data provided by CDCR regarding the construction activities at the CHCF Stockton site.
[2] Based on cubic yards of material to be moved to/from the site during demolition/site preparation and grading. Based on 20 one-way trips per day during utilities and building construction.
Source: Fehr & Peers 2013

Implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in temporary construction-related impacts. The impacts could include both operational impacts (degradation of LOS to unacceptable levels) and deterioration of pavement conditions by heavy vehicles.

Construction of a level II infill correctional facility at the CMF/SOL Infill Site would generate between 62 and 744 daily trips during the peak period of construction traffic, anticipated to be the six months when utilities and building construction are taking place concurrently. These trips, when added to the local roadway network, could result in some of the same traffic impacts described for the operation of a level II infill correctional facility at the CMF/SOL Infill Site. The level II infill correctional facility is expected to generate 396 daily trips, which is more than the trip generation of the demolition/site preparation, grading, or utilities phase. During those single phases (approximately 3 months in duration), construction impacts would be the same or less than those for operation of the infill facility. For the remainder of the construction period (i.e., during the building construction phase and the concurrent phases), the daily trip generation will vary from 441 daily trips to 744 daily trips. The traffic impacts during construction would depend on the construction workers' shifts. Construction traffic could result in temporary impacts at the following facilities, which currently operate at LOS C or worse:

- Alamo Drive and Merchant Street (a.m. and p.m. peak hours),
- Peabody Road and Elmira Road (a.m. and p.m. peak hours),
- Peabody Road and Cliffside Drive (a.m. and p.m. peak hours),
- Peabody Road and Hume Way/Berryessa Drive (a.m. and p.m. peak hours),
- Peabody Road and Marshall Road (a.m. and p.m. peak hours),
- Peabody Road and Alamo Drive (a.m. and p.m. peak hours),
- Peabody Road and California Drive (a.m. and p.m. peak hours),
- Peabody Road and Caldwell Drive (p.m. peak hour),
- Peabody Road and Morning Glory Drive (a.m. and p.m. peak hours), and
- Peabody Road and Foxboro Parkway (a.m. and p.m. peak hours).

A new driveway at Foxboro Parkway would serve as the construction access driveway for Access Options 1 and 2. If Access Option 1 is ultimately chosen to serve the CMF/SOL Infill Site, the construction access driveway at Foxboro Parkway would be removed at the conclusion of construction. The Peabody Road/Foxboro Parkway intersection currently operates at LOS C as a three-legged intersection and would continue to operate at LOS C as a four-legged intersection under existing plus level II infill correctional facility conditions.

With development of a single, level II infill correctional facility at the CMF/SOL Infill Site, construction traffic could result in significant short-term traffic impact on several local intersections. Therefore, this impact would be significant.

Mitigation Measures

Mitigation Measure 3.11-4

CDCR will prepare a construction traffic management plan (TMP) in consultation with the applicable transportation entities, including Caltrans for state roadway facilities and the City of Vacaville. The applicant will implement the construction TMP during project construction. The TMP will address the following, as needed:

- scheduling for oversized material deliveries to the work site and haul routes, including flagging, scheduling off-peak deliveries, etc.;
- the cumulative effect of construction traffic with other concurrent, major construction projects nearby;

- daily construction time windows during which construction is restricted; and
- other actions to be identified and developed as may be needed by the construction manager/resident engineer to ensure that temporary impacts on transportation facilities are minimized.

To minimize potential impacts, the TMP will restrict, to the extent feasible, peak hour trips entering and exiting CMF/SOL to 70 passenger-car equivalents (PCEs). The TMP will include an updated evaluation of current operational characteristics of the roadways to determine if construction traffic would cause unacceptable operations. If so, the TMP would specify temporary mitigations as needed, including but not limited to temporary operational improvements or limiting the hours or amount of construction trips on affected roadway segments. The TMP will also evaluate pavement conditions along the haul routes designated in the TMP, and, if necessary, specify mitigations to:

- avoid or minimize the use of haul routes where the pavement condition is physically deficient according to each jurisdictions' standards, or
- enter into mitigation agreements to improve the physical condition of haul routes that are in a physically deficient condition.

Determination of whether the pavement condition is "acceptable" or "deficient" will be defined by the presiding jurisdiction's pavement management criteria.

Significance after Mitigation

Although the construction TMP would reduce the significance of this impact and would substantially improve and manage construction-related traffic conditions on area roadways, until the specific parameters of the construction activities and the details of the TMP are developed, it is possible that feasible mitigation measures would not be available for all construction-related impacts. However, the details of these improvements cannot feasibly be developed at this time. Further, it is considered unlikely that the construction traffic associated with development of the infill site could be reduced to below the performance standard identified above. Therefore, for purposes of CEQA, this impact is concluded to remain **significant and unavoidable.**

EXISTING PLUS APPROVED PROJECTS CONDITIONS

Existing plus approved projects (E+AP) conditions are assumed to represent a short-term future-year scenario in which planned and approved projects in the study area are constructed, but no other growth has occurred. This section presents the traffic operations analysis for the E+AP conditions scenario.

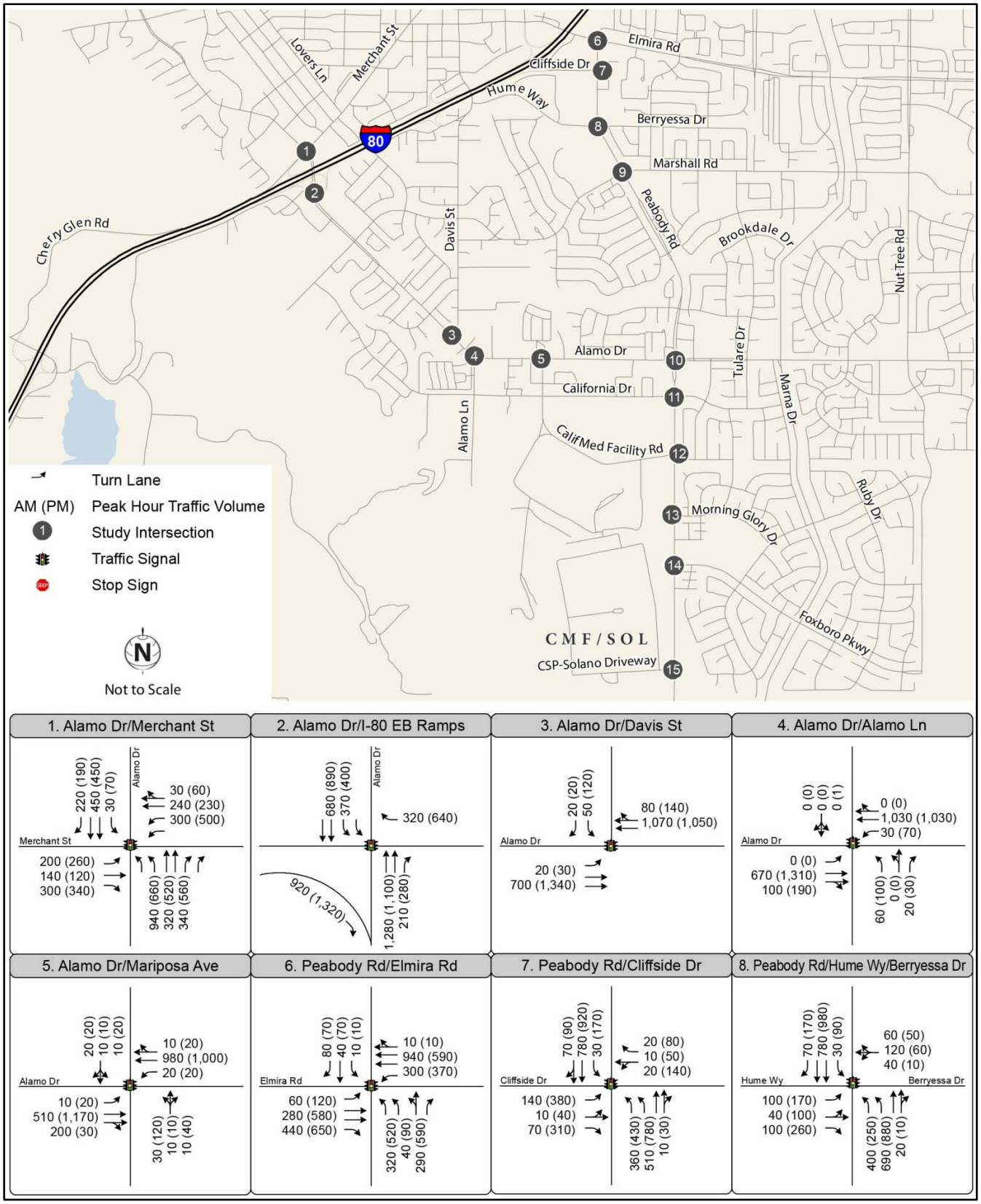
Existing plus Approved Projects Conditions Roadway Network

No roadway network improvements are assumed for the E+AP conditions scenario.

Existing plus Approved Projects Traffic Projections

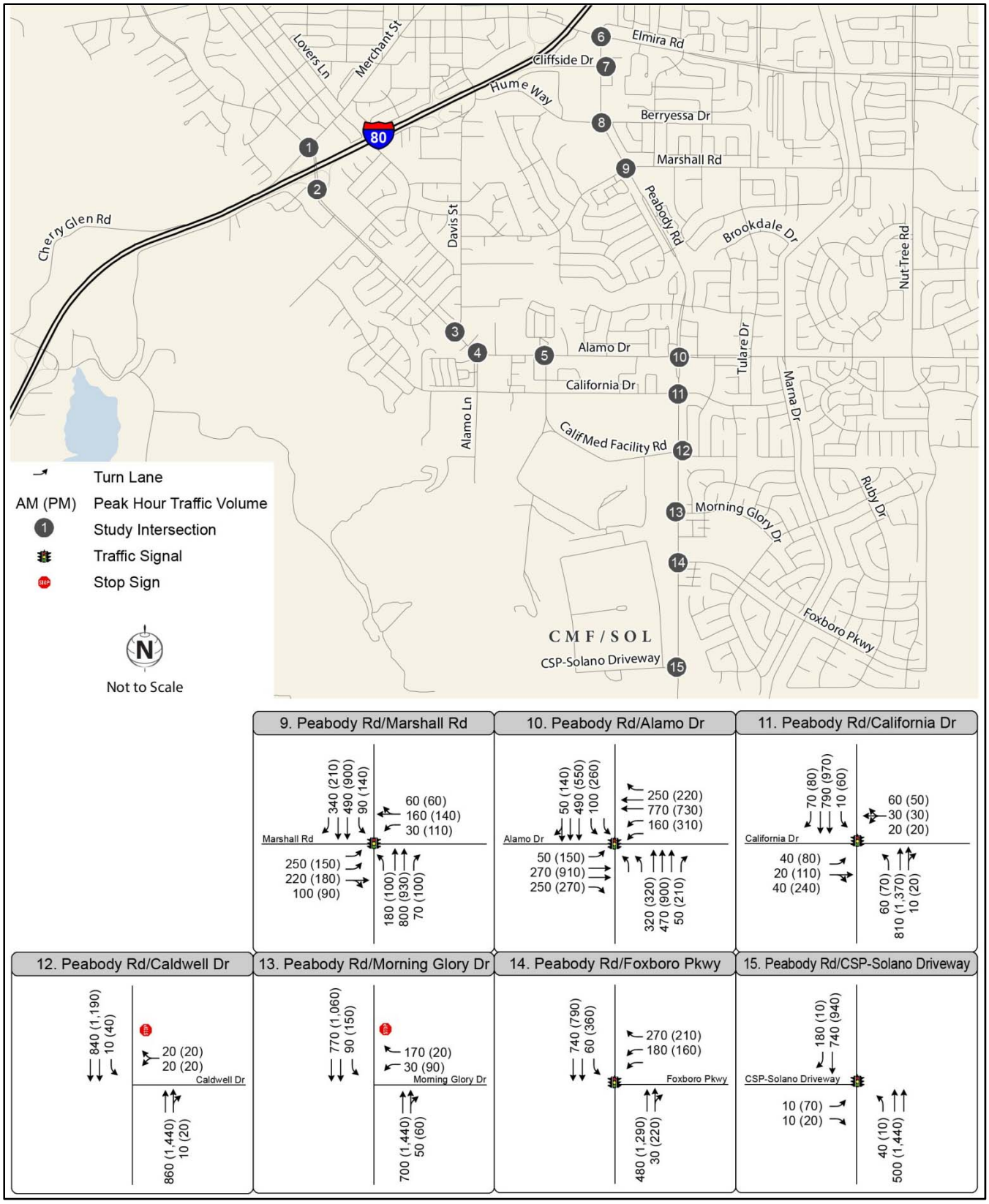
E+AP conditions traffic forecasts were provided by the City of Vacaville based on their citywide traffic model. The model includes updated land use assumptions developed by the Community Development Department.

Traffic forecasts were developed using the difference method, in which the growth between the 2035 and base-year model volumes was added to existing traffic counts. Exhibits 3.11-7 present the E+AP traffic volumes.



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-7 Existing plus Approved Projects Traffic Volumes (1 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-7 Existing plus Approved Projects Traffic Volumes (2 of 2)

E+AP plus level II infill correctional facility traffic volumes were developed by adding the traffic generated by the infill facility (shown in Exhibits 3.11-3 and 3.11-4) to the E+AP volumes. Exhibits 3.11-8 (Access Option 1) and 3.11-9 (Access Option 2) present the E+AP plus level II infill correctional facility traffic volumes.

Existing plus Approved Projects plus Level II Infill Correctional Facility Traffic Impacts

This study analyzes peak hour intersection operations under E+AP and E+AP plus level II infill correctional facility conditions to determine the potential impacts of the infill facility on traffic operations. The E+AP and E+AP plus level II infill correctional facility analysis uses existing signal timings and intersection PHFs.

Impact 3.11-5: Existing plus Approved Projects Impacts on Intersection Operations

The intersection LOS analysis for E+AP plus level II infill correctional facility conditions was performed using Synchro 7 software, which utilizes *HCM 2000* methodology. Table 3.11-7 shows the E+AP plus level II infill correctional facility LOS at the study intersections.

Under E+AP conditions, the Alamo Drive/Merchant Street, Peabody Road/Elmira Road, Peabody Road/Marshall Road, Peabody Road/Alamo Drive, and Peabody Road/California Drive intersections operate at an unacceptable LOS in one or both peak hours. The development of a level II infill correctional facility at the CMF/SOL Infill Site does not increase delay at these intersections by more than two seconds; therefore, the infill facility does not create an impact at these locations. However, the traffic generated by the level II infill correctional facility at CMF/SOL would increase the delay by more than two seconds at the following intersections, which operate at unacceptable LOS under E+AP conditions:

- Peabody Road and Cliffside Drive – p.m. peak hour
- Peabody Road and Caldwell Drive – p.m. peak hour
- Peabody Road and Morning Glory Drive – p.m. peak hour
- Peabody Road and Foxboro Parkway – p.m. peak hour (Access Option 1)
- Peabody Road and Foxboro Parkway – p.m. peak hour (Access Option 2)

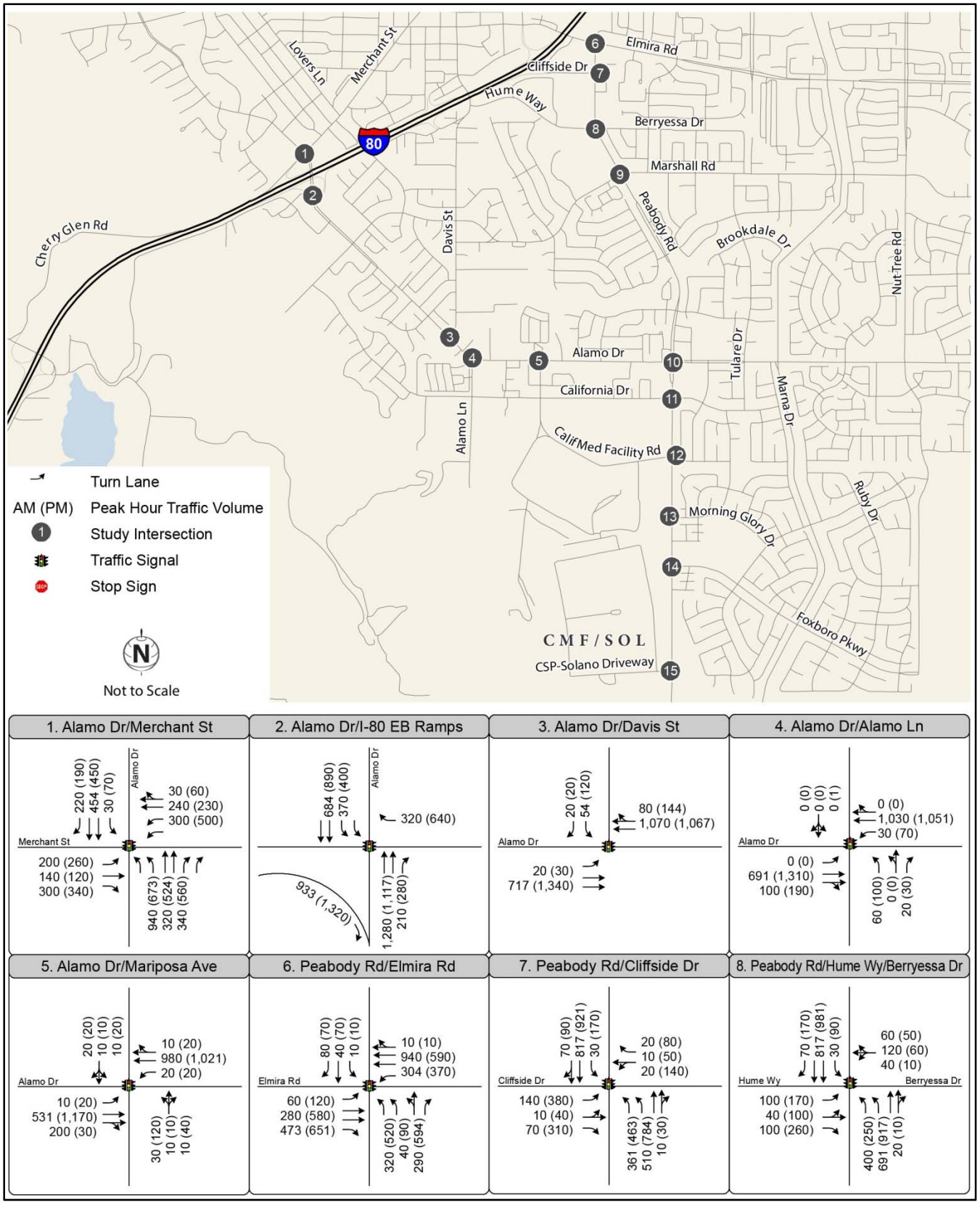
Implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in the degradation of intersection operations during the p.m. peak hour at intersections of Peabody Road with Cliffside Drive, Caldwell Drive, Morning Glory Drive, and Foxboro Parkway under E+AP plus level II infill correctional facility conditions. This would be a significant impact.

Mitigation Measures

Implement Mitigation Measure 3.11-1.

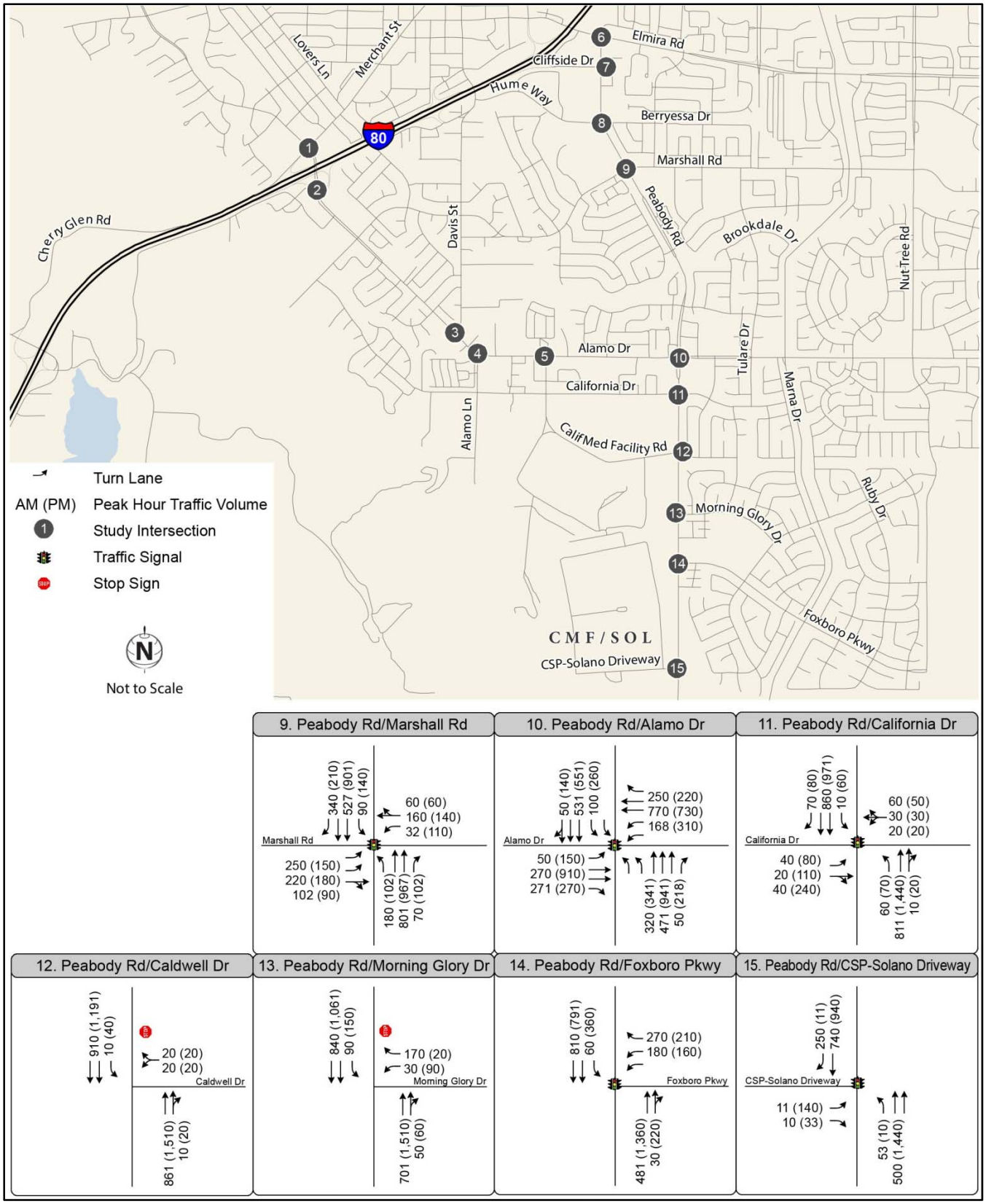
Mitigation Measure 3.11-5a

CDCR will coordinate with the City of Vacaville and will contribute traffic development impact fees towards the signalization of a traffic signal at the Peabody Road/Morning Glory Drive intersection. This mitigation measure will be implemented prior to occupancy or earlier if specified by the construction transportation management plan (see Mitigation Measure 3.11-4).



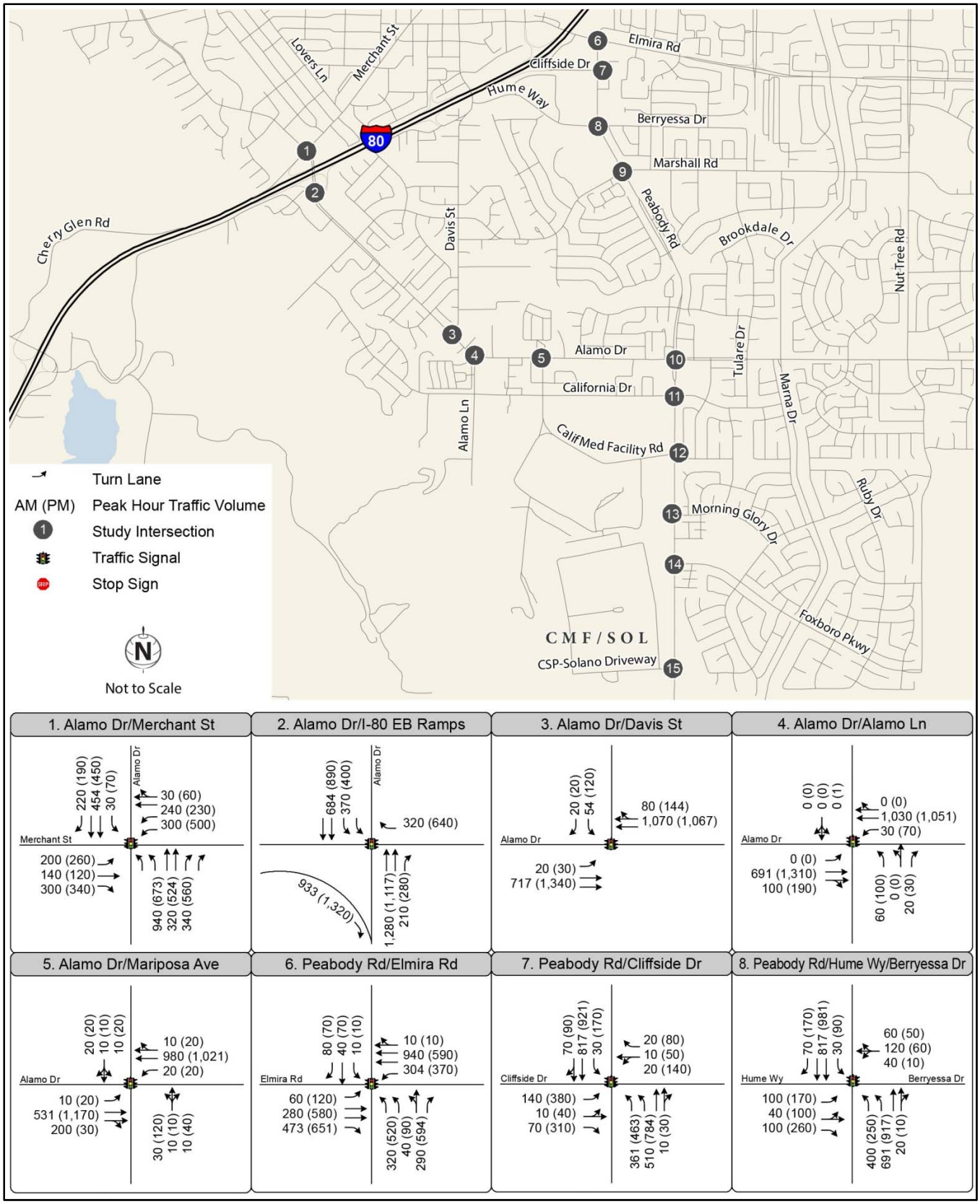
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-8 Existing plus Approved Projects plus Level II Infill Correctional Facility **Traffic Volumes – Access Option 1 (1 of 2)**



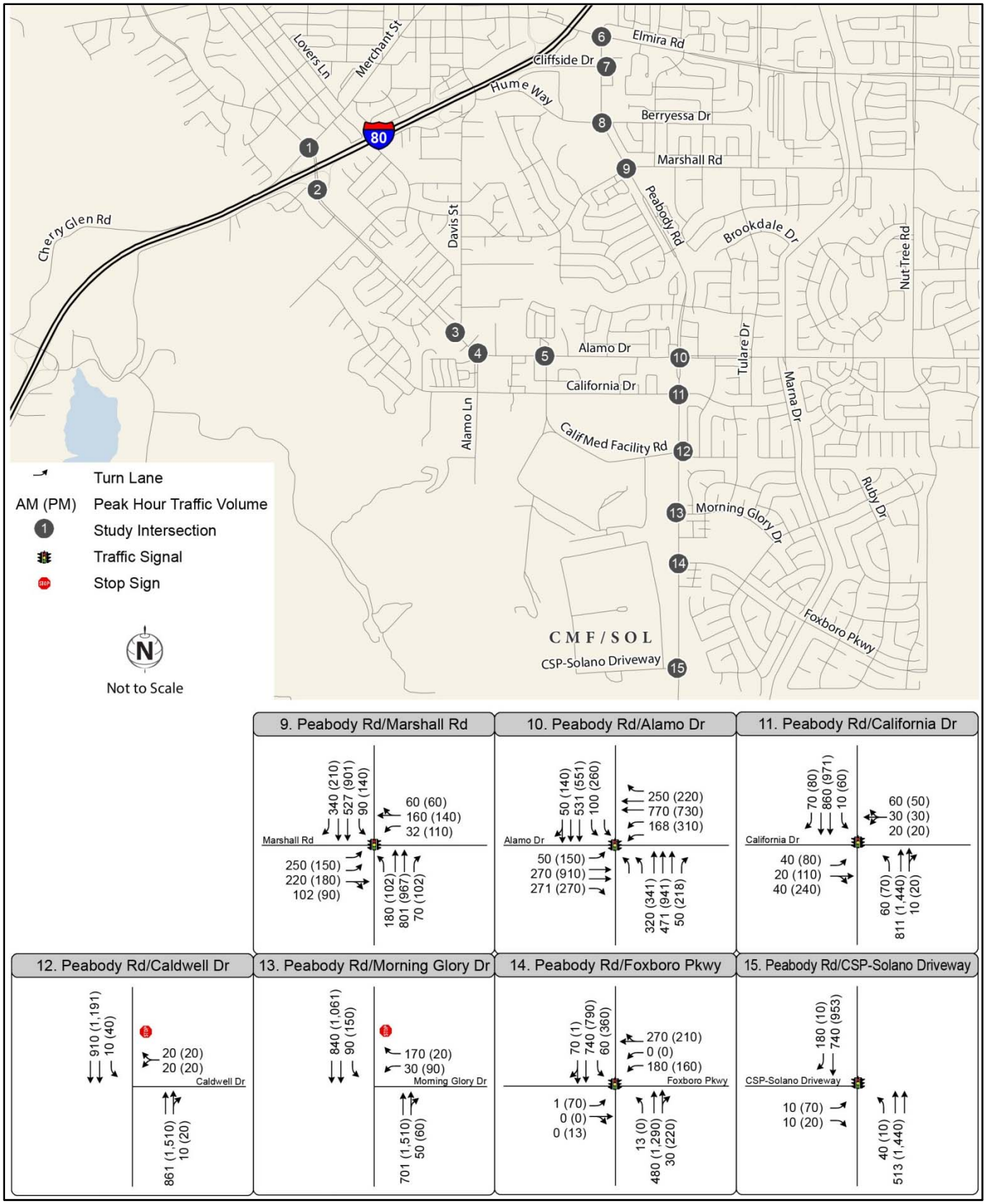
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-8 Existing plus Approved Projects plus Level II Infill Correctional Facility Traffic Volumes – Access Option 1 (2 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-9 Existing plus Approved Projects plus Level II Infill Correctional Facility Traffic Volumes – Access Option 2 (1 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-9 Existing plus Approved Projects plus Level II Infill Correctional Facility Traffic Volumes – Access Option 1 (2 of 2)

Table 3.11-7 Intersection Level of Service Results – Existing plus Approved Projects plus Level II Infill Correctional Facility Conditions

Intersection	Traffic Control[1]	Existing Plus Approved Projects				Access Option	Existing Plus Approved Projects Plus Single Facility			
		AM Peak[2]		PM Peak[2]			AM Peak[2]		PM Peak[2]	
		Delay[3]	LOS	Delay[3]	LOS		Delay[3]	LOS	Delay[3]	LOS
1. Alamo Drive and Merchant Street	Signal	**93.7**	**F**	**50.1**	**D**	1 and 2	**93.7**	**F**	**50.4**	**D**
2. Alamo Drive and I-80 EB Ramps	Signal	8.6	A	6.7	A	1 and 2	8.6	A	6.8	A
3. Alamo Drive and Davis Street	Signal	4.4	A	8.4	A	1 and 2	4.5	A	8.4	A
4. Alamo Drive and Alamo Lane	Signal	6.3	A	10.6	B	1 and 2	6.4	A	10.5	B
5. Alamo Drive and Mariposa Avenue	Signal	8.3	A	18.9	B	1 and 2	8.4	A	18.7	B
6. Peabody Road and Elmira Road	Signal	34.8	C	**53.4**	**D**	1 and 2	**37.0**	**D**	**53.1**	**D**
7. Peabody Road and Cliffside Drive	Signal	25.7	C	**49.6**	**D**	1 and 2	27.4	C	**53.5**	**D**
8. Peabody Road and Hume Way/Berryessa Drive	Signal	31.8	C	29.6	C	1 and 2	32.0	C	29.4	C
9. Peabody Road and Marshall Road	Signal	**100.4**	**F**	**67.9**	**E**	1 and 2	**99.9**	**F**	**64.6**	**E**
10. Peabody Road and Alamo Drive	Signal	**42.4**	**D**	**39.4**	**D**	1 and 2	**43.8**	**D**	**39.8**	**D**
11. Peabody Road and California Drive	Signal	**50.4**	**D**	**63.6**	**E**	1 and 2	**49.0**	**D**	**63.6**	**E**
12. Peabody Road and Caldwell Drive	SSSC	0.4 (16.3)	A (C)	0.7 **(30.0)**	A **(D)**	1 and 2	0.4 (16.4)	A (C)	0.7 **(32.3)**	A **(D)**
13. Peabody Road and Morning Glory Drive	SSSC	1.9 (18.2)	A (C)	2.4 **(48.5)**	A **(E)**	1 and 2	1.9 (18.6)	A (C)	2.7 **(57.0)**	A **(F)**
14. Peabody Road and Foxboro Parkway	Signal	21.9	C	**50.3**	**D**	1	21.3	C	**59.6**	**E**
						2	21.9	C	**75.8**	**E**
15. Peabody Road and SOL Driveway	Signal	8.8	A	18.1	B	1	10.0	B	30.0	C
						2	8.8	A	19.2	B

Notes: Unacceptable operations are highlighted in **bold** text. Shaded text indicates a potentially significant impact.
1 SSSC = Side-Street Stop Control
2 The a.m. peak hour is between 7:00 a.m. and 9:00 a.m., The p.m. peak hour is between 4:00 p.m. and 6:00 p.m.
3 Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the overall intersection (worst movement) for side-street stop-controlled intersections.
Source: Fehr & Peers 2013.

Mitigation Measure 3.11-5b

Depending on which access option is selected, CDCR will implement one of the following improvements at the intersection of Peabody Road/Foxboro Drive:

- If Access Option 1 is selected, CDCR will coordinate with the City of Vacaville and arrange for optimization of signal timings at the intersection of Peabody Road and Foxboro Drive during the p.m. peak hour. This mitigation measure will be implemented prior to occupancy or earlier if specified by the construction transportation management plan (see Mitigation Measure 3.11-4).

- If Access Option 2 is selected, CDCR will reconstruct the southbound approach at the intersection of Peabody Road and Foxboro Parkway to include two dedicated left-turn lanes. Space is available within existing right-of-way to construct this improvement such that additional environmental impacts beyond those that are identified in this DEIR would not occur. This mitigation measure will be implemented prior to occupancy or earlier if specified by the construction transportation management plan (see Mitigation Measure 3.11-4).

Significance after Mitigation

Optimization of signal timings at the intersection of Peabody Road and Cliffside Drive and, if Access Option 1 is selected, the intersection of Peabody Road and Foxboro Parkway during the p.m. peak hour would reduce the overall delay at the intersection to less than pre-development conditions. Both intersections would operate at LOS D in the p.m. peak hour. The Peabody Road/Cliffside Drive intersection would have an average delay of 44.0 seconds and Peabody Road/Foxboro Parkway would have an average delay of 45.9 seconds. Implementation of a traffic signal at Peabody Road/Morning Glory Drive would result in acceptable LOS B at the intersection. With respect to Access Option 2, the reconstruction of the southbound approach at the intersection of Peabody Road and Foxboro Parkway to include two left-turn lanes would in result in less delay than E+AP conditions. The intersection would operate at LOS D with an average delay of 38.8 seconds in the p.m. peak hour.

Development of a level II infill correctional facility at the CMF/SOL Infill Site would result in unacceptable LOS D operations in the p.m. peak hour at the intersection of Peabody Road and Caldwell Drive intersection under E+AP plus level II infill correctional facility conditions. The impact could be mitigated by installing a signal at the intersection. However, traffic volumes on the westbound approach of the intersection do not meet the peak hour signal warrant threshold in the Manual of Traffic Control Devices (MUTCD). The installation of an unwarranted traffic signal usually increases the risk for rear end collisions. As a result, low-volume intersections are not recommended for signalization due to traffic safety concerns, and mitigation of this intersection is considered infeasible.

Implementation of the mitigations described above would reduce potential impacts of the level II infill correctional facility to less than significant at three of the four affected intersections. The mitigation measures would reduce the overall delay of the intersection to less than pre-development conditions. However, implementation of the aforementioned mitigation measures is within the responsibility and jurisdiction of another public agency and not CDCR. The City of Vacaville has indicated that the mitigation measures specified above are sufficient to mitigate the impacts. Therefore, impacts at these intersections would be less-than significant with mitigation.

As noted above, feasible mitigation is not available that would reduce potentially significant impacts at the intersection of Peabody Road and Caldwell Drive to acceptable LOS. Therefore, even with implementation of the aforementioned mitigation measures, impacts would be **significant and unavoidable**.

Impact 3.11-6: Existing plus Approved Projects Impacts on Caltrans Facility Operations

According to the Caltrans *Guide for the Preparation of Traffic Impact Studies* (2002), analysis of development-related impacts is not required for intersections that operate at LOS D or better without the development, if the development would generate fewer than 49 trips on the Caltrans facilities. The level II infill correctional facility would add 17 a.m. and 17 p.m. peak hour trips to the to the I-80 and Alamo Drive/Merchant Street interchange ramp terminal intersections. The Alamo Drive and Merchant Street intersection is expected to operate at LOS F during the a.m. peak hour under E+AP no project conditions; however, traffic from the contemplated level II infill correctional facility at CMF/SOL is not

expected to increase delay at the intersection. Freeway segments were not analyzed due to the low number of vehicle trips expected to use the freeway. Refer to Appendix 5D in this volume for technical calculations.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not exceed the screening criteria for nearby Caltrans facilities. This would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

CUMULATIVE (2035) CONDITIONS

Long-term cumulative conditions are assumed to represent 2035 conditions. This section presents the traffic operations analysis for the cumulative conditions scenario.

Cumulative Roadway Network

The following roadway network improvements included in the City of Vacaville *General Plan* were assumed to be in place by 2035. Therefore, these improvements were included in the cumulative no project scenario:

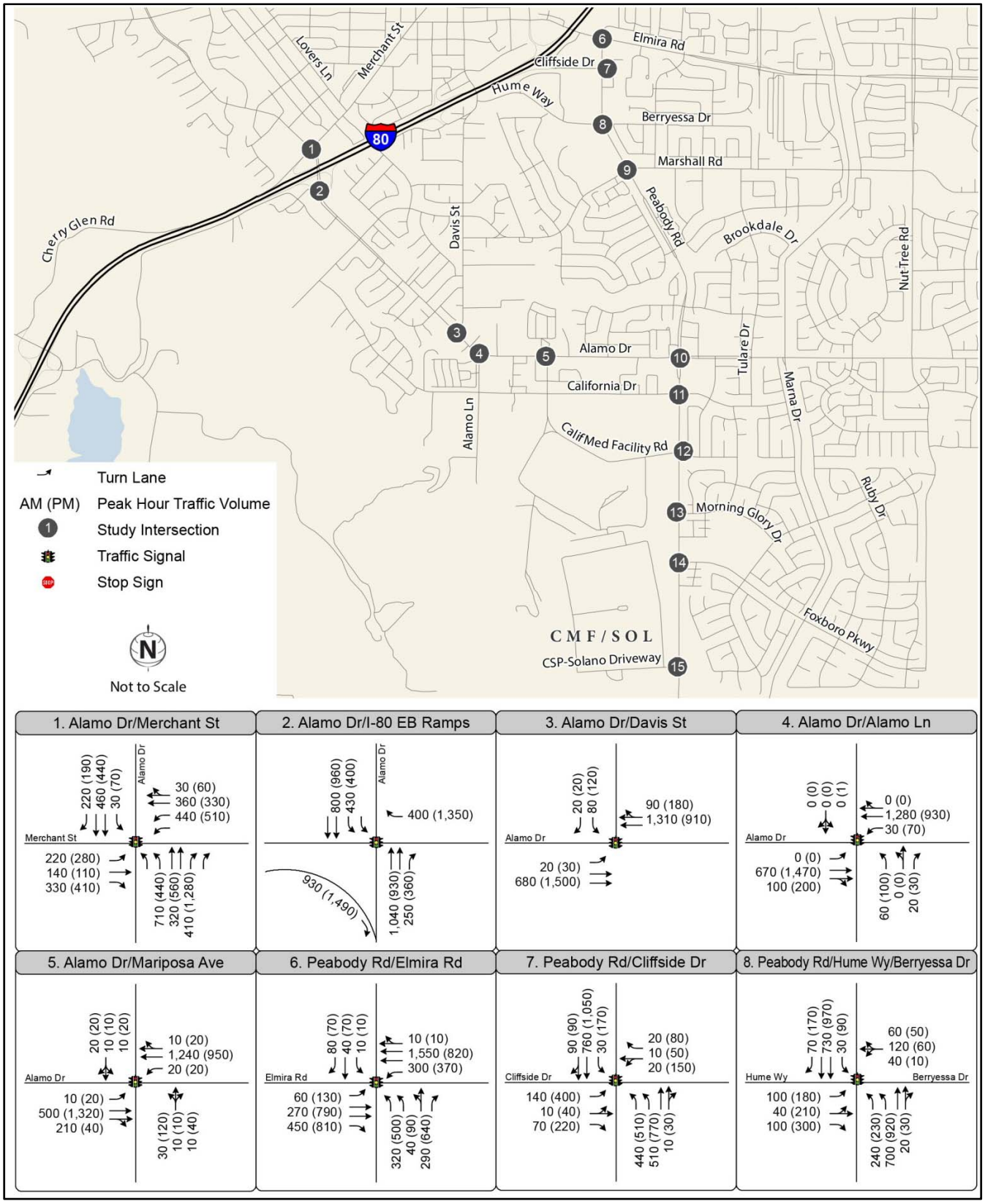
- California Drive Extension – Extension of California Drive west of Marshall Road to Cherry Glen Road. This extension will cross over I-80 and connect to the I-80 ramps at Cherry Glen Road/Rivera Road via Cherry Glen Road.
- The California Drive extension will provide a more direct route to and from I-80 west than the I-80 and Alamo Drive/Merchant Street interchange. Under cumulative no project conditions, development-related traffic to/from the west on I-80 is expected to use the I-80/Cherry Glen Road interchange.
- Additional roadway network improvements are included in the *General Plan*, but do not directly affect the study intersections. These changes would however cause shifts in traffic volumes throughout the network, which are reflected in the model volume outputs.

Cumulative Traffic Forecasts

Traffic forecasts representing 2035 were provided by the City of Vacaville based on their citywide traffic model. The traffic model roadway network included the improvements listed above and all planned and approved land use development in the area.

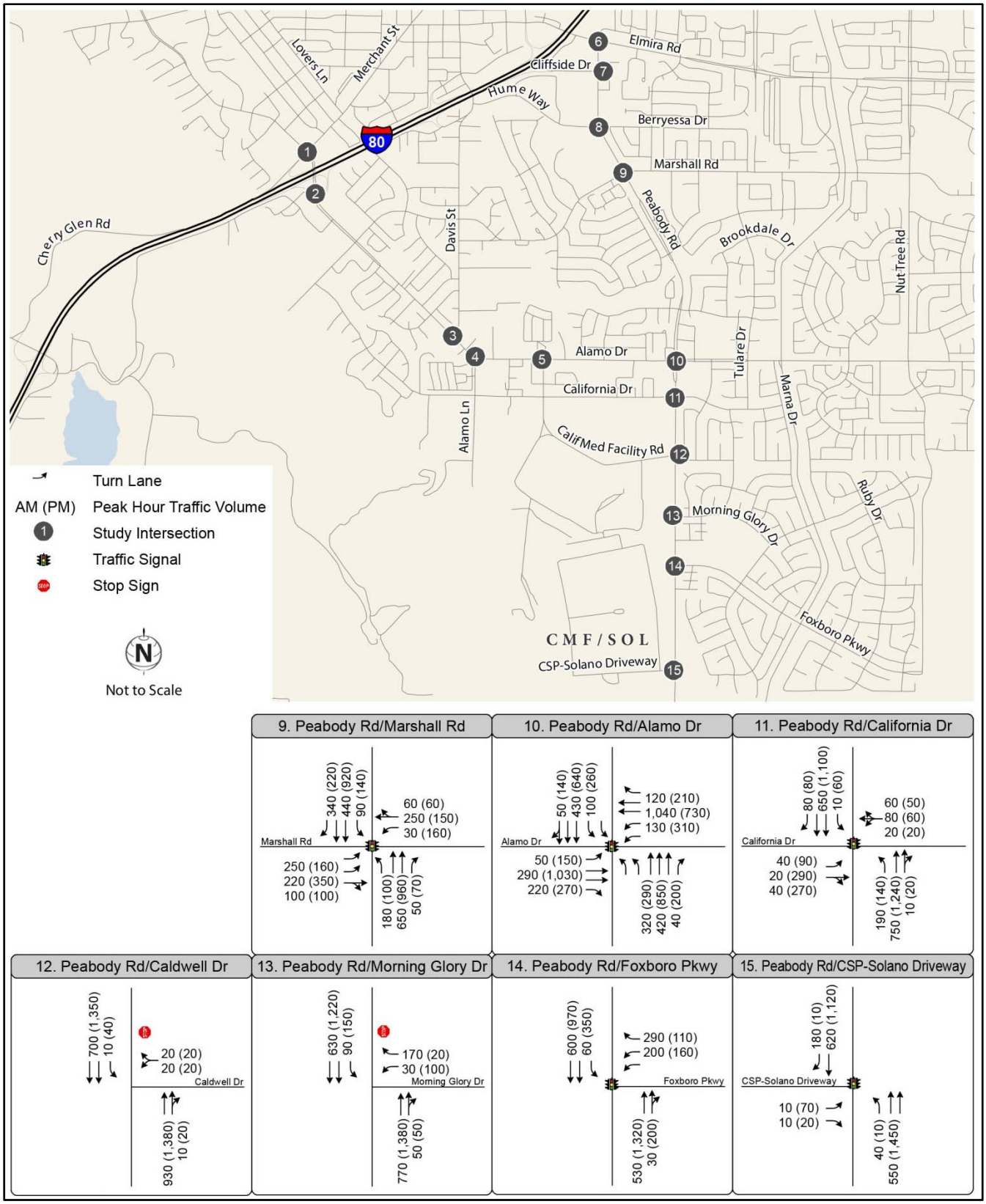
Traffic forecasts were developed using the difference method, in which the growth between the future-year and base-year model volumes was added to existing traffic counts. Exhibit 3.11-10 presents the cumulative no project traffic volumes.

Cumulative plus single, level II infill correctional facilities traffic volumes were developed by adding the traffic generated by the infill facility (Exhibits 3.11-3 and 3.11-4) to the cumulative no project volumes. Exhibits 3.11-11 (Access Option 1) and 3.11-12 (Access Option 2) present the cumulative plus level II infill correctional facilities traffic volumes.



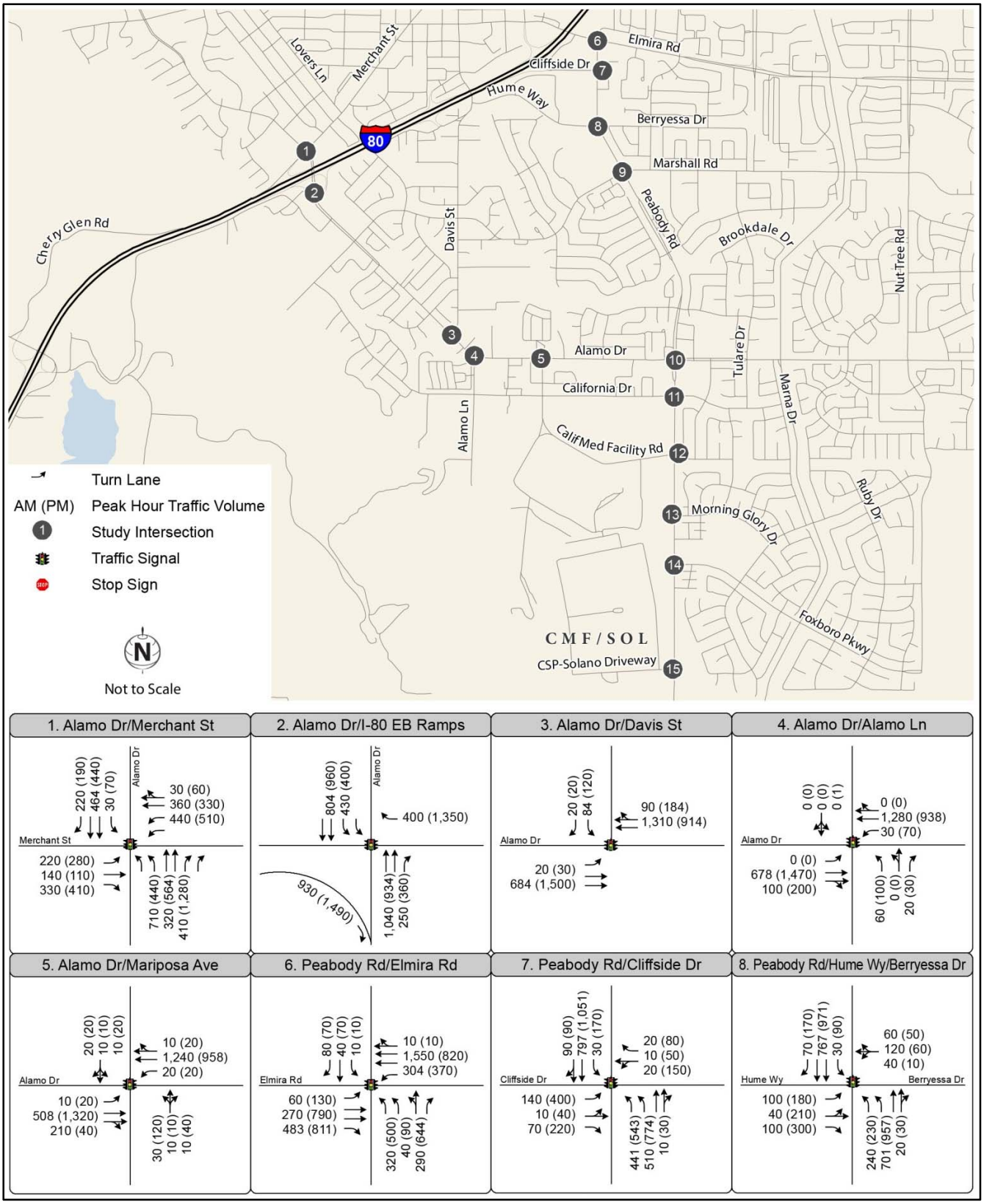
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-10 Cumulative No Project Traffic Volumes (1 of 2)



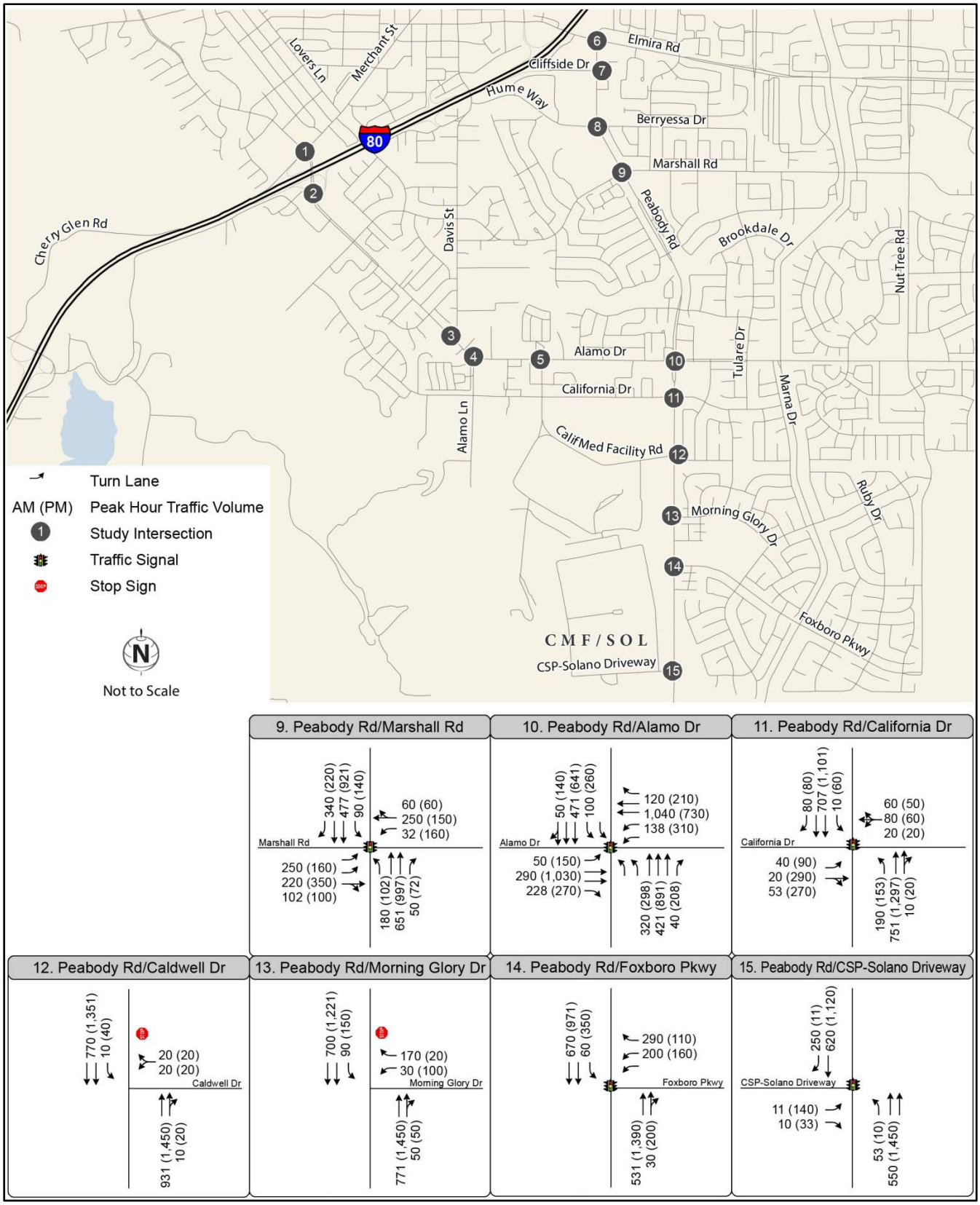
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-10 **Cumulative No Project Traffic Volumes (2 of 2)**



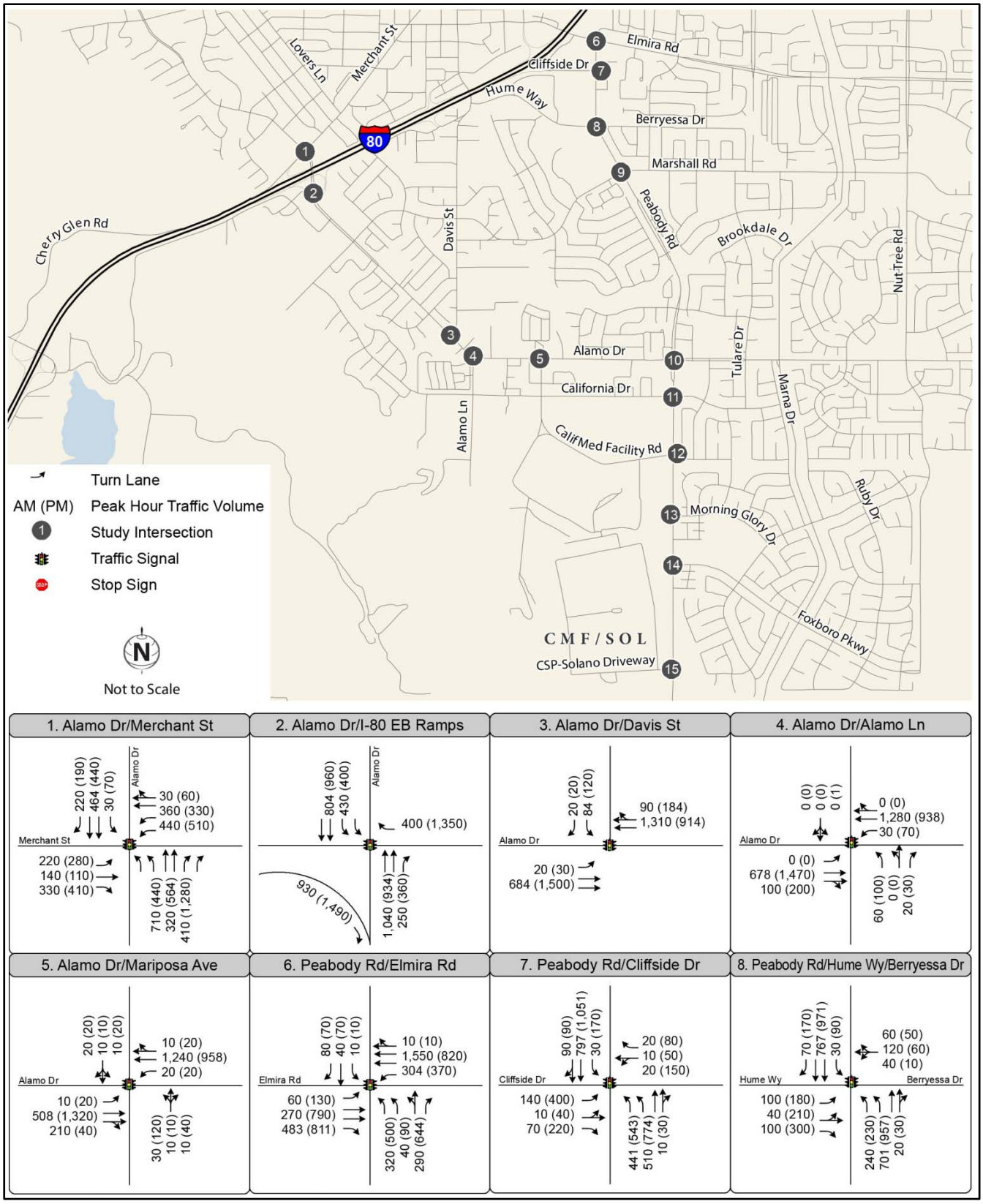
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-11 Cumulative plus Level II Infill Correctional Facility Traffic Volumes – Access Option 1 (1 of 2)



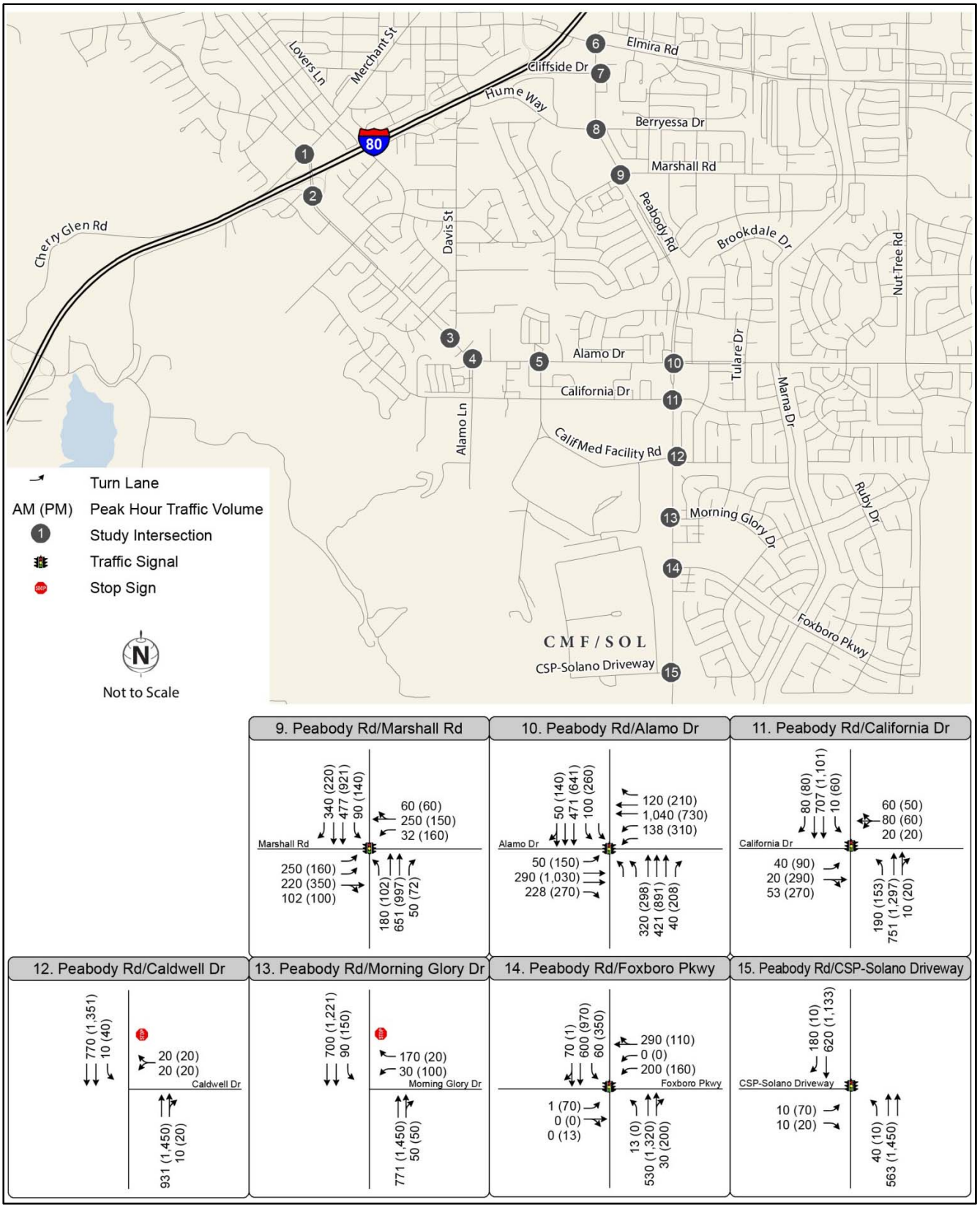
Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-11 Cumulative plus Level II Infill Correctional Facility Traffic Volumes – Access Option 1 (2 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-12 Cumulative plus Level II Infill Correctional Facility Traffic Volumes – Access Option 2 (1 of 2)



Source: Data compiled by Fehr & Peers in 2013

Exhibit 3.11-12 Cumulative plus Level II Infill Correctional Facility Traffic Volumes – Access Option 2 (2 of 2)

Cumulative (2035) plus Level II Infill Correctional Facility Traffic Impacts

This study analyzes peak hour intersection operations under cumulative no project and cumulative plus level II infill correctional facility conditions to determine the potential impacts of development of a level II infill correctional facility at CMF/SOL on traffic operations. The cumulative no project and cumulative plus level II infill correctional facility analyses use optimized signal timings based on cumulative no project conditions and a network-wide PHF of 0.92.

Impact 3.11-7: Cumulative Impacts on Intersection Operations

Intersection LOS analysis for cumulative plus single, level II infill correctional facility conditions was performed using Synchro 7 analysis software, which utilizes *HCM 2000* methodology. Table 3.11-7 shows the cumulative plus level II infill correctional facility LOS at the study intersections.

Under cumulative no project conditions, the Alamo Drive/Merchant Street, Peabody Road/Elmira Road, and Peabody Road/Marshall Road intersections operate at an unacceptable LOS in one or both peak hours. The development of a level II infill correctional facility at the CMF/SOL Infill Site would not increase delay at these intersections by more than two seconds; therefore, the infill facility would not create a significant impact at these locations. However, the traffic generated by the potential infill facility at the CMF/SOL Infill Site would degrade traffic operations to an unacceptable LOS or increase the delay by more than two seconds at intersections that operate at unacceptable LOS under cumulative no project conditions at the following locations:

- Peabody Road and Cliffside Drive – p.m. peak hour
- Peabody Road and California Drive – p.m. peak hour
- Peabody Road and Caldwell Drive – p.m. peak hour
- Peabody Road and Morning Glory Drive – p.m. peak hour
- Peabody Road and Foxboro Parkway – p.m. peak hour (Access Option 2)

Implementation of a level II infill correctional facility at the CMF/SOL Infill Site under cumulative (2035) conditions would result in the degradation of operations during the p.m. peak hour at intersections of Peabody Road with Cliffside Drive, California Drive, Caldwell Drive, Morning Glory Drive, and Foxboro Parkway (Access Option 2). This would be a significant impact.

Mitigation Measures

Implement Mitigation Measures 3.11-5a and 3.11-5c (Access Option 2).

Mitigation Measure 3.11-7a

CDCR will coordinate with the City of Vacaville and arrange for optimization of signal timings at the Peabody Road/Cliffside Drive intersection to optimize the coordinated cycle length and provide a right-turn overlap phase to the eastbound right-turn movement. This mitigation measure will be implemented within five years of the initiation of construction.

Mitigation Measure 3.11-7b

CDCR will coordinate with the City of Vacaville and arrange for optimization of signal timings at the Peabody Road/California Drive intersection to provide split phasing for the eastbound and westbound approaches, remove the pedestrian phase for the crosswalk on the south leg of the intersection, and add a pedestrian phase concurrent with the eastbound split phase. This mitigation measure will be implemented within five years of the initiation of construction.

Significance after Mitigation

Implementation of Mitigation Measures 3.11-7a and 3.11-7b would reduce the delay at those intersections to less than cumulative no project conditions during the p.m. peak hour. The Peabody Road/Cliffside Drive intersection would operate at LOS E with an average delay of 57.9 seconds and Peabody Road/California Drive would also operate at LOS E with an average delay of 57.6 seconds. Installation of a traffic signal, as described in Mitigation Measure 3.11-5a, would result in acceptable LOS B or better at the Peabody Road/Morning Glory Drive intersection during both peak hours under cumulative with level II infill correctional facilities. With respect to Access Option 2, the restriping of the southbound approach at the Peabody Road/Foxboro Parkway intersection to include two left-turn lanes would in result inacceptable LOS C in the p.m. peak hour.

Similar to what was described above under Impact 3.11-7 at the Peabody Road/Caldwell Drive intersection, development of a level II infill correctional facility at the CMF/SOL Infill Site would result in unacceptable LOS D operations in the p.m. peak hour at this intersection under cumulative plus level II infill correctional facility conditions. The impact could be mitigated by installing a signal at the intersection. However, traffic volumes on the westbound approach of the intersection do not meet the peak hour signal warrant threshold in the MUTCD. The installation of an unwarranted traffic signal usually increases the risk for rear end collisions. As a result, low-volume intersections are not recommended for signalization due to traffic safety concerns, and mitigation of this intersection is considered infeasible.

Implementation of Mitigation Measures 3.11-7a and 3.11-7b, described above, would reduce potential impacts of the single, level II infill correctional facility to a less-than-significant impact at three of the four affected intersections. The mitigation measures would reduce the overall delay at each intersection to less than pre-development conditions. However, implementation of the aforementioned mitigation measures is within the responsibility and jurisdiction of other public agencies and not CDCR. The City of Vacaville has indicated that these mitigation measures are acceptable to mitigate the impacts. Therefore, impacts at these intersections would be less-than-significant with mitigation.

As noted above, feasible mitigation is not available that would reduce potentially significant impacts at the Peabody Road/Caldwell Drive intersection to acceptable LOS. Therefore, even with implementation of the aforementioned mitigation measures, impacts would be **significant and unavoidable**.

Impact 3.11-8: Cumulative Impacts on Caltrans Facility Operations

As noted above, Caltrans does not require analysis of impacts for intersections that operate at D or better without a development, if the development in question would generate fewer than 49 trips on the Caltrans facilities. The contemplated level II infill correctional facility would add 17 a.m. and 17 p.m. peak hour trips to the to the I-80 and Alamo Drive/Merchant Street interchange ramp terminal intersections, which are expected to operate at LOS D or better under cumulative no project conditions. Freeway segments were not analyzed due to the low number of vehicle trips expected to use the freeway. Refer to Appendix 5D in this volume for technical calculations.

*Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not exceed the screening criteria for nearby Caltrans facilities. This would be a **less-than-significant** impact.*

Mitigation Measures

No mitigation measures are required.

Table 3.11-8 Intersection Level of Service Results – Cumulative plus Level II Infill Correctional Facility Conditions

Intersection	Traffic Control[1]	Cumulative No Project				Access Option[4]	Cumulative Plus Single Facility			
		AM Peak[2]		PM Peak[2]			AM Peak[2]		PM Peak[2]	
		Delay[3]	LOS	Delay[3]	LOS		Delay[3]	LOS	Delay[3]	LOS
1. Alamo Drive and Merchant Street	Signal	**42.4**	**D**	34.9	C	1 and 2	**42.4**	**D**	34.9	C
2. Alamo Drive and I-80 EB Ramps	Signal	5.3	A	6.9	A	1 and 2	5.2	A	6.9	A
3. Alamo Drive and Davis Street	Signal	5.9	A	8.4	A	1 and 2	6.0	A	8.4	A
4. Alamo Drive and Alamo Lane	Signal	4.7	A	11.1	B	1 and 2	4.7	A	11.1	B
5. Alamo Drive and Mariposa Avenue	Signal	5.3	A	15.0	B	1 and 2	5.2	A	15.0	B
6. Peabody Road and Elmira Road	Signal	32.8	C	**60.3**	**E**	1 and 2	33.1	C	**60.9**	**E**
7. Peabody Road and Cliffside Drive	Signal	26.5	C	**58.1**	**E**	1 and 2	26.7	C	**61.7**	**E**
8. Peabody Road and Hume Way/Berryessa Drive	Signal	25.8	C	22.9	C	1 and 2	25.5	C	22.8	C
9. Peabody Road and Marshall Road	Signal	**44.7**	**D**	**54.8**	**D**	1 and 2	**44.6**	**D**	**55.0**	**D**
10. Peabody Road and Alamo Drive	Signal	31.6	C	32.9	C	1 and 2	31.9	C	32.9	C
11. Peabody Road and California Drive	Signal	19.5	B	**59.6**	**E**	1 and 2	19.4	B	**64.7**	**E**
12. Peabody Road and Caldwell Drive	SSSC	0.4 (15.9)	A (C)	0.6 **(25.5)**	A **(D)**	1 and 2	0.4 (15.9)	A (C)	0.6 **(27.7)**	A **(D)**
13. Peabody Road and Morning Glory Drive	SSSC	2.0 (17.2)	A (C)	2.2 **(44.6)**	A **(E)**	1 and 2	2.0 (17.5)	A (C)	2.4 **(49.4)**	A **(E)**
14. Peabody Road and Foxboro Parkway	Signal	18.7	B	29.9	C	1	18.1	B	33.1	C
						2	15.7	B	**52.6**	**D**
15. Peabody Road and SOL Driveway	Signal	6.8	A	15.5	B	1	7.0	A	24.0	C
						2	6.9	A	28.1	C

Notes: Unacceptable operations are highlighted in **bold** text. Shaded text indicates a potentially significant impact.

1 SSSC = Side-Street Stop Control

2 The a.m. peak hour is between 7:00 a.m. and 9:00 a.m. The p.m. peak hour is between 4:00 p.m. and 6:00 p.m.

3 Delay is reported in seconds per vehicle for the overall intersection for signalized intersections. Delay is reported in seconds per vehicle for the overall intersection (worst movement) for side-street stop-controlled intersections.

4 Under Access Option 1 the project access driveway would be at the existing SOL Driveway. Under Access Option 2 a new driveway would be constructed at the Peabody Road/Foxboro Parkway intersection. Access Option 2 will only be used by employees of the CMF/SOL Infill Site.

Source: Fehr & Peers 2013.

3.12 UTILITIES

This section evaluates the adequacy of existing and planned future utilities to serve the potential level II infill correctional facility at California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site. This section covers:

- water supply, distribution, and treatment;
- wastewater treatment and disposal;
- solid waste disposal; and
- energy (electricity and natural gas).

The analysis provided in this section is based on consultation with the Solano Irrigation District (SID) staff, California Department of Corrections and Rehabilitation (CDCR) staff, and information from numerous sources including the following:

- *2010 City of Vacaville Urban Water Management Plan Update* (City of Vacaville 2011);
- *Urban Water Management Plan* (Solano County Water Agency 2010);
- *California Health Care Facility Vacaville Draft Water Distribution System Master Plan* (California Prison Health Care Receivership Corporation 2009a);
- *California Health Care Facility Vacaville Draft Wastewater Collection and Treatment Master Plan* (California Prison Health Care Receivership Corporation 2009b); and
- *California State Prison, Solano and California Medical Facility Infrastructure Report* (California Department of Corrections and Rehabilitation 2008).

Information from these and other documents is incorporated into this section and referenced as appropriate. The *Draft Water Distribution System Master Plan* (California Prison Health Care Receivership Corporation 2009a) and *Draft Wastewater Collection and Treatment Master Plan* (California Prison Health Care Receivership Corporation 2009b) were prepared to establish water and wastewater generation and capacity for CMF/SOL Solano, and the necessary improvements to implement the previously proposed, but never approved, California Health Care Facility – Vacaville Project. While this project is not currently under consideration, these reports provide relevant information related to the evaluation of level II infill correctional facilities at CMF/SOL. This information is used, as appropriate, in this resource section.

Storm drainage, surface water quality, and groundwater quality are addressed in Section 3.7, “Hydrology and Water Quality,” of this volume of the draft environmental impact report (DEIR). The development of a level II infill correctional facility at the CMF/SOL Infill Site would include storm drains to direct runoff from the infill site to detention basins, which temporarily detain stormwater runoff to allow sediment particles and certain pollutants to settle before entering the watershed. In addition, low-impact development (LID) methods to maintain pre-project runoff levels, such as design considerations when planning roads, parking lots, buildings, or landscaping would be incorporated to the maximum extent practicable. As required by Mitigation Measure 3.7-2, the final specifications of the project’s drainage system would be designed to appropriately accommodate the stormwater runoff generated from the new level II infill correctional facility to maintain pre-project conditions. Therefore, impacts associated with the capacity of the existing stormwater drainage system are not analyzed further in this section. However, it should be noted that the impacts of construction of the storm drainage system have been evaluated throughout the technical resources sections in Chapter 3 of this DEIR.

3.12.1 ENVIRONMENTAL SETTING

WATER

EXISTING AND FUTURE WATER SUPPLIES AND DEMANDS

Solano Project Surface Water

The U.S. Bureau of Reclamation (USBR) Solano Project (Solano Project) began in the 1940s and 1950s to meet the water demands of agriculture, municipalities, and military facilities located in Solano County. As agriculture developed throughout the county, groundwater use increased substantially, to the point that use exceeded replacement/recharge, also known as overdraft. Groundwater overdraft persisted in several parts of the county, providing an impetus for a surface water supply to offset the overdraft. During the planning of the Solano Project, Napa County and Yolo County chose not to participate in a larger Solano Project. Therefore, the Solano Project was sized to meet only the projected water needs of Solano County. Construction of the Solano Project was completed by USBR in 1958, and the first water was delivered in 1959.

The physical facilities of the Solano Project include Monticello Dam, the Putah Diversion Dam, and the Putah South Canal (Table 3.12-1). Solano County Water Agency (SCWA) maintains oversight responsibility for the Solano Project and has an agreement with SID to operate and maintain Solano Project facilities on SCWA's behalf. SID also owns and operates a hydroelectric power plant at Monticello Dam.

Table 3.12-1 Solano Project Facilities

	Monticello Dam—Lake Berryessa	Putah Diversion Dam—Lake Solano	Putah South Canal
Storage/Capacity	1,602,000 af	750 af	956 cfs (max)
Dam Height	304 feet	29 feet	n/a
Dam Crest	1,023 feet	910 feet	n/a
Length	n/a	n/a	33 miles

Note: af = acre-feet; cfs= cubic feet per second
Source: SCWA and Solano Agencies 2004:8

As noted above, SCWA has entered into agreements with cities, districts, and state agencies (including CDCR) to provide water from the Solano Project. The contracts with the Solano Project member units are for the full supply available from the Solano Project. The Solano Project contracting agencies are the Cities of Fairfield, Suisun City, Vacaville, and Vallejo; Solano Irrigation District; Maine Prairie Water District; the University of California at Davis (UC Davis); and CSP Solano. Contract entitlements for each agency are listed in Table 3.12-2. USBR is contractually committed to deliver the full contract amount of water from the Solano Project unless the supply does not physically exist (i.e., the reservoir is empty). All Solano Project contractors, municipal or agricultural, are on an equal basis for Solano Project water supply. Water quality from the Solano Project is considered excellent for both municipal and agricultural use (SCWA and Solano Agencies 2004:11).

Water rights permits for the Solano Project are held by USBR in trust for the various Solano water users. The water rights further state that when the permits are converted to a license, the license will be issued in the name of Solano water users. Unlike most federal water projects, the water rights to the Solano Project "belong" to the Solano water users. The amount of water contracted (207,350 acre-feet per year [afy]) is approximately the firm yield of the Solano Project. The firm yield is an engineering calculation based on a specified water amount every year during the driest hydrologic period on record. For the Solano Project, the driest hydrologic record was from 1916 to 1934. This is a conservative method of determining water supply from a reservoir, and results in a very dependable water supply.

Table 3.12-2 Solano Project Water Contracts	
Agency	Annual Entitlement (acre-feet)
Fairfield	9,200
Suisun City	1,600
Vacaville	5,750
Vallejo	14,600
Solano Irrigation District (SID)	141,000
Marine Prairie Water District	15,000
UC Davis	4,000
California State Prison (CSP) Solano	1,200
Project Operating Loss (average estimated)	15,000
Total	**207,350** [a]

[a] Value approximates a firm yield during the driest hydrologic period on record (1916–1934).
Source: SCWA and Solano Agencies (2004:12)

Solano County Water Agency

SCWA was formed in 1951, by an act of the State Legislature, as the "Solano County Flood Control and Water Conservation District" (SCFCWCD). As originally established, SCFCWCD's governing board (ex officio) was the Board of Supervisors of Solano County. As with other countywide flood control and water conservation districts established at the time, the SCFCWCD was given authority for both water supply and flood control. The first major action of the SCFCWCD was to contract with USBR for water supply from the Solano Project.

In 1988, the legislative act was changed to modify the governing board of the SCFCWCD and to make other minor updates to the act. In 1989, the name of SCFCWCD was changed to the current SCWA. The change in the governing board of SCWA was significant. In addition to the five County Supervisors, the mayors of all seven cities in the County and a member from each of the three agricultural irrigation districts (Solano Irrigation District, Maine Prairie Water District, and Reclamation District No. 2068) were added. The three agricultural districts were added because those districts provide retail water service to their constituents. The authorities of SCWA still include both water supply and flood control. The water supply function consists of providing wholesale, untreated water supply to cities, districts, and state agencies. Additionally, SCWA leads efforts to protect rights to existing sources of water and participates in efforts to secure new sources of water for future use within the County. SCWA uses property taxes to pay for the operations and maintenance of the Solano Project.

City of Vacaville Groundwater, Surface Water, and Recycled Water

The City of Vacaville receives water from several surface water sources including the Solano Project and Delta water from the North Bay Aqueduct (NBA), and it receives groundwater from local wells. City water supplies, as well as existing and future water demands, are described below. The following discussion is based on information provided in the *2010 City of Vacaville Urban Water Management Plan Update* (City of Vacaville 2011) and other sources as referenced below.

Groundwater Supply

Groundwater is provided by 12 permitted wells, 10 of which withdraw water from the deep aquifer in the basal zone of the Tehama Formation. Currently, approximately 5,000 acre-feet per year of groundwater is withdrawn. Vacaville is continuing to explore well field expansion as a means of maintaining adequate water supply. A regional program is implementing the monitoring of groundwater data as a means of insuring against overdraft or contamination.

The Solano Sub-basin includes the southernmost portion of the Sacramento Valley Basin and extends into the northern portion of the Sacramento-San Joaquin Delta. Sub-basin boundaries are as follows: (1) Putah Creek on the north; (2) Sacramento River on the east (from Sacramento to Walnut Grove); (3) North Mokelumne River on the southeast (from Walnut Grove to San Joaquin River); (4) San Joaquin River on the south (from the North Mokelumne River to Sacramento River); and, (5) boundary between the San Francisco bay and Sacramento River on the west.

The City is the primary groundwater user within the Vacaville area. Unmeasured agricultural and domestic groundwater extractions in unincorporated areas of the Vacaville area, Rural North Vacaville Water District (RNVWD) production wells, and SID are the other groundwater usages. Since 1968, the City's annual groundwater pumping has varied from a low of 2,862 afy in 1968 to a high of 8,024 afy in 1983. The majority of groundwater production in the past was obtained from wells located at the Elmira Road well field. The newer northeast sector well field located near I-80 now contributes to the groundwater production. In the future, groundwater pumping will be more widely distributed, rather than concentrated in the Elmira Road well field.

The Solano Sub-basin is not projected to become overdrafted if the current management conditions continue (City of Vacaville 2011).

Surface Water Supply

The City has three separate sources for surface water including Solano Project, State Water Project, and Settlement Water. Each surface water source is described below.

Solano Project (Vacaville Supply, SID Agreement)

As described above, the water rights permits for the Solano Project are held by USBR in trust for the Solano water users. The main feature of the Solano Project is Monticello Dam, which provides for storage of 1.6 million af of water in Lake Berryessa (Lake). Water from the Lake is diverted through the Putah Diversion Dam to the 32-mile Putah South Canal, which transports water to the eight SCWA-member unit contractors for Solano Project water. SCWA has entered into agreements with cities, districts, and state agencies to provide water from the Solano Project. The Solano Project contracting agencies are: Fairfield, Suisun City, Vacaville, Vallejo, SID, Maine Prairie Water District, University of California at Davis, and CCSP – Solano.

In addition to its entitlement from SCWA, Vacaville entered into a 1995 Master Water Agreement with SID, which was amended in 2010. Pursuant to the agreement, Vacaville receives an increasing supply from SID through 2039 and a consistent supply thereafter until 2050.

State Water Project (North Bay Aqueduct)

Vacaville receives water allocations from the State Water Project through SCWA (termed Table A water) and water from a Year 2000 purchase agreement from the Kern County Water Agency (KCWA). Surface water received pursuant to these agreements is delivered through the NBA, a State Water Project facility. The City supply from the State Water Project is 6,100 afy, while KCWA Agreement water totals 2,878 afy. The Solano County branch of the NBA was completed in 1988. The Aqueduct is 28 miles long, starting from Barker Slough in the Delta and ending in Napa County. The California Department of Water Resources (DWR) is the owner and operator of the NBA. The water supply for the NBA is less reliable than the Solano Project. Supply from the NBA comes from the State Water Project which provides water to a total of 29 contractors. Because the NBA is part of the entire State Water Project, any shortages occurring in the State Water Project adversely affect the NBA.

Within Solano County there are currently seven agencies with NBA water allocations. These include Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo. Shortages during dry years are proportional to their share of the overall contract with DWR.

Settlement Water (DWR Agreement)
Settlement Water consists of surface water from the Sacramento River and Sacramento-San Joaquin Delta Estuary. Settlement Water is diverted under water rights held by DWR, but is not considered State Water Project water. The water is made available by DWR in settlement of area-of-origin water right applications by the cities of Fairfield, Benicia, and Vacaville. The City currently uses only 25–30 percent of the Settlement Water, and experiences water quality and delivery challenges. The City is working with SCWA to construct a new intake on the Sacramento River to resolve these challenges.

Recycled Water Supply
A preliminary planning study performed in 2003 evaluated the potential for recycled water delivery and use citywide. Potential customers were identified that may accept tertiary treated recycled water generated at the Easterly Wastewater Treatment Plant (EWWTP) in the future. Several considerations were also identified: (1) I-80 splits Vacaville into south and north segments with the EWWTP located in the farthest southeast section of the City. Distribution piping does not currently exist and the planning and coordination to construct a system reaching north of I-80 would be expensive and challenging; and (2) SID has a non-potable water conveyance system established throughout Vacaville and has the potential to deliver to all areas of the City at a lesser cost than the City could provide recycled water. Evaluation of these considerations has focused the City's current planning on future delivery to customers south of I-80 and near the EWWTP. Delivery estimates for 2020 currently total 1,175 afy; however, this drought-proof resource will require user contracts and possible retrofit costs on the user's behalf. Therefore, for planning purposes, only 75 percent of the total delivery estimate, or 880 afy, is assumed to be available beginning in 2020. Table 3.12-3 provides an overview of the total water supply available to the City of Vacaville.

Table 3.12-3 City of Vacaville – Total Water Supply – 2035

Source of Supply	Allocations (afy)
Solano Project	
Vacaville Entitlement	5,750
SID Agreement	8,625
State Water Project	
Vacaville Table A	6,100
KCWA Agreement	2,878
Settlement Water	9,320
Groundwater Pumping	8,100
Recycled Water	880
Total	**41,653**

Source: City of Vacaville 2011

Vacaville Water Demand
The following table presents the projected water demands and supply for the City (including future development) in 5-year increments through 2030 (Table 3.12-4). Water demands for 2035 were based on the growth projected in the most recent land use database prepared by the City's Community Development Department.

Table 3.12-4 City of Vacaville Summary of Normal Year Annual Water Demand and Supply (afy)					
Demand	2015	2020	2025	2030	2035
Existing City (2005)	16,329	16,329	16,329	16,329	16,329
Proposed Developments	**1,432**	**2,167**	**2,902**	**3,510**	**3,501**
Other Future Development in City	126	252	378	505	821
Total Demand	**17,887**	**18,748**	**19,609**	**20,344**	**20,660**
Available Supply	**34,173**	**36,053**	**37,853**	**39,753**	**41,653**

afy = acre-feet per year
Source: City of Vacaville 2011

WATER SUPPLY RELIABILITY

In this section, the reliability of the City's groundwater and surface water supplies are analyzed. The sources are identified for their availability during normal, single-dry, and multiple-dry years as determined by the DWR Sacramento Valley Water Hydrologic Classifications.

Groundwater

A groundwater source sufficiency report for the City was prepared in 2011 by Luhdorff and Scalmanini Consulting Engineers to describe the use and sufficiency of groundwater supplies beneath the City. As part of the groundwater source sufficiency report, an analytical groundwater flow model was used to provide a preliminary assessment of water level impacts from future increases in groundwater pumping by the City to meet future water demands. The modeling effort included simulations of ten future pumping scenarios in which pumping would be increased and/or redistributed within the study area. Increased pumping during dry years will cause groundwater levels to decrease. Based on the results of the groundwater model, groundwater levels will return to normal levels once pumping decreases to normal year rates.

Solano Project (Vacaville Supply, SID Agreement)

The contracts with the public entities that use Solano Project water provide for the sale and distribution of water made available by USBR each year. USBR is contractually committed to delivering the full contract amount of water supply from the Solano Project unless the water supply does not physically exist (e.g., an empty reservoir). All Solano Project contractors, whether they are municipal or agricultural, are impacted by water supply reductions on an equal basis. The Solano Project has an annual water supply of 207,350 afy. The City of Vacaville is entitled to 5,750 afy of this annual yield. The Solano Project differs from other reservoir projects in California due to the reservoir storage size relative to the watershed yield. In other words, it may take a relatively long time to deplete the reservoir, but, in turn, it takes a relatively long time to fill the reservoir. Due to the size of the reservoir as a function of its yield, the long-term reliability for the Solano project is excellent.

State Water Project (North Bay Aqueduct)

As previously discussed, the water supply for the NBA is less reliable than the Solano Project. Supply from the NBA originates from the State Water Project and has a similar level of priority as all other 28 contractors to the project. As a result, this source is subject to significant cutbacks during dry years. Specifically, the City anticipates 63 percent availability during a single-dry year and 33 percent availability during multiple-dry years for this source. State Water Project availability percentages for the City are derived from CALSIM II Model Studies for State Water Project Delivery Capability and provided by SCWA.

The 2029 model includes pumping restrictions in the South Delta based on the Biological Opinions for Delta Smelt and Salmon, which has resulted in lower reliability then those used in the 2005 UWMP

update. In addition, the 2029 scenario includes climate change impacts that further reduce reliability. These lower reliabilities are used in the 2030 and 2035 water supply estimates.

Settlement Water (DWR Agreement)

In lieu of an Area of Origin Water Rights filing by the City, DWR and the City entered into a settlement agreement for water. An analysis on the expected reliability of the water to be provided to the City in accordance with the settlement agreement concluded that the City can anticipate receiving 100 percent of the allocation during normal, single-dry, and multiple-dry years.

Recycled Water

Preliminary planning estimates indicate that recycled water will be available for delivery in 2020. Recycled water is a 100 percent reliable source of non-potable water and is completely independent of hydrologic conditions. Therefore, the City anticipates that this source will be 100 percent available during normal, single-dry, and multiple-dry years.

GLOBAL CLIMATE CHANGE AND WATER SUPPLY

In recent years, scientific consensus has begun to accept that Earth's climate is changing and this consensus has broadened to consider increasing concentrations of greenhouse gases, attributable to anthropogenic activities, as a primary cause of global climate change. The United Nations Intergovernmental Panel on Climate Change predicts that changes in Earth's climate will continue through the 21st century and that the rate of change may increase substantially in the future because of human activity (IPCC 2001, 2007). Extensive background information on global climate change, including modeling and trends, is found in Chapter 4, "Cumulative Impacts," of this volume.

Today, the issue of global climate change has begun to play an increasing role in scientific and policy debates in multiple issue areas. Of particular concern are the existing and potential future effects of global climate change on hydrologic systems and water management (e.g., domestic water supply, agricultural water supplies, flood control, and water quality). There is evidence that global climate change has already had an effect on California's hydrologic system; for example, historical data indicate a trend toward declining volumes of spring and summer runoff from the Sierra Nevada.

The California Water Plan (Bulletin 160) first briefly addressed climate change in 1993 (DWR 1994). This analysis has most recently been expanded and refined in the 2005 update of the California Water Plan, which explores a wide range of climate impacts and risks, including risks to water resources (Kiparsky and Gleick 2005, Roos 2005). The 2005 update also describes efforts that should be taken to quantitatively evaluate climate change effects for the next update of the California Water Plan (DWR 2005).

Water Supply Projections

Several recent studies have shown that existing water-supply systems are sensitive to climate change. Many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows as a result of rainfall and snowpack (Kiparsky and Gleick 2005, Cayan et al. 2006). Little work has been performed on the effects of climate change on specific hydrologic basins, though groundwater recharge reduction, higher evaporation, and shorter rainfall seasons could be expected (Kiparsky and Gleick 2005). Conversely, rapid or additional winter runoff would be occurring at a time when some basins, particularly in Northern California, are being recharged at their maximum capacity. However, the specific extent to which various meteorological conditions will change and the impact of that change on hydrologic systems are both unknown.

DWR's 2005 report focused on climate change impacts on State Water Project (SWP) operations and on the Delta. The results of that analysis suggest several impacts of climate change on overall SWP operations and deliveries. In three of the four climate scenarios simulated, reservoirs north of the Delta

experienced shortages during droughts. Van Rheenen et al. (2004) studied the potential effects of climate change on the hydrology and water resources of the Sacramento–San Joaquin River basin using five PCM scenarios. The study concluded that most mitigation alternatives examined satisfied only 87–96 percent of environmental targets in the Sacramento system, and less than 80 percent in the San Joaquin system. Therefore, modifications and improvements to system infrastructure could be necessary to accommodate the volumetric and temporal shifts in flows predicted to occur with future climates in the Sacramento–San Joaquin River basin.

Lund et al. (2003) examined the effects of a range of estimates of climate warming on the long-term performance and management of California's water system. The study estimated changes in California's water availability, including effects of forecasted changes in year-2100 urban and agricultural water demands, using a modified version of the CALVIN model. Some of the main conclusions are summarized as follows:

- Methodologically, it is useful and realistic to include a wide range of hydrologic effects, changes in population and water demands, and changes in system operations in studies of climate change.
- A broad range of climate-warming scenarios show significant increase in wet-season flows and significant decreases in spring snowmelt. The magnitude of effects of climate change on water supplies is comparable to increases in water demand from population growth in the 21st century.
- In Southern California, population growth is expected to be more problematic than climate change. Population growth, conveyance limits on imports, and the high economic value of water in Southern California could lead to high levels of wastewater reuse and substantial use of desalinated seawater along the coast.
- California's water system could economically adapt to all the climate-warming scenarios examined in the study. California can adapt to population growth and global climate change by using new technologies for efficiency of water supply, treatment, and water use; implementing water transfers and conjunctive use; coordinating operation of reservoirs; and improving flow forecasting. The cooperation of the federal, state, regional, and local governments can also be helpful. Even if these strategies are implemented, however, the costs of water management are expected to be high and there is likely to be less "slack" in the system than under current operations and expectations.

Summary of Global Climate Change on Water Supply

As described by several projections, the overall conclusion is that climate change is expected to have a greater effect in Southern California than Northern California. For example, for 2020 conditions, where optimization is allowed (i.e., using the CALVIN model), scarcity is essentially zero in the Sacramento Valley for both urban and agricultural users, and generally zero for urban users in the San Joaquin and Tulare basins. Rather, most water scarcity will be felt by agricultural users in Southern California, although urban users in Southern California, especially those in the Coachella Valley, will also experience some scarcity. By 2050, urban water scarcity will remain almost entirely absent north of the Tehachapi Mountains, although agricultural water scarcity in the Sacramento Valley could increase to about 2 percent (Medellin et al. 2006).

Based on the conclusions of current literature regarding California's ability to adapt to global climate change, it is reasonably expected that, over time, the state's water system will be modified to be able to handle the projected climate changes, even under dry and/or warm climate scenarios (DWR 2006). Although coping with climate change effects on California's water supply could come at a considerable cost, based on a thorough investigation of the issue, it is reasonably expected that statewide implementation of some, if not several, of the wide variety of adaptation measures available to the state will likely enable California's water system to reliably meet future water demands. For example, traditional reservoir operations may be used, in conjunction with other adaptive actions, to offset the impacts of global warming on water supply (Medellin et al. 2006; see also Tanaka et al. 2006 and Lund et al. 2003). Other adaptive measures include better water-use efficiency practices by urban and agricultural users, conjunctive use of surface water and groundwater, desalination, and water markets

and portfolios (Medellin et al. 2006; see also Lund et al. 2003 and Tanaka et al. 2006). More costly statewide adaptation measures could include construction of new reservoirs and enhancements to the state's levee system. As described by Medellin et al. 2006, with adaptation to the climate, water deliveries to urban centers are expected to decrease by only 1 percent, with Southern California shouldering the brunt of this decrease.

EXISTING WATER SERVICE AT CMF/SOL

Water is supplied to CMF/SOL by SID and the City. SID delivers untreated raw water to an onsite conventional water treatment plant (owned and operated by CDCR) located near the CMF, and the City delivers treated potable water to a water metering station located near CSP Solano. Treated SID water and the City water is then distributed to the facilities.

The water delivered by SID is supplied by the SCWA, which is contracted to supply CMF/SOL with 1,200 afy of raw, untreated surface water from Lake Berryessa as part of the Solano Project. The SCWA acts as a wholesale water agency, while SID operates the Solano Project and is responsible for delivering water from the Putah South Canal to the onsite water treatment plant. SCWA and the USBR renewed their water service contract (contract number 14-06-200-4090) in March 1999 for a 25-year term. In turn, SCWA entered into a new contract agreement with CDCR, as a participating agency, in March 1999 to continue to furnish CDCR with up to 1,200 afy of water from the Solano Project.

In June 2000, a Joint Powers Agreement (JPA) was established between CDCR and the City related to water supply. The JPA established requirements for the parties regarding water supply from the City, in addition to SID, and the discharge of domestic wastewater from CMF/SOL to the city's collection system for treatment and disposal. The JPA defines the maximum potable water provided by the City as one million gallons per day (mgd) with an annual limit of 560 afy. The City's existing potable water system consists of surface water treatment facilities, wells, pumping facilities, distribution pipelines, and reservoirs, and receives water from several sources, including Solano Project water from the Lake Berryessa reservoir, SWP and DWR Settlement Water from the NBA, and groundwater from local City wells. Within the City's water entitlements, the percentage of water used from each supply source varies due to conjunctive use. If any one source has limited water availability or poor water quality, use from other sources can increase.

Table 3.12-5 summarizes the existing contracted water supply for CMF/SOL.

Table 3.12-5 Existing CMF/SOL Water Supply

Source	Agreement (afy)
Solano Irrigation District (Solano Project)	1,200
City of Vacaville	560
Total	**1,760**

Sources: SCWA 1999 (March), City of Vacaville 2000 (June)

Recent water use data provided by CDCR staff indicates that water demands for CMF/SOL have decreased, beginning in 2007. This is likely due to the recent implementation of water conservation measures at both facilities (i.e., low-flush valves for toilets), coupled with population reductions. Table 3.12-6 is a summary of the measured water demand by CMF/SOL for both City and SID water supplies. In January 2013, 64 new beds became available as part of the CMF. Because of the limited data available regarding existing water demands from the 64 additional beds, reliable annual water usage data associated with them is not available; however the additional facilities meet all water conservation standards for new development.

Data in the table includes an average total water demand between 1999 and 2012. Water demand is shown to be reduced in 2008/2009 due to water conserving measures completed in 2007–2008, and reduced further through 2011 due to a decrease in inmate population.

Table 3.12-6 CMF/SOL Historical Water Demand Summary 1999–2011

Year	Water Demand		
	Total (afy)	Average (gpd)	Average per inmate (gpid)
1999	1,388	1,238,794	142
2000	1,375	1,227,202	138
2001	1,270	1,133,845	136
2002	1,460	1,303,380	142
2003	1,481	1,321,720	143
2004	1,536	1,371,050	148
2005	1,558	1,391,279	151
2006	1,480	1,321,010	144
2007	1,349	1,203,888	131
2008	1,110	992,928	122
2009	946	844,757	106
2010	904	807,201	107
2011	889	793,255	113
2012	801	715,385	110

Notes:
[a] CSP Solano and CMF exceeded the annual City allotment of 560 afy.
[b] Water demand for December 2008 was estimated; demand for 2009 was not available.
Source: Vanir Construction 2012

WATER TREATMENT AND DISTRIBUTION

The potable water distribution system at CMF/SOL consists of a looped network of 8-inch and 10-inch diameter water mains that connects to the water treatment plant (WTP) and four storage tanks. A network of 10-inch diameter water mains loops around CMF and connects to an 8-inch water distribution system at SOL. This potable water distribution system connects to the City's distribution system near the intersection of Peabody Road and Foxboro Parkway. From the City's 24-inch water main on Peabody Road, a 12-inch water main extends from a 12-inch by 24-inch tee connection to the onsite water metering structure. The City's 24-inch water transmission main along Peabody Road conveys water from the City's North Bay Regional (NBR) water treatment plant.

SID raw water is extracted from the Putah South Canal with three vertical turbine pumps. Two of the vertical turbine pumps at the canal intake structure have capacities of 1,560 gallons per minute (gpm) at 75 horsepower (hp), and the third pump has a capacity of 800 gpm at 25 hp. Raw water is conveyed to the onsite WTP site via a 14-inch polyvinyl chloride (PVC) transmission main. At the CMF/SOL property line, the transmission main decreases to a 12-inch diameter ductile iron pipeline.

Onsite Water Treatment Plant

The onsite WTP is located just east of CMF, near Peabody Road. The onsite WTP is a conventional surface water treatment facility with in-line mixing, flash mixing, coagulation, flocculation, sedimentation, dual-media filtration, and clearwell disinfection. The facility was constructed in the mid-1980s and has a process capacity of 1,560 gpm. The facility currently operates for approximately 16 hours per day at a flow rate of 1,200 gpm.

WASTEWATER

WASTEWATER COLLECTION AND TREATMENT

Both CMF and SOL have their own connections to the City of Vacaville wastewater collection system, and the City is responsible for treating the wastewater generated at the facilities. Wastewater from both facilities flows to the City's EWWTP. The EWWTP, located southeast of the town of Elmira, approximately 4 miles northeast of CMF/SOL, is the main WWTP for the City. The plant is operated and maintained by the City. The treatment capacity of this secondary treatment facility was expanded from 10 mgd to 15 mgd in 2007, and the plant currently treats approximately nine mgd (CPR 2009b:12).

The wastewater collection system at CMF consists of gravity flow pipelines ranging in diameter from four inches to 10 inches. Wastewater is discharged into an automatic mechanical screen and flow metering structure. The mechanical screen removes large debris such as torn sheets/clothes and plastic bags (which inmates flush down toilets), and the flow metering structure records the amount of wastewater entering the City's collection system. After passing through the flow metering structure and reaching the City collection system, piped wastewater flows northward along Peabody Road and eventually to the trunk sewer line along Elmira Road.

The SOL wastewater collection system consists of gravity sewer pipelines ranging in diameter from four inches to 18 inches. Prior to leaving state property, wastewater is processed through a mechanical bar screen, an ultrasonic flow meter, and a pH meter. Downstream of the mechanical strainer and flow meter, piped wastewater flows eastward along Foxboro Parkway, and eventually reaches the trunk line along the Southern Pacific railroad tracks.

WASTEWATER AGREEMENTS AND PERMITS

As part of the JPA established in June 2000 between the CDCR and the City regarding the discharge of domestic wastewater from CMF and SOL to the City collection system (as well as other matters), maximum wastewater flow rates for average dry weather flow (ADWF) and maximum peak flow (MPF) conditions were established (see Table 3.12-7). ADWF refers to a monthly average flow rate for the dry calendar months of May through October. MPF refers to the total discharge during any 60 minute period of time taken in five minute intervals measured in average gpm (CPR 2009b:4–5).

Table 3.12-7 2000 JPA Wastewater Capacity Allocations

Facility	Monthly ADWF	Peak Hour MPF
CMF	670,000 gallons per day	1,163 gallons per minute
SOL	854,500 gallons per day	1,483 gallons per minute

Source: CPR 2009b:5

The City also issued each facility an industrial user permit. The permit authorizes the facilities to release process (i.e., industrial) wastewater and domestic wastewater into the City's collection system. The permit defines wastewater quantity, materials allowed and prohibited, concentration, and sampling and monthly reporting requirements for the facilities. The permits also provide the wastewater quality limits as daily maximum and monthly averages, and outlines monitoring and reporting requirements. The CMF was issued its permit on January 2, 2007. The permit limits CMF discharge to an ADWF (monthly average) of 642,895 gpd. SOL received its permit on December 1, 2006, and a permit revision on May 8, 2008. The discharge limits in the SOL permit are the same as those allowed by the JPA (CPR 2009b:5).

EXISTING WASTEWATER FLOWS

Wastewater generated at the CMF and SOL facilities includes flows from staff, inmates, and visitors. The ADWF and total wastewater generation at both facilities have been decreasing in recent years. This is due, in large part, to the water conservation measures implemented at the facilities and the reduction in the inmate population at the two institutions. As shown in Table 3.12-8, more recent data from 2012 indicates a flow rate averaging approximately 806,134 gallons per day from CMF/SOL (CDCR 2013). The maximum monthly ADWF at SOL during the period from January 2010 to December 2012 was 776,016 gallons per day in March 2011; and the maximum monthly ADWF at CMF during the period from January 2010 to December 2012 was 446,646 in March 2011 (Vanir 2012). Both peak flow rates are below the current JPA limitations. The average flow rate in 2012 was 125 gpid at CMF/SOL.

Table 3.12-8 CMF/SOL Wastewater Flows January 2010 - December 2012

	Total (mgd)	Per Inmate (gpid)
CMF	**0.25 mgd**	**105 gpid**
SOL	**0.55 mgd**	**135 gpid**
CMF/SOL Average	**0.80 mgd**	**125 gpid**
CMF/SOL Maximum	**1.25 mgd**	**N/A**

Note: mgd = million gallons per day; gpid = gallons per inmate per day
Source: Vanir Construction Management 2012a; Data compiled by Ascent in 2013

ELECTRICITY AND NATURAL GAS

ELECTRICITY SERVICE

Electricity service is provided to the area surrounding the infill site by Pacific Gas and Electric (PG&E). PG&E provides electricity service to approximately 15 million consumers across 70,000 square miles of northern and central California (PG&E 2013). Electrical facilities at CMF/SOL include electrical power distribution and standby generation systems. The electric power distribution system consists of a PG&E substation transformer, switchgear, several pad-mounted transformers, panelboards, switchboards, high- and low-voltage feeders, standby generators, and pad-mounted switches (CDCR 2008:7-1). PG&E provides electricity to CMF/SOL through the Peabody Substation and the Vacaville Substation. The substations are redundant and each is able to power existing facilities at CMF/SOL if the other is out of service or has a power failure. Power to the site is metered by the Western Area Power Authority, which owns the meter and sells power to the facilities.

PG&E owns the overhead 12.47-kilovolt (kV) lines that supply CMF, and also owns and maintains the main service transformer (CDCR 2008: 7-1). SOL is fed from a PG&E 20.78-kV line that powers 25-kV switchgear and 7,500-kilovolt-ampere (kVA) transformers. The electrical distribution system is run both underground and in the utility tunnel. In addition, six diesel generators provide emergency power to CMF, including a 2,000-kilowatt (kW) generator that serves the site. The average combined electricity demand per month at CMF/SOL in 2011 was 2,725 MW, peaking at 2,946 MW for the month of July 2011 (Vanir 2012).

NATURAL GAS SERVICE

PG&E also provides natural gas service from high-pressure gas mains that traverse the CMF/SOL site. A six-inch PG&E gas main runs north-south along the western side of Peabody Road. SOL is served directly from this main by a 6-inch service lateral and a PG&E metered pressure-regulating station. Near the northeast corner of SOL, a PG&E gas main branches off the 6-inch main along Peabody Road and heads west between the facilities to serve CMF. From this main, a 6-inch service lateral and a PG&E

metered pressure-regulating station serve CMF (CDCR 2008: 5-1). Natural gas is used at the facilities for space heating, water heating, cooking, and laundry. The combined monthly gas consumption at CMF/SOL in 2011 average 242,222 therms, peaking at 412,537 therms for the month of July 2011.

SOLID WASTE

Solano County has two privately owned landfills to receive solid waste from most land uses: Recology Hay Road Landfill and Potrero Hills Landfill. Recology Hay Road Landfill, as of July 28, 2010, has 30.4 million cubic yards of capacity remaining, and is expected to be available until 2077. The Potrero Hills Landfill is located in Suisun City. As of January 1, 2006, it had a remaining capacity of 13.9 million cubic yards, and was estimated to be available for waste disposal until 2048 (CalRecycle 2013).

3.12.2 REGULATORY CONSIDERATIONS

A list of the applicable federal and state plans, policies, regulations, and laws related to utilities is provided below. Complete summaries of these regulations are provided in Volume 1, Appendix 1B of Volume 1.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

The only federal plan or policy applicable to the project is related to potential transportation of hazardous materials (medical waste).

- Hazardous Materials Transportation Act - the transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the US Department of Transportation (DOT). The HMTA governs the safe transportation of hazardous materials by all modes, excluding bulk transportation by water.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

WATER SUPPLY

- California Water Code - The California Water Code outlines the general state authority and responsibilities over water in California.
- Urban Water Management Planning Act - The Urban Water Management Planning Act requires water suppliers to document water supplies available during normal, single dry, and multiple dry water years during a 20-year projection period, and to document the existing and projected future water demand during a 20-year projection period.
- Senate Bills 610 and 221 - SB 610 amended the Water Code requirements within the CEQA process and broadened the types of information required in a UWMP. SB 610 requires the preparation of “water supply assessments” for large developments (i.e., more than 500 dwelling units or nonresidential equivalent) proposed under the jurisdiction of a County or City lead agency.
- California Water Code Part 2.10 - Water Code Part 2.10 clarifies the roles and responsibilities, under CEQA, of the lead agency and the water supplier (i.e., the public water system) with respect to describing current and future supplies compared to current and future demand. It also defines the projects for which a WSA must be prepared as well as the responsibilities of the lead agency related to the WSA.

WATER AND WASTEWATER DISTRIBUTION

There are no state regulations relevant to the contemplated development at the infill site that pertains to water and wastewater distribution infrastructure.

ELECTRICITY AND NATURAL GAS

- California Building Code (CBC), Title 24, Part 6 - California Building Code (CBC), Title 24, Part 6, establishes building energy efficiency standards for new construction (including requirements for new buildings, additions, alterations, nonresidential buildings, and repairs).

SOLID WASTE

- California Waste Management Act of 1989 - The California Waste Management Act requires each county to submit a management plan to the California Integrated Waste Management Board that includes an adopted Source Reduction and Recycling Element from each of its cities as well as for the unincorporated area.

CDCR DESIGN CRITERIA GUIDELINES

The CDCR *Design Criteria Guidelines* (DCG) establishes general sustainable design principles for the design of correctional facilities. The DCG provides guidelines that comply with various regulatory requirements, including those described as follows.

- **Executive Order S-20-04** requires that the state takes aggressive action to reduce electricity usage in state facilities by retrofitting, building and operating the most energy and resource efficient buildings by taking cost-effective measures. These measures are intended to reduce grid-based energy purchases for state-owned buildings by 20 percent of 2009 levels by 2015.
- **Green Building Action Plan** is detailed direction that accompanies Executive Order 2-20-04.
- **Assembly Bill (AB) 32** requires a reduction in greenhouse gas (GHG) emissions to 1990 levels by 2020. The California Air Resources Board has established a reporting program (Climate Action Registry) that includes publicly owned utilities and all electricity consumed in the state or imported into the state.

The DCGs requires that new or renovated buildings with floor area of 10,000 square feet or greater, which are subject to Title 24, meet Leadership in Energy and Environmental Design (LEED) Silver or higher certification. All projects must also implement cost-effective measures to conserve water, such as water-saving fixtures and conservation practices. In addition, the guidelines contain various building reuse and recycling requirements to reduce waste production at CDCR facilities.

LOCAL PLANS, POLICIES, AND ORDINANCES

The CMF/SOL Infill Site is located on land that is owned or controlled by the State. As a state agency, CDCR is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CITY OF VACAVILLE GENERAL PLAN

The following policies from Chapter 5, “Public Facilities, Institutions, and Facilities Element,” and Chapter 8, “Conservation Element,” of the *2007 City of Vacaville General Plan* (City of Vacaville 2007) relating to water supply and water conservation are considered in relation to the contemplated development at the infill site:

- **8.4-G 1:** Encourage and support water conservation programs.
- **5.1-I 12:** Do not approve any development that will not, even with identified mitigation measures, maintain standards for water, sewer, police, and fire service unless there are overriding findings of

special circumstances or economic or social benefits and the service standards will be achieved at the time of project occupancy.

3.12.3 ENVIRONMENTAL IMPACTS OF THE PROJECT

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State of California Environmental Quality Act (CEQA) Guidelines, the level II infill correctional facility at the CMF/SOL Infill Site would result in a significant impact relating to utilities if it would do any of the following:

- lack of sufficient water supplies available to serve the project from existing resources and entitlements, and/or a need for new or expanded entitlements;
- require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- exceed wastewater treatment requirements of the applicable regional water quality control board (RWQCB);
- result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- generate waste materials that would exceed the permitted capacity of local landfills;
- violate federal, state, and/or local statutes and regulations related to solid waste; or
- create demand for electricity or natural gas service that would require or result in the construction of new electricity or natural gas facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

The State CEQA Guidelines (Section 15064.5) define a "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Wastewater treatment: The City of Vacaville is responsible for the treatment and disposal of wastewater generated at CMF/SOL, and there is no state-owned wastewater treatment facility associated with CMF/SOL. The EWWTP operates and discharges treated effluent to Old Alamo Creek under the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and waste discharge requirements issued by the Central Valley RWQCB in Order No. R5-2008-0055, NPDES No. CA0077691. Compliance with these waste discharge requirements would ensure that treated effluent from the WWTP would meet the water quality standards of the Central Valley RWQCB. Therefore, implementation of the contemplated development at the infill site would not exceed the wastewater treatment requirements of the applicable regional water quality control board, and this issue will not be discussed further.

Water treatment facilities: As discussed above, water from SID is treated by CDCR in an onsite water treatment facility. While CMF/SOL Solano relies, in part, on water from SID, the supply may become unavailable due to various reasons: canal repair, cleaning, or high turbidity conditions following significant rainfall events. Furthermore, SID doses the canal with copper sulfate to reduce biological growth approximately every 2 weeks from April through October. Raw water is not available from the canal for a period of 8–12 hours during the copper sulfate dosing. In addition, the Putah South Canal is shutdown for approximately three weeks in October/November for annual cleaning and maintenance.

CMF/SOL also rely on City water during the winter when the onsite WTP cannot be operated due to the high turbidity of the SID raw water (CPR 2009a:10).

There are currently two 0.75 million gallon (MG) potable water storage tanks for SOL and two 0.5 MG storage tanks for CMF. The SOL tanks are located in the hills west of the SOL facility, and the CMF tanks are located in the hills west of CMF. The SOL storage tanks are connected to the onsite water distribution system via a 10-inch transmission main. Similarly, the CMF storage tanks are connected to the onsite water distribution system via a 10-inch transmission main (CPR 2009a:13). The onsite water treatment has a process capacity of 1,560 gpm, allowing up to 1,674 afy. Taking into account outages for canal maintenance, including approximately 13 days of copper sulfate dosing and 3 weeks of annual cleaning, the WTP could produce approximately 1,520 afy of potable water. This operation scenario would be greater than the current contracted supply of 1,200 afy from SID, and closure to the SID canal due to anticipated events (e.g., maintenance, poor water quality) would not affect the maximum level of water treated in the WTP. No changes to the WTP would be required to support the contemplated development. There would be no impact, and this issue is not discussed further.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.12-1: Impacts on Water Supply

A single, level II infill correctional facility at the CMF/SOL Infill Site would house 792 inmates at full buildout. CDCR assumes an average daily water demand factor of 150 gpd per inmate based on the design of the facility and the use of water conservation devices throughout. (Note that, although this factor is based on the number of inmates, it encompasses potable water demand for the entire facility, including landscaping and staff demands.) Given this demand factor, the operational water requirement for a single, level II infill correctional facility is estimated to be 118,800 gpd (133 afy).

As discussed above, water is supplied to CMF and SOL by the SID and the City of Vacaville. Existing agreements provide up to 1,200 afy from SID and 560 afy from the City of Vacaville, totaling 1,760 afy. In 2012, CMF and SOL water demand was 801 afy. Since compilation of this data, a new facility, the 64-Bed Intermediate Care Facility (ICF) began operation (January 2013). Because reliable data (i.e., several months of use) is not yet available to consider the additional facility at full capacity, it is estimated to demand 9,600 gpd (11 afy) based upon the demand factor of 150 gpid.

Table 3.12-8 provided the estimated potable water demand, considering recorded demand from CMF and SOL, and estimates of the newly-established 64-Bed ICF and contemplated level II infill correctional facility. As shown, the anticipated demand, 945 afy, is less than the allowable maximum identified in CDCR's existing agreements at CMF/SOL (1,760 afy).

Table 3.12-8 Estimated Potable Water Demand

Facility	Annual Demand (afy)
Existing CMF/SOL	801
64-Bed ICF	11
Potential Level II infill correctional facility at CMF/SOL[1]	133
Total Estimated Water Demand	945

Notes : [1] estimated; CSP=California State Prison; CMF=California Medical Facility; ICF=Intermediate Care Facility
Source: Analysis by Ascent in 2013.

Long-term Water Sufficiency Analysis

Consistent with the requirements of State CEQA Guidelines Section 15155, existing and projected future normal-year water supplies and demands are presented in Table 3.12-9. Note that CDCR is not

required to comply with the requirements of Section 15155, which prescribes water supply assessment approaches for city and county projects of certain sizes, but the analysis presented herein is intended to provide the information prescribed by these guidelines. This includes a determination of supply sufficiency over the next 20 years under normal, drought, and multi-year drought conditions.

The Vacaville Urban Water Management Plan (SCWA 2005) shows growing supplies over the 20- year period shown (from 2010 to 2030). During single- and multiple-dry years, supplies from Solano Irrigation district are constant, so no change in supplies is assumed for CDCR either. Thus, the table below indicates that SID water supply to CMF/SOL would be unaffected by single- or multiple-year drought, and the table focuses on City of Vacaville supply differences.

Table 3.12-9 Summary of Total Normal Year Water Supply and Demand (afy) in Five Year Increments

Demand	2015	2020	2025	2030
Projected City of Vacaville Demand	**17,887**	**18,748**	**19,609**	**20,344**
Projected CDCR Demand	945	945	945	945
Total Demand	18,832	19,693	20,554	21,289
Supply-Normal Year				
Total City of Vacaville Supply	**34,173**	**36,053**	**37,853**	**39,753**
Total Solano Project Supply (CDCR)	1,200	1,200	1,200	1,200
Total Supply-Norm Years	35,373	37,253	39,053	40,953
Surplus (Supply minus Demand, Normal Years)	**16,541**	**17,560**	**18,499**	**19,664**
Supply-Multi Dry Years				
Total City of Vacaville Supply	**30,245**	**35,745**	**38,585**	**39,234**
Total Solano Project Supply (CDCR)	1,200	1,200	1,200	1,200
Total Supply-Norm Years	**31,445**	**36,945**	**39,785**	**40,434**
Surplus (Supply minus Demand Multi-Dry Years)	**12,613**	**17,252**	**19,231**	**19,145**

Source: Solano County Water Agency 2010; Compiled by Ascent Environmental 2013.

As shown in Table 3.12-9, total water supply is greater than total water demand for all water year types, and there is a water surplus of at least 12,613 acre-feet in all years. Therefore, there are sufficient water supplies available to serve the contemplated development from existing resources and entitlements (i.e., 1,760 acre-feet), and to continue to serve the site at existing levels in the long-term. No new or expanded entitlements would be required as a result on implementation of the Level II infill correctional facility. Further, the infill facility would include water conservation devices to conserve water use, which would be consistent with Policy 8.4-G-1 of the City's General Plan.

Because existing water supplies are sufficient to serve the contemplated development from existing resources and entitlements, and implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site would not require new or expanded entitlements, the impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.12-2: Impacts to Wastewater Treatment Facilities

Implementation of the single, level II infill correctional facility at the CMF/SOL Infill Site would increase the flow of wastewater from the CMF/SOL Solano facility as a result of increased population at the site. The collected wastewater flows from the infill site would continue to be transported from CDCR property at CMF/SOL to the EWWTP for treatment and disposal. As part of this system, flows from the CMF/SOL Infill Site would travel through a new onsite sanitary sewer line to the SOL headworks facility, and would then discharge into the City's wastewater collection system near the intersection of Peabody Road and Foxboro Parkway. Given a conservative flow rate projection of 130 gpid (average flow rates is 125 gpid at CMF/SOL, respectively), the potential level II infill correctional facility would generate approximately 102,960 gallons per day, as shown in Table 3.12-10.

Table 3.12-10 Estimated Wastewater Flow Rate

Facility	Flow (gallons per day)
CMF	446,646[1]
CSP Solano	776,016[1]
CMF – 64-Bed [1]	9,600
Level II Infill	102,960
Total	**1,335,222**
Existing JPA Agreements	1,524,500
Remaining Capacity in Agreements	**189,278**

Notes: [1] Flow rate reflects the highest monthly flow from January 2010 through December 2012. This time period was subject to water conservation and facility capacity rates required under state and federal direction. [2]Estimated flow, based on 64 inmates and 150 gpid.
CMF=California Medical Facility; CSP=California State Prison; JPA=Joint Power Authority

As shown in Table 3.12-10, wastewater flows associated with the potential level II infill correctional facility is not anticipated to result in an exceedance of the existing JPA agreements. Because flows would remain within the agreed upon levels, the EWWTP would not require new or expanded facilities as a result of implementation of level II infill correctional facilities at CMF/SOL. Onsite wastewater collection system improvements would be constructed primarily within areas that are already highly developed, such as roads and parking lots. Environmental impacts have been considered and evaluated throughout the environmental resource sections of this DEIR, and mitigation recommended for the contemplated development of the CMF/SOL Infill Site would substantially reduce construction-related impacts associated with these wastewater improvements.

As the potential future flows from the CMF/SOL Infill Site, including a single, level II infill correctional facility, would be less than the flows allowed by existing agreements, expansion of existing wastewater treatment capacity is not anticipated. Thus, impacts related to wastewater treatment facilities would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.12-3: Impacts to Electricity and Natural Gas Facilities

In compliance with Governor Arnold Schwarzenegger's Executive Order S-20-04, which requires all state projects larger than 10,000 square feet to meet LEED Silver standards, CDCR has committed meeting or exceeding LEED Silver standards for the contemplated single, level II infill correctional facility at the CMF/SOL Infill Site. Nonetheless, construction and operation of a level II infill correctional facility at CMF/SOL would result in an increase in demand for electricity at CMF/SOL. Although the demand has not been fully defined, project engineers have estimated a single-use facility to require a

5,000 amp line that would deliver and average of 2,628 kilovolt-amps (KVA) and would be capable of peaking at 3,285 KVA (Vanir Construction 2012). The specific amount of electricity needed to operate the facility would be determined when and if the design of a level II infill correctional facility at CMF/SOL is finalized.

The level II infill correctional facility at CMF/SOL would utilize existing onsite electrical equipment, such as substation switchgear, transformers, and backup power generators. The level II infill correctional facility's central plant would house emergency generators and necessary equipment to provide electrical power to the main facility in the event of electrical power interruption. The generators would automatically and immediately start up and send power to pre-determined areas of the facility and would be designed to provide power for 72 hours. To accommodate contemplated development's electricity loads, minor upgrades to onsite PG&E infrastructure would be necessary. Infrastructure improvements would be constructed at existing onsite facilities in areas that are already highly developed.

Because minor PG&E electrical infrastructure improvements would be constructed within existing highly developed onsite areas, and no offsite improvements would be necessary to accommodate the electricity demands of the level II infill correctional facility at CMF/SOL, impacts associated with the construction of new electrical facilities would be less than significant.

Construction and operation of a level II infill correctional facility at CMF/SOL would also result in an increase in natural gas demand at CMF/SOL. Although the amount of demand has not been fully defined, project engineers estimate that a new 3-inch gas line would deliver a sufficient supply, averaging 890 cubic feet per hour and peaking at 2,250 cubic feet per hour. The specific amount of natural gas needed to operate the level II infill correctional facility would be determined when the design of single, level II infill correctional facilities at the CMF/SOL Infill Site is completed. Implementation of the contemplated development is not expected to require offsite natural gas infrastructure improvements. Onsite improvements typically include minor trenching work in previously disturbed areas, the environmental impacts of which are described throughout this volume of the DEIR. It should be noted that a discussion of energy conservation related to development at the infill site is included within Chapter 4, "Cumulative Impacts of the Proposed Project" of Volume 1 of this DEIR.

Because minor electrical and natural gas infrastructure improvements for the single, level II infill correctional facility at the CMF/SOL Infill Site would be constructed in highly developed onsite areas, and no offsite improvements would be necessary to accommodate the electricity and natural gas demands of the contemplated development, impacts associated with the construction of new electrical and natural gas facilities would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 3.12-4: Impacts to Solid Waste Facilities

Based on CDCR estimates, the average solid waste generation rate is 3.6 pounds per inmate per day. Taking into account that in December 2012 CMF/SOL housed 6,472 inmates, existing solid waste generation is approximately 23,300 pounds per day. Construction and operation of a level II infill correctional facility at CMF/SOL would be anticipated to generate an additional 2,850 pounds of solid waste per day (3.6 pounds per inmate per day x 792 inmates). This would constitute a 10 percent increase in waste generated by CDCR; however, this increased amount of solid waste would not occupy a substantial amount of the available capacity of area landfills and would not result in the need to expand or construct new landfill facilities.

As noted above, the Recology Hay Road Landfill is expected to have available capacity until 2077, and operation of a level II infill correctional facility at CMF/SOL would not substantially deplete remaining

landfill capacity and would not result in the need to expand or construct new solid waste disposal facilities. Additionally, it should be noted that CDCR would comply with all applicable federal, state, and local statutes and regulations related to solid waste.

In addition, the level II infill correctional facility would have its own recycling program that would result in the weekly diversion of recyclable waste from the waste stream, reducing the amount of waste that would be sent to a local landfill. Recycled waste includes cardboard, recycled paper, and co-mingled recyclables such as plastic, tin, aluminum, and glass. Recyclable waste would be collected from multiple locations throughout the level II infill correctional facility and staged onsite for pickup by a contractor.

Medical waste, which would be minor and associated with health care units included in the facility, would be transported in accordance with the HMTA, and disposed at appropriate facilities. Because medical waste would be minor, it is expected that it would be accommodated without meaningfully effecting capacity at any disposal facility.

Although a single, level II infill correctional facility at the CMF/SOL Infill Site would increase solid waste generation at CMF/SOL, both during construction and operation, the nearby landfill is projected to have capacity to accept the increased solid waste and the contemplated development of the infill site would not consume a substantial amount of the available capacity of area landfills or result in the need to expand or construction new landfill facilities. Therefore, this impact would be ***less than significant****.*

Mitigation Measure

No mitigation measures are required.

3.13 VISUAL RESOURCES

This section describes the existing visual characteristics and visual quality of the infill site and the surrounding area, and evaluates the effects on the visual environment resulting from the development of a single, level II infill correctional facility at the California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site, including light-and-glare-related impacts. Visual resources are the natural and human-built features of the landscape that can be seen and that contribute to an attractive landscape appearance and the public's enjoyment of the environment. Visual quality is dependent on the degree to which landscape features combine to provide striking and distinctive visual patterns; whether or not intrusive elements are dominant in the views; and the visual or compositional harmony of the views. A scenic vista is generally considered a view of an area that has "remarkable" or unique scenery or a resource that is unique to the area.

The viewer's distance from landscape elements plays an important role in the determination of an area's visual quality. Visibility and visual dominance of landscape elements depend on their placement within a viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (FHWA 1988).

Viewer sensitivity is also considered in assessing the impacts of visual change and is a function of several factors. The sensitivity of the viewer or viewer concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, numbers of viewers, and types and expectations of individuals and viewer groups.

Assessing the effects of a project on visual resources is a subjective process, and reasonable people may disagree as to whether a visual change would be considered an adverse effect on the environment. The following analysis takes into consideration the aspects of existing visual character and visual quality, as well as the sensitivity of viewers to visual change.

This visual resources analysis is based on field surveys of the site and surrounding areas and on interpretation and analysis of existing views of the infill site and surrounding area. Visual simulations are used to draw conclusions regarding the appearance and effects of the contemplated development of the infill site on visual resources.

3.13.1 ENVIRONMENTAL SETTING

The infill site is located northeast of the San Francisco Bay area, in the southern portion of Vacaville in Solano County. The area surrounding the infill site is along the eastern edge of the Coast Range with Capay Valley to the northeast and the wetlands and tributaries of the Sacramento-San Joaquin River Delta (Delta) to the east and southeast. Much of the land to the northeast, east, and southeast of the infill site is farmland, with several small communities near and associated with agricultural land uses. This is contrasted with the urban development that extends north along Interstate 80 from the San Francisco Bay Area and includes Fairfield, 2.5 miles southwest of the infill site. Mount Diablo, a prominent Bay Area landmark, is located on the south side of the Delta approximately 30 miles from the infill site. Land on the southern edge of Vacaville is a mix of residential, agricultural, institutional, and open space land uses.

The infill site is located at the foot of the southernmost extent of the Vaca Mountains, at the western edge of the Sacramento Valley. The landform of the area is marked by the abrupt topographic change from the valley floor in the east to the steep hillsides in the west. The hillsides of the Vaca Mountains are undeveloped and provide visual interest, with seasonal changes to the natural vegetation, lighting effects, and weather. Additionally, viewpoints in open space areas in the Vaca Mountains that overlook the Sacramento Valley provide unique views of farmland and the more distant Delta and Mount Diablo.

Views of the Vaca Mountains are considered unique in the area due to topographic variation, natural vegetation, and open space. Unobstructed views of the Vaca Mountains are considered a scenic vista. Views from open space areas on the Vaca Mountains that overlook the valley are considered scenic vistas as well. These viewpoints provide a unique opportunity to observe distant features and surrounding farmlands from an elevated location.

VISUAL CHARACTER OF THE SURROUNDING AREA

The visual environment of the area surrounding the CMF/SOL facilities to the north and east is characterized by level topography with suburban development that includes low-density residential development, manufactured homes, and low-rise commercial buildings. Open space in the surrounding area includes parks that have been developed for sports, including softball fields, running tracks, and turfed playing fields. Residential areas north and east of the infill site are landscaped with street trees, turfed yards, and shrubs; concrete block walls and landscaping line the adjacent major roadways. Open spaces on the slopes and ridges of the Vaca Mountains west of the infill site provide a striking backdrop.

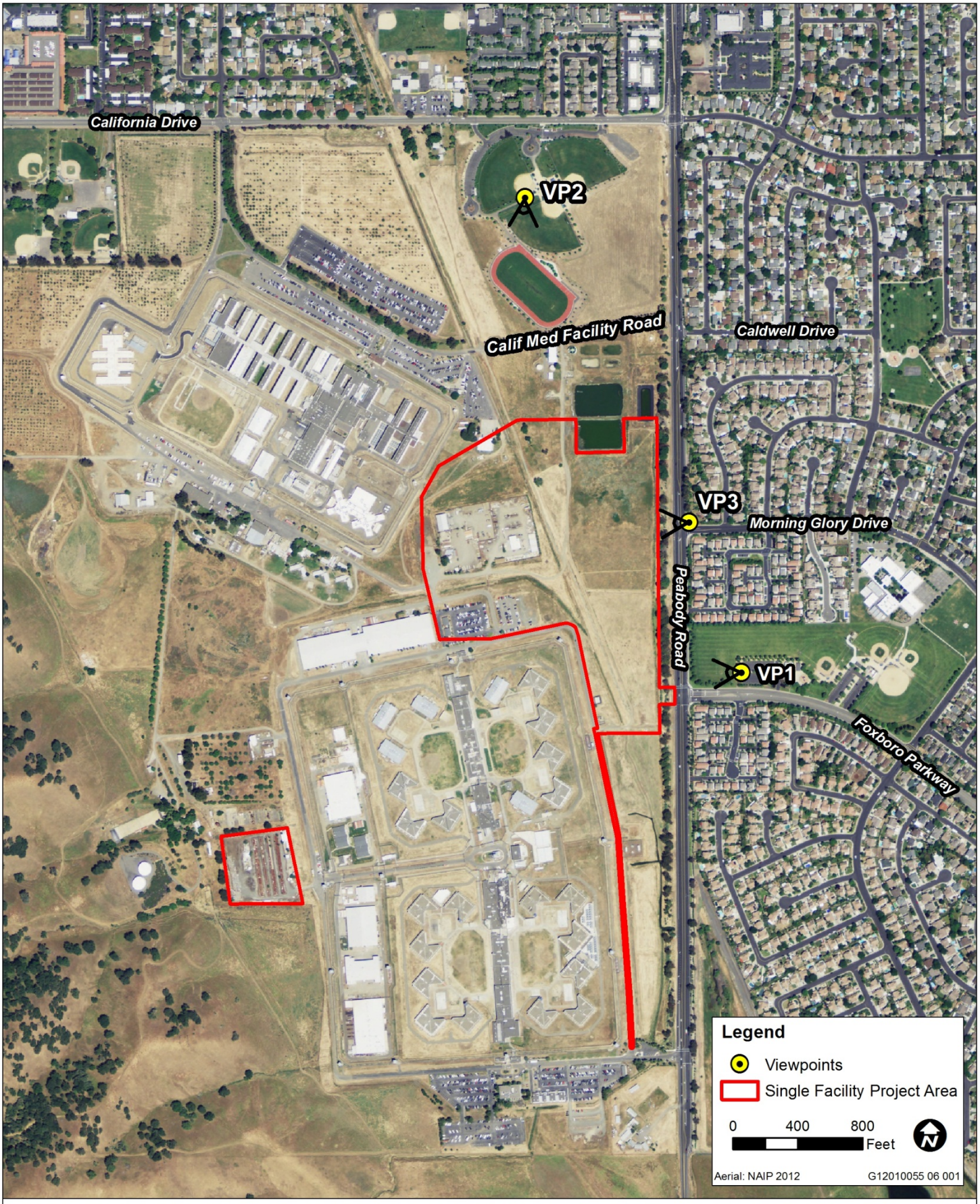
VISUAL CHARACTER OF THE INFILL SITE AND IMMEDIATE AREA

The infill site is located on State-owned land adjacent to the existing CMF/SOL facilities, which are operated by the California Department of Corrections and Rehabilitation (CDCR). The infill site is partially developed land with an inmate ward labor (IWL) yard on the southwest portion of the site. The remainder of the infill site is undeveloped and is vegetated with low-lying grasses. The adjacent facilities of the CMF/SOL, immediately west and south of the infill site, are institutional one- to three-story buildings with minimal architectural interest. Chain-link fencing, parking lots, and various maintenance and outbuildings occupy foreground views of the existing CMF/SOL facilities. The CMF/SOL facilities are a dominant feature in the landscape.

VISIBILITY FROM OFFSITE AREAS

A field reconnaissance was conducted in January 2013 to survey publicly accessible viewing points. Photographs were taken from various viewpoints surrounding the infill site to determine the visibility of the site from public roads, public recreational areas, and residential areas. Landscaping along the west side of Peabody Road consists of a row of mature nonnative trees that partially screen the CMF/SOL facilities from the roadway and residential areas on the east side of the road. Breaks in the tree line provide partial views of the CMF/SOL facilities, and unobstructed views of the Vaca Mountains are visible at the Peabody Road/Morning Glory Drive and Peabody Road/Foxboro Parkway intersections where breaks in the tree line occur. Existing facilities are visible from adjacent parks to the north and northwest. The infill site boundary is approximately 100 feet from the western edge of Peabody Road. The north side of the site is visible to southbound travelers on Peabody Road at Caldwell Drive, through a row of tall palm trees that grow along the CMF entrance road at the southern boundary of Al Patch Park. Distant views of the infill site are available from the ridge of the Vaca Mountains, approximately 0.85 mile to the west and 800 feet above CMF/SOL. The ridge is within the open space area of Lagoon Valley Park and is traversed by a gravel road that is used by bicyclists and hikers.

Based on the survey, three representative viewpoints were selected for detailed analysis, one of which was selected for visual simulation. Exhibit 3.13-1 shows the location and orientation of the selected viewpoints. These viewpoints include a view from Peabody Road at Morning Glory Drive to the east of the infill site; a view from Arlington Park located on the east side of Peabody Road at Foxboro Parkway east of the infill site; and a view from Al Patch Park located on the north side of the infill site.



Source: Ascent Environmental 2013

Exhibit 3.13-1

Visual Simulation Viewpoint Locations for the CMF/SOL Level II Infill Correctional Facility

ASCENT ENVIRONMENTAL

VIEWPOINT 1: VIEW OF THE SITE FROM ARLINGTON PARK

Viewpoint 1, shown in Exhibit 3.13-2, is looking to the west from Arlington Park, at the intersection of Foxboro Parkway and Peabody Road. Trees growing along the west side of the park and along the west side of Peabody Road partially screen views of the infill site. Views of the Vaca Mountains are visible but mostly screened from view within the park by park landscaping and landscaping on the west side of Peabody Road. (The Vaca Mountains are not visible in Exhibit 3.13-2 due to low clouds.) Viewer groups at this viewpoint include neighborhood residents and other park users from the surrounding area.

VIEWPOINT 2: VIEW OF THE SITE FROM AL PATCH PARK

Viewpoint 2, shown in Exhibit 3.13-3, shows the view to the south from the softball fields within Al Patch Park. A double row of widely spaced (20 feet on center) mature palm trees is planted along the access road to CMF on the southern boundary of the park, which partially screens views of the infill site. The foreground of the view is dominated by turfed playing fields, fencing, playing field lights, and trees growing next to the playing fields. The Vaca Mountains are visible on the right in the view, but light standards, trees, and fencing partially obstruct the views. Viewing groups at this viewpoint include residents of the homes along California Drive and park users.

VIEWPOINT 3: VIEW OF THE SITE FROM PEABODY ROAD AT MORNING GLORY DRIVE

Views to the west toward the infill site from the Peabody Road/Morning Glory Drive and Peabody Road/Foxboro Parkway intersections include unobstructed scenic vistas of the Vaca Mountains. Viewpoint 3, as shown in Exhibit 3.13-4, is representative of these views. A break in the tree line on the west side of Peabody Road provides an unobstructed view of the infill site directly to the west of this intersection. The roadway is dominant in the foreground; however, the Vaca Mountains are dominant in the background. The mountain views are visually enhanced by changing seasons, sun lighting, and atmospheric conditions. Viewing groups at this viewpoint include residents of the neighborhood engaged in driving or walking along Morning Glory Drive near its intersection with Peabody Road.

LIGHT AND GLARE CONDITIONS

The terms “glare” and “skyglow” are used in this analysis to describe the visual effects of lighting. For the purposes of this impact analysis, glare is considered to be direct exposure to bright lights and skyglow is a glow that extends upward beyond the light source into the night sky and can dominate or partially dominate nighttime views above the horizon.

Nighttime lighting sources at the existing CMF/SOL facilities consist of exterior building lighting and pole-mounted lights located around the perimeter of each facility and in the parking lots. Additionally, the site is illuminated by high-mast lights (i.e., multiple luminaires installed in a ring configuration at the top of a pole 60-100 feet tall), used to light outdoor yards.

The areas north and east of the CFM/SOL property consist of residential neighborhoods. Lighting in these areas consists of conventional street lighting and porch lights, which are less intense light sources than those present near the infill site. The playing fields at Al Patch Park and Keating Park have lighted playing fields with multiple shielded fixtures mounted on tall poles. Playing field lights are only used when there are nighttime activities occurring at the parks. Vehicles traveling on the adjacent roadways contribute to nighttime light and glare. The surrounding light sources, combined with existing light sources on the CFM/SOL grounds, contribute to existing skyglow in the general area. The surrounding open spaces south and west of the infill site (Vaca Mountains) do not contain noticeable night lighting.

Source: Ascent Environmental 2013

Exhibit 3.13-2

Viewpoint 1

Source: Ascent Environmental 2013

Exhibit 3.13-3

Viewpoint 2

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Source: Ascent Environmental 2013

Exhibit 3.13-4

Viewpoint 3

3.13.2 REGULATORY CONSIDERATIONS

A list of the applicable federal and state plans, policies, regulations, and laws relating to visual resources applicable to the CMF/SOL Infill Site is provided below. Complete summaries of these regulations are provided in Volume 1, Appendix 1B.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

- National Scenic Byways Program - Under the National Scenic Byways Program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. This program provides resources to help manage the intrinsic qualities in the broader byway corridor to be treasured and shared.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

- California Scenic Highway Program - California's Scenic Highway Program was created to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

LOCAL PLANS, POLICIES, AND ORDINANCES

The CMF/SOL Infill Site is located on land that is owned or controlled by the State. As a state agency, CDCR is not subject to land use plans, policies, and ordinances adopted by local agencies. Nevertheless, a discussion of relevant local plans and policies is provided because conflicts with them could indicate the potential occurrence of other physical environmental effects.

CITY OF VACAVILLE GENERAL PLAN

The City of Vacaville is currently in the process of updating its general plan. The following discussion is based on the currently adopted City of Vacaville General Plan.

The following policy from the Land Use Element addresses community form and image and is relevant to the development of the infill site with level II infill correctional facilities (City of Vacaville 2008).

- **Guiding Policy 2.1-G9:** Preserve scenic features and the feel of a city surrounded by open space, and preserve view corridors to the hills, and other significant natural areas.

3.13.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

In accordance with Appendix G and Section 15065 of the State of California Environmental Quality Act (CEQA) Guidelines, the level II infill correctional facility at the FSP/SAC Infill Site would result in a significant impact relating to visual resources if it would do any of the following:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- 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 day or nighttime views in the area.

The State CEQA Guidelines (Section 15064.5) define a “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

ISSUES NOT DISCUSSED FURTHER

Scenic resources: Because no officially designated or eligible state scenic highways are located near or have views of the infill site, development of level II infill correctional facilities at the CMF/SOL Infill Site would have no effect on scenic resources, including scenic trees, geologic features, rock outcroppings, and historic buildings located within a state scenic highway. Therefore, this topic is not evaluated further.

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 3.13-1: Substantial Degradation of a Scenic Vista

Unobstructed views of the Vaca Mountains in the vicinity of the infill site would be considered a scenic vista. As described under “Representative Viewpoints,” unobstructed views of the Vaca Mountains are provided by a break in the landscaping at the Peabody Road/Morning Glory Drive (Figure 3.13-4, Viewpoint 3) and Peabody Road/Foxboro Parkway intersections. Background views of the Vaca Mountains are also available from Arlington Park and Al Patch Park (Viewpoints 1 and 2, respectively). However, these views are obstructed by trees at Arlington Park (Exhibit 3.13-2) and by palm trees, playing field light standards, and correctional facility light standards at Al Patch Park (Exhibit 3.13-3, Viewpoint 2).

Development of the contemplated single, level II infill correctional facility at the CMF/SOL Infill Site would place structures approximately 500 feet west of Viewpoint 3 at the Peabody Road/Morning Glory Drive intersection. The dormitory structures (26 feet tall), guard towers, perimeter light masts (30 feet tall), and high-mast yard lights (60-100 feet tall) would be visible in the foreground from this viewpoint. The dormitory structures and guard towers would partially obstruct views of the lower slopes of the mountains, and the lighting standards would intrude on views of the ridgelines. These visual changes could be perceived as a substantial change in views of the Vaca Mountains. Further, these changes would be inconsistent with the Guiding Policy 2.1-G9 of the City’s General Plan, which encourages the preservation of view corridors to the surrounding hills.

An unobstructed view of the Vaca Mountains is provided by a break in the landscaping along Peabody Road at Morning Glory Drive. Implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site would obstruct views of the lower slopes of the Vaca Mountains, and the lighting standards would intrude on views of the ridgelines. Therefore, the infill facility would degrade views of surrounding scenic vistas and this is considered a significant impact.

Mitigation Measures

Mitigation Measure 3.13-1

The following measures will be implemented by CDCR:

- Use paint and other design elements on the building walls to blend the buildings with their surroundings.
- Use landscaping where feasible outside the secure perimeter to minimize direct line-of-sight views of the facility from views along Peabody Drive at Morning Glory Drive.

Significance after Mitigation

Although CDCR will make its best effort to design facilities to reduce visual impacts through implementation of Mitigation Measure 3.13-1, the potential infill facility would nevertheless result in substantial changes to views of the Vaca Mountains. Impacts would be reduced; however because of the physical limitations of site-required security protocols, other design treatments (e.g., facades, interior landscaping, and architectural additions) are not feasible. Therefore, a **significant and unavoidable** scenic vista impact would remain.

Impact 3.13-2: Visual Character Impacts

The visual character and quality of the area surrounding the infill site is dominated by the existing CMF/SOL buildings and support facilities, including IWL yard buildings, wastewater treatment structures and ponds, warehouse, access and interior roads, parking lots, and security lighting. The existing facilities, however, are largely screened from the neighborhoods to the east by landscaping along Peabody Road (Exhibit 3.13-2, Viewpoint 1). Neighborhoods north of the existing facilities have views of the existing CMF/SOL facilities and the infill site that are partially screened by landscaping and the facilities in Al Patch Park (Exhibit 3.13-3, Viewpoint 2).

Implementation of the single, level II infill correctional facility at the CMF/SOL Infill Site would place structures and associated facilities in close proximity to the existing CMF/SOL facilities on the site. The new facility would be similar in appearance to existing development on the property and would not substantially alter the existing visual character or quality of the site. The level II infill correctional facility structures would be located at about the same distance from the Al Patch Park and the neighborhood north of the infill site as are the existing CMF/SOL structures (Exhibit 3.13-3, Viewpoint 2). Landscaping and existing structures would partially screen the new structures, and the quality of the visual environment in the area north of the infill site would not be substantially changed.

However, the level II infill correctional facility would be constructed closer to Peabody Road than the existing facilities and would be more visible from the residential neighborhood to the east. The level II infill correctional facilities would be visible to residents walking or driving in the vicinity of the Peabody Road/Morning Glory Drive intersection (Exhibit 3.13-4, Viewpoint 3) or near Arlington Park at the intersection of Peabody Road and Foxboro Parkway. As described above, the closest level II building would be approximately 450 feet from the residences on the east side of Peabody Road. The visual prominence of these structures could degrade views from these areas. Further, as discussed above, direct views of the Vaca Mountains would be blocked in the lower hillside areas. This would be inconsistent with scenic resource policies of the City's General Plan. Therefore, development of the infill site could result in a degradation of visual quality of the site and its surroundings.

The structures associated with a single, level II infill correctional facility at the CMF/SOL Infill Site, including fencing and lighting masts, could substantially change, and views of institutional facilities could become prominent features in the viewshed, depending on the specific location. Therefore, the development of level II infill correctional facilities at CMF/SOL could result in a degradation of visual quality of the site and its surroundings. This would be a significant impact.

Mitigation Measures

Implement Mitigation Measure 3.13-1.

Significance after Mitigation

Although CDCR will make its best effort to design facilities to reduce visual impacts through implementation of Mitigation Measure 3.13-1, the infill facility would nevertheless result in a substantial change in the local viewshed. Impacts would be reduced; however because of the physical limitations of site-required security protocols, other design treatments (e.g., facades, interior landscaping, and architectural additions) are not feasible. Therefore, a **significant and unavoidable** impact to the existing visual character and quality of the area would remain.

Impact 3.13-3: Light and Glare Impacts

The contemplated single, level II infill correctional facility at the CMF/SOL Infill Site would be constructed with materials similar to those used for the CMF/SOL facilities. Because it is essential that CDCR maintain adequate site security and line-of-sight, non-reflective materials are used in building design. Therefore, the contemplated infill facility would not result in any daytime glare-related impacts.

High-mast lighting would be installed in the interior yard of the level II infill correctional facility. The high-mast lighting would be a maximum of 100 feet high. Other onsite lighting would be installed for the illumination of parking lots, circulation roads, internal site features, and for all-purpose lighting in courtyards. This lighting would be in the form of high-pressure sodium lights on 35-foot poles, similar to typical retail parking lot lighting.

The lighting for the facility would be similar in appearance to existing lighting on the property. However, development of the infill site with level II infill correctional facilities would increase the number of light standards and luminaires on the property. Building lighting within the facility would also contribute to the overall lighting on the property. All lighting associated with the level II infill correctional facility would be viewed against the backdrop of existing lighting at the CMF/SOL facilities located adjacent to the west and south of the infill site (Exhibit 3.13-5, Viewpoint 3).

However, the level II infill correctional facility would be constructed closer than the existing facilities to neighborhoods on the east side of Peabody Road. Perimeter lighting would be located within 450–500 feet of residences where existing perimeter lighting is at least 1,450 feet away. Lighting from the infill facility would be more visible in the adjacent neighborhoods than is the case under current conditions (Exhibit 3.13-5, Viewpoint 3). As a consequence, nighttime glare from high-mast lighting would degrade nighttime views in the area.

Regarding nighttime glare, the nearest residence to potential lighting sources associated with the contemplated level II infill correctional facilities would be 270 feet away from the parking lot. As described above, parking lot lighting would be in the form of high-pressure sodium lights on 35-foot poles, similar to typical retail parking lot lighting. As can be seen in Exhibit 3.13-5, Viewpoint 3, depending on the specific location, development of the infill site could result in glare that would directly affect residential areas.

Existing skyglow as seen by people traveling in the area, including along Interstate 80, is created by the high-mast lights at existing CMF/SOL. The level II infill correctional facility would increase high-mast lighting on the site. Therefore, the contemplated development would increase skyglow as viewed from adjacent residences and the surrounding areas.

The lighting for the contemplated single, level II infill correctional facility at the CMF/SOL Infill Site would be similar in appearance to existing lighting at CMF/SOL facilities and would be viewed against the backdrop of existing lighting at the CMF/SOL facilities and existing street lighting in neighborhoods surrounding the infill site. However, because of the increased number of lighting sources, development of the infill site with level II infill correctional facilities would contribute to a substantial increase in nighttime glare in adjacent neighborhoods and skyglow that could be viewed from offsite areas. This would be a significant impact.

Mitigation Measures

No feasible mitigation is available.

Significance after Mitigation

CDCR uses state-of-the-art lighting in all its new facilities, which is designed to cast light only where needed, and to cut off glare to offsite areas. There are no other known measures that CDCR can implement that would provide sufficient lighting to maintain security needs without some of this light being visible off the CDCR property. Therefore, no mitigation measures are available to decrease the effects of skyglow from high-mast lighting. This impact would remain **significant and unavoidable.**

Source: Ascent Environmental 2013

Exhibit 3.13-5

Nighttime View of Existing and Simulated Lighting of Level II Infill Correctional Facility from Viewpoint 3 at CMF/SOL

4 CUMULATIVE IMPACTS

4.1 INTRODUCTION TO THE CUMULATIVE ANALYSIS

Section 15130 of the State of California Environmental Quality Act (CEQA) Guidelines requires that an environmental impact report (EIR) discuss cumulative impacts of a project and determine whether the project's incremental effect is "cumulatively considerable." The definition of cumulatively considerable is provided in Section 15065(a)(3):

> "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

According to Section 15130(b) of the State CEQA Guidelines,

> [t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

For purposes of this EIR, the project would have a significant cumulative effect if it meets either one of the following criteria:

- the cumulative effects of related projects (past, current, and probable future projects) without the project are not significant but the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact; or
- the cumulative effects of related projects (past, current, and probable future projects) without the project are already significant and the project represents a considerable contribution to the already significant effect. The standards used herein to determine "considerability" are that the impact either must be substantial or must exceed an established threshold of significance.

Mitigation measures are to be developed, where feasible, that reduce the project's contribution to cumulative effects to less than considerable.

Volume 1 of this draft EIR (DEIR) evaluates cumulative impacts statewide that pertain to greenhouse gas emissions, of the development of the Level II Infill Correctional Facilities Project, as described in Chapter 3, "Project Description" in Volume 1 of this EIR. This volume focuses on the cumulative impacts of development at California Medical Facility (CMF)/California State Prison, Solano (SOL) Infill Site in combination with other projects throughout the region that could result in more extensive local/regional environmental effects. Chapter 3, "Environmental Setting, Thresholds of Significance, Environmental Impacts of the Project, and Mitigation Measures," of this volume has identified potentially significant environmental impacts associated with development of a single, level II infill correctional facility at the CMF/SOL Infill Site. These issues, and others that could contribute considerably to cumulatively significant effects, are discussed below in the context of cumulative development.

4.2 RELATED PROJECTS

The analysis of cumulative environmental impacts associated with development of a single, level II infill correctional facility at the CMF/SOL Infill Site addresses the potential incremental impacts of the project in combination with those of other past, present, and probable future projects and land use changes. The projects listed in Table 4-1 (correlated with their locations in Exhibit 4-1) are not intended to be an all-inclusive list of projects in the region, but rather an identification of projects constructed, approved, or under review in the vicinity of the CMF/SOL Infill Site and the City of Vacaville that have some relation to the environmental impacts of construction and operation of a single, level II infill correctional facility at CMF/SOL. The list of projects used in this cumulative analysis is based on information for approved and pending projects obtained from the City of Vacaville and the City of Fairfield and is consistent with the cumulative projects evaluated in the analysis of cumulative transportation impacts in Section 3.11, “Transportation,” of this volume.

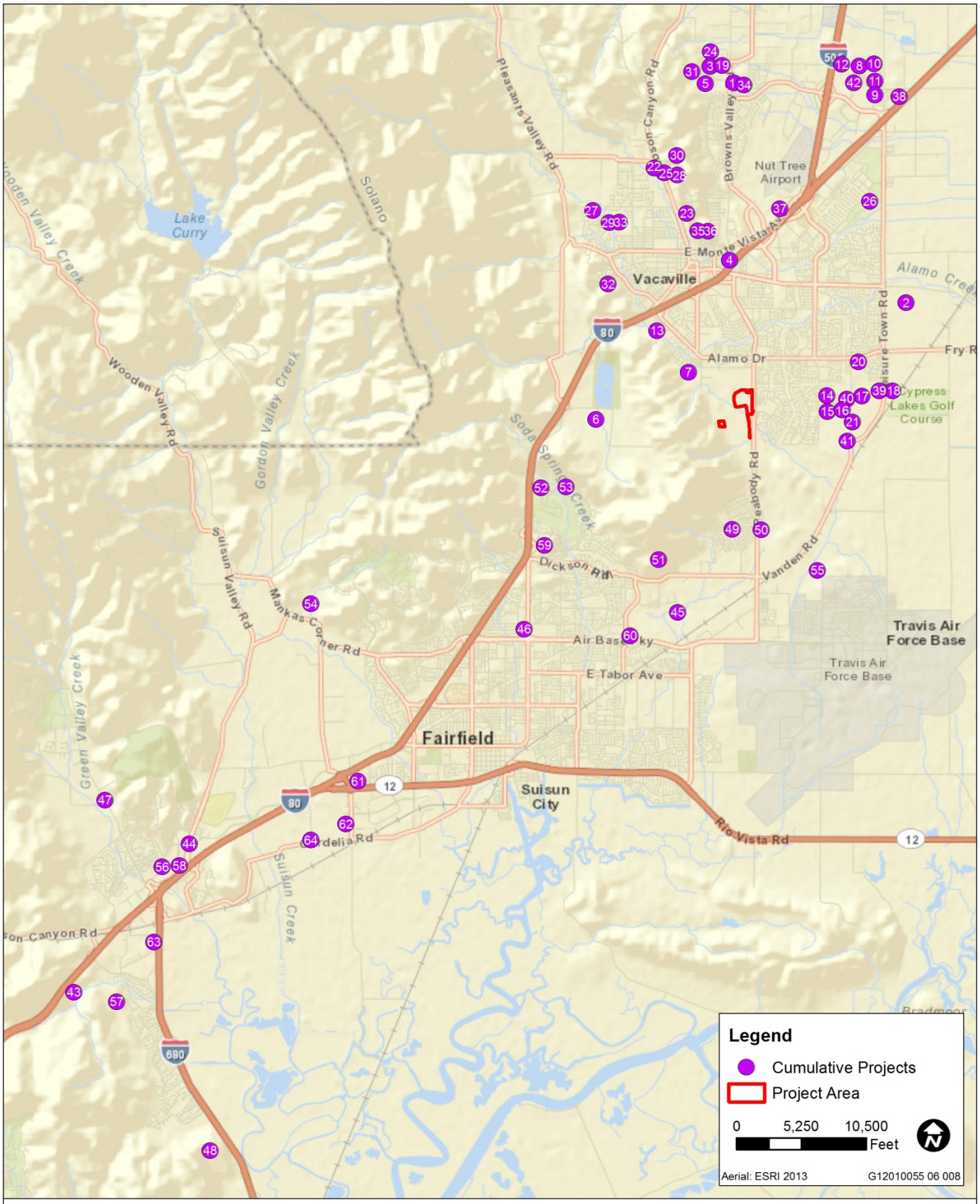
Table 4-1 List of Projects Located within the Vicinity of the CMF/SOL Infill Site

Exhibit 4-1 Map Key	Project Name	Developed or Proposed Land Use	Size (Acreage, Dwelling Units, or Square Footage)	Jurisdiction
	CMF/SOL Solar Farm	Photovoltaic Panels	2.3 acres	CDCR
	CMF/SOL Medical Facility Improvements*	Modernization/ Improvement of Existing Medical Space	52,900 gsf	CDCR
1	Amber Hills	Residential	19.1 acres/38 DUs	City of Vacaville
2	Brighton Landing	Residential	125 acres/769 DUs	City of Vacaville
3	Cheyenne	Residential	86 acres/221 DUs	City of Vacaville
4	Ivywood	Residential	5.9 acres/37 DUs	City of Vacaville
5	Knoll Creek	Residential	10 acres/38 DUs	City of Vacaville
6	Lagoon Valley	Residential	412 acres/1025 DUs	City of Vacaville
7	Montessa	Residential	40 acres/55 DUs	City of Vacaville
8	Renaissance at North Village	Residential	19.8 acres/192 DUs	City of Vacaville
9	Casa Bella at North Village	Residential	2.9 acres/35 DUs	City of Vacaville
10	Sanctuary at North Village	Residential	13.4 acres/162 DUs	City of Vacaville
11	North Village Unit 5	Residential	11 acres/68 DUs	City of Vacaville
12	North Village Unit 6	Residential	134.9 acres/176 DUs	City of Vacaville
13	Portofino Unit 2	Residential	1.26 acres/7 DUs	City of Vacaville
14	Barrington Estates at Southtown	Residential	43.7 acres/165 DUs	City of Vacaville
15	Carrington Manor at Southtown	Residential	41.9 acres/158 DUs	City of Vacaville
16	Cambridge Village at Southtown	Residential	25.7 acres/108 DUs	City of Vacaville
17	Southtown Phase 3	Residential	48 acres	City of Vacaville
18	Southtown Commons	Residential	39 acres/215 DUs	City of Vacaville
19	Rancho Rogelio	Residential	20.9 acres/40 DUs	City of Vacaville
20	Sterling Chateau 4	Residential	14 acres/54 DUs	City of Vacaville
21	Vanden Meadow Specific Plan and Development Project	Residential	206 acres/939 DUs	City of Vacaville
22	Arroyo Vista	Residential	3.87 acres/8 DUs	City of Vacaville
23	Canyon View	Residential	14 acres/15 DUs	City of Vacaville
24	Cheyenne Estates	Residential	15 acres/15 DUs	City of Vacaville
25	Gibson/Vine Estates	Residential	9.01 acres/8 DUs	City of Vacaville

Table 4-1 List of Projects Located within the Vicinity of the CMF/SOL Infill Site

Exhibit 4-1 Map Key	Project Name	Developed or Proposed Land Use	Size (Acreage, Dwelling Units, or Square Footage)	Jurisdiction
26	Golf Course Estates Unit 2 (remaining)	Residential	17 acres/3 DUs	City of Vacaville
27	Hidden Valley	Residential	26 acres /31 DUs	City of Vacaville
28	Horkey Parcel Map	Residential	3.5 acres/2 DUs	City of Vacaville
29	Nob Hill Estates	Residential	12.17 acres/9 DUs	City of Vacaville
30	North Vine Street Estates (remaining)	Residential	60 acres/58 DUs	City of Vacaville
31	Rogers Ranch	Residential	35 acres/28 DUs	City of Vacaville
32	Spring Lane Unit 2	Residential	53 acres/27 DUs	City of Vacaville
33	Stratton Estates	Residential	4 acres/10 DUs	City of Vacaville
34	Verona	Residential	4.72 acres/4 DUs	City of Vacaville
35	Villages on Vine Unit 2	Residential	12.9 acres/25 DUs	City of Vacaville
36	Vine Glen Estates	Residential	6.3 acres/19 DUs	City of Vacaville
37	Nut Tree Apartments	Residential	12 acres/216 DUs	City of Vacaville
38	Quinn Crossing Apartments	Residential	17.3 acres/312 DUs	City of Vacaville
39	Southtown Apartments	Residential	10.7 acres/223 DUs	City of Vacaville
40	Southtown Townhouses	Residential	6.3 acres/60 DUs	City of Vacaville
41	Vanden Meadows Apartments	Residential	8 acres/60 DUs	City of Vacaville
42	Villas at North Village Apartments	Residential	9.9 acres/228 DUs	City of Vacaville
43	Fieldcrest	Residential	267 acres/394 DUs	City of Fairfield
44	Green Valley Plaza	Retail	44 acres	City of Fairfield
45	The Villages at Fairfield	Residential	440 acres/2,388 DUs	City of Fairfield
46	Wal Mart	Commercial	200,00 sf	City of Fairfield
47	Eastridge	Residential	217 DUs	City of Fairfield
48	Garibaldi Ranch	Residential	520 DUs	City of Fairfield
49	Goldridge	Residential	1458 DUs	City of Fairfield
50	Madison	Residential	221 DUs	City of Fairfield
51	Paradise Crest	Residential	334 DUs	City of Fairfield
52	Paradise Valley	Residential	164 DUs	City of Fairfield
53	Paradise Valley Townhomes	Residential	220 DUs	City of Fairfield
54	Rancho Solano Phase 3	Residential	217 DUs	City of Fairfield
55	Train Station Specific Plan Area	Residential	6800 DUs/ 4,962,000 sf commercial	City of Fairfield
56	Turnstone	Residential	136 DUs	City of Fairfield
57	Villas at Havenhill	Residential	324 DUs	City of Fairfield
58	Fairmount Assisted Living	Residential	189,000 sf	City of Fairfield
59	Lowes	Retail	139,000 sf	City of Fairfield
60	Laurel Creek Plaza	Retail	110,186 sf	City of Fairfield
61	CarMax	Retail	64,000 sf	City of Fairfield
62	Lincoln Cordelia Rd	Office/Industrial	119,000 sf	City of Fairfield
63	Lopes-Fermi Industrial Flex Building	Office/Industrial	32,509 sf	City of Fairfield
64	JCM Industrial Park	Office/Industrial	841,000 sf	City of Fairfield

Note: sf = square feet; DUs = dwelling units
Sources: City of Vacaville, City of Fairfield 2012
* No capacity of staffing increases; facility improvements only.



Source: adapted by Ascent Environmental 2013

Exhibit 4-1 Approximate Location of Cumulative Projects

4.3 GEOGRAPHIC SCOPE OF THE CUMULATIVE ANALYSIS

The geographic area that could be affected by development of a single, level II infill correctional facility at the CMF/SOL Infill Site varies depending on the type of environmental resource being considered. The general geographic area associated with various environmental effects of construction and operation of a single, level II infill correctional facility at the CMF/SOL Infill Site establishes the boundaries of the area used for compiling the list of projects considered in this cumulative impact analysis. Table 4-2 presents the general geographic areas associated with the resources addressed in this DEIR and evaluated in those sections of this cumulative analysis.

Table 4-2 Geographic Scope of Cumulative Impacts

Resource Issue	Geographic Area
Air Quality and Climate Change	Regional (Yolo Solano Air Quality Management District—pollutant emissions that have regional effects) Local (immediate project vicinity—pollutant emissions that are highly localized) Global (greenhouse gas emissions)
Biological Resources	Regional (Solano Multispecies Conservation Plan area)
Cultural Resources	Local (limited to CDCR property)
Employment, Population, and Housing	Regional (Solano County) and local (cities of Vacaville, Sacramento, Fairfield, and Elk Grove)
Geology, Soils, Seismicity, Mineral Resources, and Paleontological Resources	Local (limited to CDCR property)
Hazards and Hazardous Materials	Local (immediate project vicinity or limited to CDCR property)
Hydrology and Water Quality	Local (immediate project vicinity—local watershed)
Land Use, Agriculture, and Forestry Resources	Regional (Solano County) and local (City of Vacaville)
Noise	Local (immediate project vicinity—effects are highly localized)
Public Services	Local(local service area)
Transportation	Regional and local (discussed in Section 3.11, “Transportation”)
Utilities	Regional (regional utility area)
Visual Resources (light and glare; aesthetics)	Local (immediate project vicinity)

Note: CDCR = California Department of Corrections and Rehabilitation
Source: Data compiled by Ascent in 2013

4.4 ANALYSIS OF CUMULATIVE IMPACTS

4.4.1 AIR QUALITY

SHORT-TERM CONSTRUCTION-RELATED IMPACTS

The Yolo Solano Air Quality Management District (YSAQMD) has established a significance threshold of 80 pounds per day (lbs/day) for emissions of respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}) and 10 tons per year (TPY) for emissions of reactive organic

gases (ROG) and oxides of nitrogen (NO_X), which are ozone precursors. YSAQMD acknowledges that the entire Sacramento Valley Air Basin (SVAB) violates state and federal ambient air quality standards for ozone and particulate matter (PM_{10} and $PM_{2.5}$) due to the combined levels of emissions generated by sources throughout the SVAB (including but not limited to the projects listed in Table 4-1). YSAQMD considers emissions of ROG and NO_X (both ozone precursors) and PM_{10} from an individual project that exceed the applicable thresholds to be a substantial contribution to this SVAB-wide (i.e., cumulative) impact (YSAQMD 2007). This is considered to be a significant cumulative impact.

Construction-related emissions of ROG, NO_X, and PM_{10} due to development of a single, level II infill correctional facility at the CMF/SOL Infill Site would be below YSAQMD's applicable thresholds for each of the three construction years. Therefore, construction-generated emissions from the project would not result in a considerable contribution to the significant cumulative impact for nonattainment pollutants (i.e. ozone and particulate matter).

The SVAB is in nonattainment status for ozone, PM_{10}, and $PM_{2.5}$. This is a result of past cumulative development in the basin, as well as transport of pollutants from other basins. New development, including the construction of a single, level II infill correctional facility at the CMF/SOL Infill Site, would be required to comply with YSAQMD measures that would reduce potential new construction emissions of criteria pollutants and precursors. As described above, the contribution of the project to regional ROG, NO_X, and PM_{10} emissions (see Section 3.1), would not be considerable because emission from the project would be below YSAQMD's applicable thresholds for each of the three construction years Therefore, the project would result in a ***less-than-significant*** *cumulative short-term construction-related emissions impact.*

LONG-TERM OPERATION-RELATED IMPACTS

Because the SVAB is currently designated as a nonattainment area for ozone, PM_{10} and $PM_{2.5}$, stationary and mobile-source emissions could contribute on a cumulative basis to pollutant concentrations that exceed the ambient air quality standards due to growth in the area. This is considered to be a significant cumulative impact. As noted above, YSAQMD considers emissions of ROG and NO_X (both ozone precursors) and PM_{10} from an individual project that exceed the applicable thresholds to be a substantial contribution to this SVAB-wide (i.e., cumulative) impact (YSAQMD 2007).

Long-term operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in regional emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from area and mobile sources but these levels would not exceed YSAQMD's significance thresholds for ROG, NO_X, and PM_{10} from an individual project and would not generate substantial operational emissions of $PM_{2.5}$ or toxic air contaminants. Also, long-term operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in concentrations of, carbon monoxide (CO), or other criteria air pollutants that would exceed ambient air quality standards; or emissions of toxic air contaminants, including diesel PM, that would result in the exposure of sensitive receptors to substantial pollutant concentrations. Furthermore, emissions from stationary sources for related projects would be regulated through YSAQMD's permitting process. YSAQMD's thresholds of significance are set at a level that avoids a potential conflict with air quality attainment plans, which are required to reach attainment of federal and state air quality standards. Consequently, the long-term operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would not contribute to an increase in regional emissions (the projected emissions inventory for the SVAB) that would conflict with the emissions budget used by YSAQMD for regional air quality planning (i.e., YSAQMD's air quality attainment plans).

Operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would generate emissions that are below YSAQMD thresholds for emissions from an individual project, which were established to reach attainment with air quality standards. Further, the contemplated single, level II infill correctional facility would comply with land use designations used in the development of the air quality attainment plan and the facility would be required to implement all feasible measures in the plan aimed

at attaining long-term air quality standards. The project's long-term operational emissions would not considerably contribute emissions which would exceed applicable air quality standards. Therefore, operational emissions generated by the project would result in a ***less-than-significant*** *cumulative air quality impact.*

4.4.2 BIOLOGICAL RESOURCES

The cumulative context for biological resources impacts for the CMF/SOL Infill Site is the area included within the draft Solano Multispecies Conservation Plan area because this plan area supports all of the special-status species and habitats that could potentially be affected by development on the infill site, contains known and major populations of many of these species, and contains important occupied and potential habitat for these species. Although a draft, the plan is based on extensive prior study and provides a well-substantiated cumulative context for consideration of biological resource. Through development of the draft Solano Multispecies Habitat Conservation Plan (SMHCP), special-status species and their habitats in the plan area have been thoroughly assessed and conservation areas have been prioritized for the maintenance of biological diversity and preservation of listed species and their habitats in the region, while allowing for development within the plan area. The CMF/SOL Infill Site is identified as a development area in the draft SMHCP and is not identified as an area important for conservation. The SMHCP area is subject to development pressures and other developments in this area would be expected to impact the same species and habitats as development of a level II infill correctional facility at the CMF/SOL Infill Site.

Past development in SMHCP area, ranging from conversion of land to agricultural production more than a hundred years ago to recent expansion of urban development, has resulted in a substantial loss of native habitat to other uses. This land conversion has benefited a few species, such as those adapted to agricultural uses, but the overall effect on native plants, animals, and habitat has been decidedly negative. Implementation of the SMHCP, if adopted, would provide habitat conservation and avoidance and minimization measures to preserve biological diversity and provide a framework for development that would not be likely to jeopardize the continued existence of covered species. Implementation of the current draft SMHCP Conservation Strategy would result in the establishment of an estimated 25,000 to 30,000 acres of preserved open space and provide habitat linkages connecting preserved habitats. The SMHCP would lessen site-specific and cumulative impacts of development by replacing project-by-project mitigation with comprehensive, long-term strategies for conserving, protecting, and maintaining viable populations of covered species and natural habitats. If the SMHCP is not adopted, many future projects proposed in the vicinity of CMF/SOL would be required to mitigate substantial impacts to biological resources in compliance with ESA, CESA and other state, local, and federal statutes. However, this mitigation would continue to occur on a project-by-project basis with no coordinated strategy for ensuring long-term conservation and species viability on a regional scale. Therefore, without adoption of the SMHCP, it can be expected that the net loss and degradation of native habitat for plants and wildlife, agricultural lands, and open space areas that support important biological resources in Solano County will continue as residential and urban development continues. This is a significant cumulative biological resource impact.

Development of a single, level II infill correctional facility on the CMF/SOL Infill Site could result in potentially significant impacts on special-status plants (i.e., showy Rancheria clover and pappose tarplant); Swainson's hawk, burrowing owl, and other nesting raptors; loggerhead shrike and migratory birds; and other waters of the U.S. However, these potential impacts would be mitigated to less-than-significant levels with implementation of the mitigation measures described in Section 3.2, "Biological Resources," in chapter 3 of this volume. Furthermore, the CMF/SOL Infill Site consists of low-quality, disturbed habitat surrounded by existing development and has very low potential to support special-status species. It is unlikely that large or important populations of any special-status species exist on the infill site and no high quality habitat important to the long-term conservation of any species in the

region is present on the infill site. Therefore, the infill facility's incremental contribution to the cumulative impact on special-status species in the region would not be considerable.

Operation of a lethal electrified fence at the CMF/SOL Infill Site could result in the death (i.e., electrocution) of sensitive and common wildlife species, some of which are protected under the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code. Other planned, proposed, and approved projects in the region could also result in significant impacts to wildlife species. As described in Section 3.2, "Biological Resources," in Chapter 3 of this volume, it is not expected that the construction and operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would eliminate any resident or migratory animal or bird species or reduce species diversity in the vicinity of the infill site or region; however, it is possible that the local population of one or more native birds, protected by the MBTA and the Fish and Game Code, could be substantially affected. As part of the infill development, the California Department of Corrections and Rehabilitation (CDCR) would implement Mitigation Measure 3.2-5, which requires CDCR's coordination with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) and implementation of measures to minimize, deter, and fully compensate for the infill development's impact on native wildlife populations. After implementation of the specified measures, the project would not substantively contribute to reduction of any affected species. Therefore, the infill facility's contribution to impact on native wildlife populations would not be cumulatively considerable.

Cumulative developments could result in potentially significant biological resource impacts. However, with implementation of the mitigation measures proposed for the CMF/SOL Infill Site, the contribution to these impacts due to the construction and operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would be reduced to a less-than-significant level. Therefore, while the overall cumulative condition is adverse, the project's contribution to cumulative biological resource impacts would not be considerable and the project would have a ***less-than-significant*** *cumulative biological resource impact*

4.4.3 CULTURAL RESOURCES

Historic and archaeological resource impacts are site-specific rather than regional in nature. The project and any related development would be subject to mitigation to avoid the loss of identified or previously undiscovered historic, archaeological resources, and human remains. Therefore, cumulative cultural resource impacts would be **less than significant** and are not addressed further.

4.4.4 EMPLOYMENT, POPULATION, AND HOUSING

As described in Section 3.4, "Employment, Population, and Housing," in Chapter 3 of this volume, the cities of Vacaville, Sacramento, Fairfield, and Elk Grove are projected to experience cumulative population growth (see Table 3.4-1 for projected 2025 populations of these cities). This population growth is regulated and monitored by each respective jurisdiction. It is anticipated and reasonable to assume that local jurisdictions would only approve growth and development that is consistent with and planned for in their growth projections and planning documents, consistent with relevant planning and zoning laws. Also, ample housing exists throughout the region (Table 3.4-2 in chapter 3 of this volume), and as shown in Table 4-1, above, the vast majority of cumulative projects would result in the construction of new residential units in Vacaville and Fairfield. Therefore, cumulative population, employment, and housing impacts would be less than significant.

Development of a single, level II infill correctional facility at CMF/SOL would result in 193 new employees, most of whom are expected to be current residents of the region. It is anticipated that the City of Vacaville would receive the largest percentage (30%) of new employees. However, project-generated population growth would be indistinguishable from other projected local growth in these areas. Project-generated growth, by itself, would not stimulate construction of any new housing, local

government facilities, or utilities infrastructure in any one jurisdiction because new employees would likely be widely distributed throughout the region. For these reasons, the employment, population, and housing impacts related to development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in a considerable contribution to cumulative population, employment, and housing impacts.

Local jurisdictions are anticipated to only approve growth and development that is consistent with and planned for in their growth projections. Therefore, cumulative population, employment, and housing impact would be less than significant. Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in population growth that would be indistinguishable from projected local growth, and employee residences would be widely distributed throughout the region. Therefore, the employment, population, and housing impacts related to development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in a considerable contribution such that new significant cumulative population, employment, and housing impacts would occur. This is a ***less-than-significant*** *cumulative impact.*

4.4.5 GEOLOGY, SOILS, SEISMICITY, MINERALS, AND PALEONTOLOGICAL RESOURCES

Geotechnical impacts are site-specific rather than regional in nature and any development occurring within the Folsom area would be subject to, at minimum, uniform site development and construction standards relative to seismic and other geologic conditions that are prevalent within the region, such as the California Building Code standards. Therefore, cumulative geology, soils, and seismicity impacts would be **less than significant** and are not addressed further.

4.4.6 GREENHOUSE GAS EMISSIONS

An individual project cannot generate enough greenhouse gas (GHG) emissions to substantially influence global climate change. A project participates in this potential cumulative impact to the extent that its incremental contribution, combined with the cumulative contributions of all other sources of GHGs, when taken together, causes global climate change impacts. Because climate change is an inherently cumulative effect, the analysis of GHG emissions and climate change is provided in Chapter 5 of Volume 1 of this DEIR, as that cumulative analysis looks at the contribution of GHGs due to the overall construction and operation of level II infill correctional facilities, regardless of which final sites are chosen for the facilities.

4.4.7 HAZARDS AND HAZARDOUS MATERIALS

Hazardous materials impacts are site-specific rather than regional in nature. In addition, the storage, use, disposal, and transport of hazardous materials are extensively regulated by various federal, state, and local agencies. Therefore, hazardous materials impacts would be **less than significant** and are not addressed further.

The CMF/SOL Infill Site is located in an area of moderate wildfire fire risk. The fire hazard associated with a new single, level II infill correctional facility at the CMF/SOL Infill Site would be mitigated through the presence of onsite personnel and facilities equipped to fight fires, mutual-aid agreements, and building and maintenance practices that would make the new single, level II infill correctional facility defensible in case of a wildland fire. To the degree that other projects are constructed in adjacent areas of fire hazard risk, there may be an increased propensity for wildland fires that could spread to the CMF/SOL Infill Site. However, most related projects are not in an area of high fire hazard and those that are would be required to construct or contribute to sufficient fire protection services and to implement fire-safe building practices.

Although there is a moderate potential for wildland fire in the CMF/SOL vicinity, the project and related projects would be required to ensure sufficient fire protection services and implement fire-safe building practices. Therefore, construction and operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would not have a considerable contribution such that a new significant cumulative impact would occur. This is a ***less-than-significant*** *cumulative hazards impact.*

4.4.8 HYDROLOGY AND WATER QUALITY

WATER QUALITY

Overall water quality in the region has degraded over time as natural habitat has been converted to urban uses, and these uses have resulted in runoff of various pollutants into local and regional waterways. A variety of programs have been implemented with the goal of halting degradation of water quality and reversing this trend. Several state and federal agencies are involved in these programs, many of which are required by or originate in the federal Clean Water Act. Nonetheless, a cumulative adverse water quality condition exists.

Construction of level II infill correctional facilities at the CMF/SOL Infill Site as well as construction of related projects would result in surface disturbance through ground scraping, grading, trenching, and compaction associated with typical development activities. Existing vegetation would be removed thereby increasing the potential for erosion. Operational activities and proposed land uses (e.g., roadways, parking areas) would generate atmospheric pollution, tire-wear residues, petroleum products, and oil and grease which would be carried in stormwater runoff. These constituents could enter the storm drainage system and adversely affect water quality. However, a Storm Water Pollution Prevention Plan (SWPPP) that would include site-specific BMPs and any other necessary site-specific Waste Discharge Requirements (WDRs) or waivers under the Porter-Cologne Act would be prepared for each project to sufficiently reduce the potential surface water quality impacts during construction. In accordance with federal and state stormwater regulations, new construction and substantial redevelopment projects must maintain pre-project hydrology and incorporate proper pollutant source controls, minimize pollutant exposure outdoors, and treat stormwater runoff through proper post-construction BMPs when source control or exposure protection are insufficient for reducing pollutant loads. Specifically, CDCR would be required to incorporate detention basins, post-construction BMPs and low impact development (LID) stormwater management principles for operation of level II infill correctional facilities at the CMF/SOL Infill Site, which would provide some treatment of pollutants and would maintain the infill site's pre-project levels of stormwater runoff.

Water quality regulations require implementation of construction and post-construction site-specific BMPs and water quality protection measures. Therefore, the construction and operation of a single, level II infill correctional facility at the CMF/SOL Infill Site and the construction and operation of related projects would reduce site-specific water quality impacts such that cumulatively adverse hydrology and water quality impacts would not occur and the project would not have a considerable contribution such that a new significant cumulative impact would occur. This is a ***less-than-significant*** *cumulative impact.*

STORMWATER DRAINAGE

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site and the development of related projects would result in the addition of impervious surfaces, which could increase stormwater runoff. However, in accordance with federal and state stormwater regulations, new construction and substantial redevelopment projects must maintain pre-project hydrology and incorporate proper pollutant source controls, minimize pollutant exposure outdoors, and treat stormwater runoff through proper post-construction BMPs when source control or exposure protection are insufficient for reducing pollutant loads. Therefore, before any construction-related ground

disturbance, final drainage plans would be required to demonstrate that all runoff would be appropriately conveyed and would not leave the project sites at rates exceeding pre-infill site runoff conditions. Therefore, this would be a less-than-significant cumulative impact.

Specifically at the CMF/SOL Infill Site, as required by Mitigation Measure 3.7-2 in Chapter 3 of this volume, the level II infill correctional facility's drainage plan and detention basins must control peak flow discharge rates to pre-project levels and improve water quality. All Regional Water Quality Control Board requirements would be followed in the development of the final drainage plan and the new and reconfigured storm drainage facilities would be constructed to accommodate increased surface flows associated with the infill site's increase in impervious surfaces. New detention basins or ponds would temporarily detain stormwater runoff to allow sediment and other pollutants to settle and prevent them from flowing directly into receiving waterbodies. These facilities would adhere to the requirements of the existing NPDES permit, including the associated monitoring and reporting program.

In accordance with federal and state stormwater regulations, new construction and substantial redevelopment projects must maintain pre-project hydrology and incorporate proper pollutant source controls. Therefore, a single, level II infill correctional facility at the CMF/SOL Infill Site would provide adequate stormwater drainage facilities on the CDCR property to accommodate stormwater runoff demands, and other cumulative developments would be required provide adequate stormwater facilities. Therefore, the development of level II infill correctional facilities at CMF/SOL would not have a considerable contribution to cumulative stormwater drainage impacts such that a new cumulative impact would occur. This is a ***less-than-significant*** *cumulative impact.*

4.4.9 LAND USE, AGRICULTURE, AND FORESTRY RESOURCES

No existing or reasonably foreseeable land use impacts were identified as a result of development of the single, level II infill correctional facility at the CMF/SOL Infill Site because it would not physically divide a community or conflict with any policies adopted for the purposes of avoiding environmental or agricultural impacts. While development of the infill site in combination with the related projects would result in land use changes, such changes are generally consistent with the goals and policies found in the City's and County's General Plan. Therefore, cumulative land use impacts would be less than significant.

The cumulative loss of farmland in the region is considered a significant cumulative condition. However, as discussed in Section 3.4, "Land Use, Agriculture, and Forestry Resources," in Chapter 3 of this volume, development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in conversion of forest land to non-forest use; would not convert any prime farmland, unique farmland, or farmland of statewide importance; would not conflict with existing zoning for agricultural use of a Williamson Act contract; and would not involve any changes in the existing environment could result in conversion of farmland to nonagricultural use. Therefore, development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not contribute to the cumulative loss of farmland in the region.

Cumulative projects would comply with local policies and plans for development, but could result in the cumulative loss of farmland. Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in any land use impacts (physically divide a community or violate a policy intended to avoid a significant environmental impact) nor impacts to important farmland, and would be consistent with relevant policies of state and local jurisdictions. Therefore, the project would not have a considerable contribution to cumulative land use, agriculture, and forestry resources impacts and would therefore result in ***less-than-significant*** *cumulative land use impacts.*

4.4.10 NOISE

The geographic context for the analysis of cumulative noise impacts depends on the impact being analyzed. As described in Section 3.9 in Chapter 3 of this volume, noise is a localized occurrence and attenuates with distance. For construction and stationary source impacts, only the immediate area around a site would be included in the cumulative context. For example, construction and stationary source impacts related to noise dissipate/attenuate quickly as the distance between the site and the receptor increases. As a result, only those construction projects located within a distance of no more than 1,000 feet would be considered within the cumulative context of construction and stationary source noise.

For operational/roadway related impacts, the context is the increase in roadway volumes as a result of existing and future development within the local area (i.e. the Cities of Vacaville and Fairfield). It should be noted that future roadway volumes contain regional growth calculations as they would affect traffic volumes within the area, and are thus considered cumulative. Traffic-related noise increases discussed under in Section 3.9 include an evaluation of cumulative impacts, as both increases in noise associated with development of the infill site and regional traffic levels are analyzed.

Construction of a single, level II infill correctional facility at the CMF/SOL Infill Site would result in less-than-significant site-specific noise impacts and would not otherwise expose offsite receptors to significant construction noise. City noise regulations limit construction activities to daytime hours and noise levels are not directly additive and attenuate rapidly with distance. No projects shown in Exhibit 4-1 are located close enough (i.e., 1,000 feet) to the infill site that they could combine with construction noise from development at the infill site. Therefore, there is not a cumulative noise impact. Therefore, construction of a single, level II infill correctional facility would not cause a cumulatively considerable incremental contribution to cumulative noise impacts.

Construction at the infill site would also produce temporary vibration. However, the construction vibration impact of the contemplated development would be less than significant due to the distance between source and receptors. Potential cumulative construction vibration impacts are considered extremely localized (less than 500 feet) and no cumulative projects or receptors are located within 500 feet of the infill site. As such, construction vibration at the infill site would not be considered cumulatively considerable.

As described in Section 3.9, “Noise,” operational noise levels associated with operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in noise levels that exceed state exterior or interior noise compatibility standards. Further, as noted in Table 3.9-13 and 3.9-14 of Section 3.9, “Noise” of this volume of the DEIR, potential operational noise levels associated with an infill facility at CMF/SOL as perceived at offsite receptors would be substantially less (>10 dBA) than Title 24 standards. As such, development of the infill facility would not be considered cumulatively considerable such that noise levels may exceed state noise compatibility standards. Therefore, the development would not result in a considerable contribution to operational noise impacts.

Future traffic noise levels were modeled using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model and are presented in Table 3.9-12 of Section 3.9, “Noise” in Chapter 3 of this volume. Substantial permanent increases (i.e. greater than 3 A-weighted decibels [dBA]) in roadway noise levels would not occur at any of the study roadway segments, and no significant cumulative impacts are anticipated. Further, the anticipated increase that would occur would largely result from increased traffic generated by other local development.

Traffic noise levels would not exceed applicable exterior standards (65 decibels [dB] day-night noise level [L_{dn}]) or result in a substantial increase in ambient noise levels at the CDCR property, as shown in the aforementioned tables. Assuming a 25-dB reduction as a result of exterior-to-interior transmission

loss from building façades, interior traffic noise levels would not exceed applicable interior standards (State of California Title 24 Noise Standards for Detention Facilities, 70 dB equivalent noise level [L_{eq}] daytime and 45 dB L_{eq} nighttime). Therefore, cumulative vehicular noise sources are not expected to result in noise in excess of applicable standards or in a substantial increase in ambient noise levels at the CMF/SOL Infill Site.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in a considerable contribution to cumulative construction, vibration, or onsite operational noise impacts. The contemplated development would not result in noise levels that would cumulatively combine with other cumulative projects such that they would exceed state construction or operational noise compatibility standards. Further, the development, in combination with cumulative development, would not result in a substantial increase in traffic noise along area roadways. Therefore, the project would not result in a considerable contribution such that a new significant cumulative noise impacts would occur and cumulative noise impacts would be ***less than significant****.*

4.4.11 PUBLIC SERVICES

Cumulative development in the region, including development of level II infill correctional facilities at CMF/SOL, would result in the concentration of persons and structures within local police and fire jurisdictions. It is anticipated that local jurisdictions would require that all new cumulative development provide or fund the necessary police, fire and emergency response services to serve those developments consistent with relevant local policies addressing these issues. Therefore, cumulative public services impacts would be less than significant. As described in Section 3.10, “Public Services,” in Chapter 3 of this volume, the new single, level II infill correctional facility would use existing CMF/SOL fire response personnel, and law enforcement would be provided by the correctional personnel staffing the facilities at all times. Although assistance from other local fire, law enforcement, and emergency response agencies could be required if an incident at the infill site were to exceed the capabilities of onsite personnel and facilities, this back-up assistance is currently provided for CMF/SOL by these agencies, and a new level II infill correctional facility would not be expected to substantially increase the demand for these agencies to provide this back-up assistance. Therefore, the project would not result in a cumulatively considerable contribution such that a significant cumulative public services impact would occur.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in a substantial population increase throughout the region and would utilize existing CMF/SOL fire response and law enforcement personnel. In addition, cumulative development would provide or fund the necessary police, fire and emergency response services to serve those developments consistent with relevant local policies addressing these issues. Therefore, cumulative impacts to police, fire, and emergency services demands would be ***less than significant*** *and the project would not result in a cumulatively considerable contribution such that a significant cumulative public services impact would occur.*

4.4.12 TRANSPORTATION

Cumulative traffic impacts are evaluated and presented in Section 3.11, “Transportation,” in Chapter 3 of this volume.

4.4.13 UTILITIES

WATER SUPPLY

As discussed in Section 3.12, "Utilities and Service Systems," in Chapter 3 of this volume water is supplied to CMF/SOL by SID and the City of Vacaville. The geographic area that could be affected by the level II infill correctional facility at CMF/SOL is the area that is served by water supplies from the Solano Irrigation District (SID) and the City of Vacaville. Existing agreements with CDCR provide up to 1,200 acre feet per year (afy) from SID and 560 afy from the City of Vacaville, totaling 1,760 afy for CMF/SOL. The estimated potable water demand, considering recorded demand from existing CMF and SOL, estimates of the newly-established 64-Bed Intermediate Care Facility (ICF), and the proposed level II infill correctional facility, of 1,037 afy is less than the allowable maximum identified in CDCR's existing agreements (1,760 afy) and less than historical water demand at CMF/SOL, as shown in Table 3.12-6 in Section 3.12, "Utilities." Therefore, no new or expanded entitlements would be required as a result of a single, level II infill correctional facility at the CMF/SOL Infill Site. Water agencies would be able to continue to meet cumulative water demands within their service areas and this would be a less-than-significant cumulative impact.

CDCR relies on water per agreements for 1,760 afy from SID and the City of Vacaville to serve the CMF/SOL facilities. Because CMF/SOL, including operation of a single, level II infill correctional facility, would demand less water than the existing water allocation, the project would not result in a considerable contribution such that a new significant water supply impact would occur. This would be a ***less-than-significant*** *cumulative water supply impact.*

WASTEWATER TREATMENT

The collected wastewater flows from CMF/SOL are, and would continue to be, transported to the Easterly Wastewater Treatment Plant (WWTP) for treatment and disposal. As part of this system, flows from the CMF/SOL Infill Site would travel through a new onsite sanitary sewer line to the SOL headworks facility, and would then discharge into the City's wastewater collection system. The wastewater flows of the existing CMF and SOL, the newly-established 64-Bed ICF, and the proposed level II infill correctional facility is estimated at 1,367,480 gpd. The Joint Powers Agreement allows for up to 1,524,500 gpd to be sent from CMF/SOL to the Easterly WWTP. Therefore, new single, level II infill correctional facility at CMF/SOL would not result in an exceedance of the existing JPA agreements. Because flows would remain within the agreed upon levels, the Easterly WWTP would not require new or expanded facilities. Furthermore, the cumulative development, which includes a great deal of residential units, would provide or fund the necessary wastewater treatment disposal and treatment facilities to serve those developments consistent with relevant local policies.

Because adequate treatment capacity is available to treat wastewater flows from cumulative development, no significant cumulative wastewater treatment impact would occur. Further, development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in an exceedance of the existing wastewater treatment agreement. Therefore, a single, level II infill correctional facility at the CMF/SOL Infill Site would not, either individually or in combination with other development, require the expansion of existing wastewater treatment facilities, and the project would not result in a considerable contribution such that a new significant cumulative wastewater treatment impact would occur. This would be a ***less-than-significant*** *cumulative wastewater treatment impact.*

SOLID WASTE, ELECTRICITY AND NATURAL GAS

The single, level II infill correctional facility proposed at the CMF/SOL Infill Site, in combination with cumulative development in the region, would increase demands for solid waste disposal capacity; however, substantial capacity is available at the Recology Hay Road Landfill to meet this demand.

Therefore, cumulative solid waste impacts would be less than significant. Construction and operation of a single, level II infill correctional facility at the CMF/SOL Infill Site would be anticipated to generate an additional 2,850 pounds of solid waste per day. This would constitute a 10 percent increase in waste generated. This constitutes a very small percent of the daily tonnage of solid waste accepted at the Recology Hay Road Landfill, which has a remaining capacity of approximately 30.4 million cubic yards, as of 2010, and is expected to have available capacity until 2077. In addition, the level II infill correctional facility would have its own recycling program that would result in the weekly diversion of recyclable waste from the waste stream, reducing the amount of infill site waste that would need to be sent to a local landfill. Therefore, the project would not have a considerable contribution such that a new significant cumulative solid waste impact would occur.

Development of a single, level II infill correctional facility at the CMF/SOL Infill Site, in combination with cumulative development in the region, would result in an increase in electrical and natural gas demands. Pacific Gas and Electric (PG&E), the local natural gas service provider, anticipates it would have the capacity to serve the level II infill correctional facility demand with existing infrastructure and system-wide utility capacity. This would be a less-than-significant cumulative impact. No offsite improvements would be needed to satisfy the additional demand for natural gas. In addition, the proposed project would not limit PG&E's ability to serve other existing and future development in the region, including related projects. The total amount of energy supplied by PG&E in its northern and central California service area is estimated to be 887 million cubic feet per day of natural gas. More natural gas is projected to become available as additional natural gas sources are developed in the future. Therefore, sufficient natural gas supplies are available to support cumulative development and cumulative natural gas impacts from the proposed project and from related projects. This would be a less-than-significant cumulative impact.

The Recology Hay Road Landfill and PG&E have adequate capacity to meet the demands associated with a single, level II infill correctional facility at the CMF/SOL Infill Site. Therefore, the development of a single, level II infill correctional facility at the CMF/SOL Infill Site would not result in a considerable contribution such that a new significant cumulative solid waste, electricity, or natural gas impacts would occur. This would be a ***less-than-significant*** *cumulative utilities impact.*

4.4.14 VISUAL RESOURCES

Development of past and current projects, and future proposed projects continue to alter the visual environment of Vacaville and the surrounding area. In general, the visual resource impacts of the related projects listed above are site specific and would not necessarily combine with other projects that are not in the same viewshed to create a cumulative impact. Any related projects in close proximity to the infill site would be most likely to result in cumulative impacts to visual resources in combination with the impacts of the infill site development. For the CMF/SOL Infill Site, there are no related projects that are in close enough proximity that a cumulative effect would occur in the viewsheds that include the infill site. Therefore, development of a level II infill correctional facility at the infill site would not have a considerable contribution to any significant cumulative impact related to viewsheds.

However, a significant cumulative impact exists as a result of regional skyglow that is created by regional sources, including the perimeter and high mast lights at existing CMF/SOL facilities and other urban uses in the vicinity. The level II infill correctional facility would contribute, along with the projects listed in Table 4-1 to increased skyglow in the region. The high mast lighting in particular would make a substantial contribution to skyglow. CDCR uses lighting in all its new facilities, which is designed to cast light only where needed, and to cut off glare to offsite areas. There are no other known measures that CDCR can implement that would provide sufficient lighting to maintain security needs without some of this light being visible off the CDCR property. Therefore, no mitigation measures are available to decrease the effects of skyglow from high mast lighting while at the same time meeting CDCR's security and safety requirements. Therefore, the project's lighting impacts would remain significant and

unavoidable, and the project would have a considerable contribution to a significant cumulative nighttime lighting and skyglow impact.

Development a single, level II infill correctional facility at the CMF/SOL Infill Site in combination with cumulative development would not result in substantial changes to the local viewshed because it would be compatible with the surrounding visual environment. New lighting sources associated with a single, level II infill correctional facility and cumulative development would contribute considerably to the overall skyglow. Therefore, the project would result in a considerable contribution to a ***significant and unavoidable*** *cumulative visual impact.*

5 OTHER CEQA SECTIONS

5.1 SIGNIFICANT UNAVOIDABLE IMPACTS

5.1.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT GUIDELINES

Section 21100(b)(2)(A) of the State of California Environmental Quality Act (CEQA) Guidelines provides that an environmental impact report (EIR) shall include a detailed statement setting forth "in a separate section: any significant effect on the environment that cannot be avoided if the project is implemented." Accordingly, this section provides a summary of significant environmental impacts of the development of the California Medical Facility/California State Prison, Solano (CMF/SOL) Infill Site with a single, level II infill correctional facility that cannot be mitigated to a less-than-significant level.

5.1.2 SIGNIFICANT UNAVOIDABLE IMPACTS OF THE PROJECT

Chapter 3, "Environmental Setting, Thresholds of Significance, Environmental Impacts, and Mitigation Measures," provides a description of the potential environmental impacts of the project and recommends various mitigation measures to reduce impacts, to the extent feasible. Chapter 4, "Cumulative Impacts," determines whether the incremental effects of this contemplated development are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of reasonably foreseeable future projects. After implementation of the recommended mitigation measures, most of the impacts associated with development of level II infill correctional facilities at the CMF/SOL Infill Site project would be reduced to a less-than-significant level. The following impacts are considered significant and unavoidable; that is, no feasible mitigation is available to reduce the impacts to a less-than-significant level. Chapter 5, "Alternatives" in Volume 1 of this DEIR considers alternatives to the contemplated development that may be capable of reducing or avoiding some of these impacts.

TRANSPORTATION

Impact 3.11-4: Construction-Related Traffic Impacts

With development of a single, level II infill correctional facility at the CMF/SOL Infill Site, construction traffic could result in significant short-term traffic impact on several local intersections. Although CDCR would prepare and implement a construction traffic management plan (TMP) to improve and manage construction-related traffic conditions on area roadways, until the specific parameters of the construction activities and the details of the TMP are developed, it is possible that feasible mitigation measures would not be available for all construction-related impacts. However, the details of these improvements cannot feasibly be developed at this time. Further, it is considered unlikely that the construction traffic associated with development of the infill site could be reduced to below the performance standard identified above. Therefore, for purposes of CEQA, this impact is concluded to remain **significant and unavoidable**.

VISUAL RESOURCES

Impact 3.13-1: Substantial Degradation of a Scenic Vista

An unobstructed view of the Vaca Mountains is provided by a break in the landscaping along Peabody Road at Morning Glory Drive. Implementation of a single, level II infill correctional facility at the CMF/SOL Infill Site would obstruct views of the lower slopes of the Vaca Mountains, and the lighting standards would intrude on views of the ridgelines. Although CDCR will make its best effort to design

facilities to reduce visual impacts through implementation of Mitigation Measure 3.13-1, the potential infill facility would nevertheless result in substantial changes to views of the Vaca Mountains. Impacts would be reduced; however because of the physical limitations of site-required security protocols, other design treatments (e.g., facades, interior landscaping, and architectural additions) are not feasible. Therefore, a **significant and unavoidable** scenic vista impact would remain.

Impact 3.13-2: Visual Character Impacts

The structures associated with a single, level II infill correctional facility at the CMF/SOL Infill Site, including fencing and lighting masts, could substantially change, and views of institutional facilities could become prominent features in the viewshed, depending on the specific location. Therefore, the development of level II infill correctional facilities at CMF/SOL could result in a degradation of visual quality of the site and its surroundings. Although CDCR will make its best effort to design facilities to reduce visual impacts through implementation of Mitigation Measure 3.13-1, the infill facility would nevertheless result in a substantial change in the local viewshed. Impacts would be reduced; however because of the physical limitations of site-required security protocols, other design treatments (e.g., facades, interior landscaping, and architectural additions) are not feasible. Therefore, a **significant and unavoidable** impact to the existing visual character and quality of the area would remain.

Impact 3.13-3: Light and Glare Impacts

The lighting for the contemplated single, level II infill correctional facility at the CMF/SOL Infill Site would be similar in appearance to existing lighting at CMF/SOL facilities and would be viewed against the backdrop of existing lighting at the CMF/SOL facilities and existing street lighting in neighborhoods surrounding the infill site. However, because of the increased number of lighting sources, development of the infill site with level II infill correctional facilities would contribute to a substantial increase in nighttime glare in adjacent neighborhoods and skyglow that could be viewed from offsite areas. CDCR uses state-of-the-art lighting in all its new facilities, which is designed to cast light only where needed, and to cut off glare to offsite areas. There are no other known measures that CDCR can implement that would provide sufficient lighting to maintain security needs without some of this light being visible off the CDCR property. Therefore, no mitigation measures are available to decrease the effects of skyglow from high-mast lighting. This impact would remain **significant and unavoidable**.

5.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

The State CEQA Guidelines require a discussion of the significant irreversible environmental changes which would be involved in the project should it be implemented.

The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms. The contemplated development would result in the irreversible and irretrievable commitment of energy and material resources during construction, operation, and maintenance, including the following resources:

- construction materials, including such resources as rocks, wood, concrete, glass, roof shingles, and steel;
- land area committed to new project facilities;
- water supply for project operation; and
- energy expended in the form of electricity, gasoline, diesel fuel, and oil for equipment and transportation vehicles that would be needed for project construction and operation.

In compliance with Governor Arnold Schwarzenegger's Executive Order S-20-04, which requires all state projects over 10,000 square feet to meet Leadership in Energy and Environmental Design (LEED) Silver standards, as stated in Chapter 3, "Project Description" in Volume 1 of this draft EIR (DEIR), CDCR has committed to meeting or exceeding LEED Silver standards for the contemplated level II infill correctional facilities. The design process would operate under the expectation of best long-term cost and environmental value, having a direct connection to the concept of sustainability and a possible result of LEED Gold or Platinum. As part of this process, efforts would be made to utilize recycled and renewable materials, and the buildings would be designed using energy efficient technologies. Some nonrenewable resources would still be required, however. These nonrenewable resources are expected to account for a minimal portion of the region's resources and would not affect the availability of similar resources for other needs within the region. Long-term operational energy and natural resource consumption is expected to be less than significant. Construction activities would not result in inefficient use of energy or natural resources. Construction contractors selected would use best available engineering techniques, construction and design practices, and equipment operating procedures. Because the contemplated level II infill correctional facility would be LEED certified and use energy efficient materials where appropriate, potential irreversible changes related to long-term consumption of energy and natural resources would be less than significant.

5.3 GROWTH INDUCEMENT

5.3.1 STATE CEQA GUIDELINES

CEQA Section 21100(b)(5) specifies that growth-inducing impacts of a project must be addressed in an EIR. State CEQA Guidelines Section 15126(d) states that a project is growth inducing if it could "foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Included in the definition are projects that would remove obstacles to population growth. Examples of growth-inducing actions include developing water, wastewater, fire, or other types of services in previously unserved areas, extending transportation routes into previously undeveloped areas, and establishing major new employment opportunities. The following is a summary of the direct and indirect growth-inducing impacts that could result with implementation of a level II infill correctional facility at CMF/SOL.

5.3.2 GROWTH-INDUCING IMPACTS OF THE PROJECT

Project construction would foster substantial short-term and long-economic growth associated with construction-related and operational employment opportunities. Construction would begin in spring 2014. The infill facility is estimated to take approximately 26 months to complete. During construction, the estimated peak level of construction workers at any given time would be 355. Upon initiation of operational activities, the contemplated facility would employ 193 people, including correctional officers, medical/mental health personnel, vocational and educational staff, facility maintenance personnel, and administrative support staff. Operation of the level II infill correction facility would foster long-term growth in three ways:

- direct growth related to employment at the level II infill correctional facility,
- growth related to induced employment resulting from jobs created to provide goods and services to the employees, and
- growth resulting from facility expenditures.

CDCR estimates that each new position creates approximately 0.5 indirect or secondary jobs through payrolls and the purchase of local goods and services. Based on the wide geographic distribution of residences of existing employees of the CMF/SOL, and given that most induced jobs would require skill levels that could be provided by existing residents of the region (i.e., City of Vacaville and other nearby

communities), induced employment is not anticipated to have a substantial effect on population growth. Implementation of a level II infill correctional facility at CMF/SOL would not substantially increase population growth in the surrounding region because it would not require the construction of new housing (see Section 3.4, “Employment, Population, and Housing,” of this volume for further discussion). The contemplated development would not remove barriers to population growth because no new or expanded (beyond what is currently planned by local jurisdictions) public infrastructure facilities would be installed. Further, is unlikely to tax existing local or regional community service facilities based on the anticipated geographic distribution of anticipated employees (see Section 3.10, “Public Services,” of this volume for additional discussion).

Although the contemplated development would foster some economic and population growth associated with new employment opportunities at the level II infill correctional facility, this growth would not substantially affect the ability of public service providers to serve their existing customers, nor would it require the construction of new facilities to serve the project. This growth would be widely dispersed throughout Solano, Yolo, and Contra Costa Counties and would not result in an increased demand for housing in these areas. As noted in Section 3.4, “Employment, Population, and Housing,” of this volume, the population and employment growth expected with implementation of a level II infill correctional facility would not exceed the projections of local general plans in the communities surrounding the infill site. Additionally, the contemplated development would not extend infrastructure and public services to serve areas outside of the existing CDCR property, which includes the infill site and CMF/SOL.

In conclusion, the contemplated level II infill correctional facility has the potential to stimulate the economy both directly (by providing jobs) and indirectly (by creating a demand for local goods and services) in the region. Because of the general availability in the labor market and current unemployment rates, there would be an opportunity to fill some positions with local residents, while other positions would be filled by new employees that would relocate to the region. This in-migration would not substantially affect housing growth because new housing generated by the project would account for only a small percentage of existing housing, and the current high number of foreclosures in the region caused by current economic conditions may result in decreased demand. Further, the contemplated development at the CMF/SOL Infill Site would not meaningfully affect employment or other growth in the region, given the size of the regional economy. Therefore, the project would not contribute to substantial population growth.

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