

# Final Environmental Impact Report Solano County 2008 Draft General Plan



**SCH # 2007122069**

**Volume I**

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July 21, 2008

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Final Environmental Impact Report  
Solano County 2008 Draft General Plan



SCH # 2007122069

Volume I

Prepared for:

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## COUNTY OF SOLANO GENERAL PLAN UPDATE

Department of Resource Management  
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July 21, 2008

RE: Final EIR – 2008 Solano County General Plan

A comprehensive update of the Solano County General Plan was initiated in 2006 by the Board of Supervisors. After months of meetings by the Citizens Advisory Committee, Planning Commission and Board of Supervisors the Draft General Plan was released for public review this spring.

The Draft Environmental Impact Report for the 2008 Draft Solano County General Plan was released for public review on April 18, 2008, with the formal public review period concluding on June 2, 2008. The Solano County Planning Commission on May 15, 2008 held a public hearing to accept comments on the Draft EIR.

The Final EIR for the 2008 Draft Solano County General Plan is enclosed with this transmittal. Environmental review in compliance with California Environmental Quality Act Guidelines (CEQA) is required as part of the County's consideration of the 2008 Draft General Plan. CEQA requires the County of Solano to include in the Final EIR responses to comments received on the Draft EIR which describe the disposition of any significant effects identified by commenters.

The Solano County Board of Supervisors will conduct a public hearing to review the Final EIR and receive public comments at 9:00 a.m. on Tuesday, July 29 2008, at the Solano County Board of Supervisors Board Room, 675 Texas Street, 1<sup>st</sup> Floor, Fairfield, California. The Board of Supervisors will consider certification of the Final EIR for the 2008 Solano County General Plan on August 5, 2008.

If you have any further questions regarding the Final EIR for the 2008 Solano County General Plan please contact Jim Louie, Senior Planner at either 707.784.3173 or [jalouie@solanocounty.com](mailto:jalouie@solanocounty.com).

A handwritten signature in black ink, appearing to read "Jim Louie".

Jim Louie, Senior Planner



## **NOTICE OF PUBLIC HEARING ON THE FINAL ENVIRONMENTAL IMPACT REPORT FOR THE 2008 SOLANO COUNTY GENERAL PLAN**

NOTICE IS HEREBY GIVEN that the County of Solano has prepared a Final Environmental Impact Report (FEIR) for the 2008 Draft Solano County General Plan.

This Final Environmental Impact Report (FEIR) evaluates the broad-scale impacts of the *2008 Solano County General Plan Update* (2008 Draft General Plan). The 2008 General Plan FEIR is a program EIR under the California Environmental Quality Act Guidelines (State CEQA Guidelines) (California Code of Regulations, Title 14, Sections 15000 et seq. [14 CCR 15000 et seq.]). A program EIR "may be prepared on a series of actions that can be characterized as one large project and are related in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program" (State CEQA Guidelines Section 15168[a][3]). In this case, the program EIR will address the 2008 Draft General Plan, which is the proposed project. This program EIR considers a series of actions needed to achieve the implementation of the 2008 Draft General Plan.

Environmental review in compliance with CEQA (Public Resources Code Sections 21000 et seq.) is required as part of the County's consideration of the 2008 Draft General Plan. PPC Section 21091 requires the County of Solano to include in the Final EIR responses to comments received on the Draft EIR which describe the disposition of any significant effects identified by commenters. PRC Section 21092.5 further requires the written responses to the comments submitted by public agencies to provide to those agencies at least 10 days prior to certification of the Final EIR.

The FEIR includes the required elements of Public Resources Code, Section 21000 et seq for the Final Environmental Impact Report for the 2008 Solano County General Plan. The Board of Supervisors must certify the EIR as a complete, accurate, and objective analysis prior to taking action on the 2008 Solano County General Plan. Responsible and trustee agencies will need to use the EIR prepared by the County when considering adoption of the 2008 Solano County General Plan. If you decide to challenge the action of the County in court, you may be limited to raising only those issues you or someone else raised at or prior to the final public hearing on the 2008 Solano County General Plan.

The Solano County Board of Supervisors will conduct a public hearing to review the Final EIR and receive public comments at 9:00 a.m. on Tuesday, July 29, 2008, at the Solano County Board of Supervisors Board Room, 675 Texas Street, 1<sup>st</sup> Floor, Fairfield, California. The Board of Supervisors will consider certification of the Final EIR for the 2008 Solano County General Plan on August 5, 2008.

Please submit any requests for a CD disk copy of the Final EIR, your written comments, including the name, address and telephone number of a contact person to: Jim Louie, Sr. Planner, Solano County Department of Resource Management, 675 Texas Street, Suite 5500, Fairfield, CA 94533 (707) 784-6765.

Copies of the Final EIR can be reviewed at the Department of Resource Management at the above address beginning on July 21, 2008. Additional copies can be reviewed at all public libraries in Dixon, Rio Vista, Vacaville, Fairfield, Suisun City, Benicia and Vallejo and on the internet website at [www.solanocountygeneralplan.net](http://www.solanocountygeneralplan.net).

***Daily Republic – display ad/one time – Friday, July 18, 2008***

***Dixon Tribune – legal ad/one time – Friday, July 18, 2008***

***Benicia Herald – legal ad/one time – Friday, July 18, 2008***

***Vacaville Reporter – legal ad/one time – Friday, July 18, 2008***

***Vallejo Times Herald – legal ad/one time – Friday, July 18, 2008***

***Rio Vista River News Herald – legal ad/one time – Wednesday, July 23, 2008***

***Winters Express – legal ad/one time – Thursday, July 17, 2008***



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## ACRONYMS AND ABBREVIATIONS

2008 Draft General Plan	<i>2008 Solano County General Plan Update</i>
AB	Assembly bill
ABAG	Association of Bay Area Governments
Af	acre-feet
afy	acre-feet per year
BMO	basin management objective
Btu	British thermal unit(s)
Cal Water	California Water Service Company
CALFED	California Bay-Delta Authority
Caltrans	California Department of Transportation
cfs	cubic feet per second
County	Solano County
CVP	Central Valley Project
CWA	Clean Water Act of 1972
DDT	dichlorodiphenyltrichloroethane
DEIR	draft environmental impact report
Delta	Sacramento–San Joaquin Delta
DSMWS	Dixon-Solano Municipal Water Service
DSOD	Division of Safety of Dams
DTSC	California Department of Toxic Substances Control
DU	dwelling unit
DWR	California Department of Water Resources
EIR	environmental impact report
ESA	federal Endangered Species Act
FEIR	final environmental impact report
FEMA	Federal Emergency Management Agency
FIRM	flood insurance rate map
gpd	gallons per day
JPA	joint powers authority
maf	million acre-feet
MCL	maximum contaminant level
Mojave	Mojave Water Agency
MPWD	Maine Prairie Water District
MS4	municipal separate storm sewer system
MSA	municipal service area
NBA	North Bay Aqueduct
NBR	North Bay Regional
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System

## ACRONYMS AND ABBREVIATIONS

NWIC	Northwest Information Center
OES	Governor's Office of Emergency Services
OWTS	on-site wastewater treatment systems
PCB	polychlorinated biphenyl
PEIS	program environmental impact statement
PG&E	Pacific Gas and Electric Company
PIER	Public Interest Energy Research
ppb	parts per billion
PRC	Public Resources Code
RCD	resource conservation district
Reclamation	U.S. Bureau of Reclamation
RHND	Regional Housing Needs Determination
RNVWD	Rural North Vacaville Water District
RPPI	Reason Public Policy Institute
SB	Senate Bill
SCWA	Solano County Water Agency
SID	Solano Irrigation District
Solano HCP	<i>Solano Multi-Species Habitat Conservation Plan</i>
SR	State Route
SRG	Solimar Research Group
SSWA	Suisun-Solano Water Authority
SWMP	stormwater management plan
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
UBC	Uniform Building Code
UC Davis	University of California, Davis
VMT	vehicle miles traveled
VPW	Vallejo permit water
WDR	waste discharge requirement
WTP	water treatment plant



# 1 INTRODUCTION

## 1.1 OVERVIEW AND PURPOSE OF THIS DOCUMENT

This document is a final environmental impact report (FEIR) prepared for the *2008 Solano County General Plan Update* (2008 Draft General Plan) in accordance with the California Environmental Quality Act (CEQA). CEQA (Section 21092.5) and the State CEQA Guidelines (Section 15086) require a lead agency that has completed a draft environmental impact report (DEIR) to consult with and obtain comments from public agencies that have legal jurisdiction with respect to the proposed project, and to provide the general public with opportunities to comment on the DEIR. In accordance with CEQA, the DEIR was circulated for a 45-day public and agency review period ending on June 2, 2008. Comments were received from federal, state, regional, and local agencies, and from individuals. An open house to receive public input on the DEIR was held at the Ulatis Community Center in Vacaville on April 21, 2008, and a public hearing was held at the Solano County (County) Government Center on May 22, 2008. As required by CEQA and the State CEQA Guidelines, this FEIR has been prepared to respond to comments received from agencies and members of the public on the DEIR for the 2008 Draft General Plan.

As a program environmental impact report (EIR) under the State CEQA Guidelines (Section 15168[a]), the DEIR evaluated the overall effects of the 2008 Draft General Plan, which provides policy guidelines for the unincorporated portions of Solano County to direct growth and development. The 2008 Draft General Plan is the proposed project for purposes of this EIR. The DEIR did not examine the effects of site-specific development projects that may occur within the overall umbrella of this program in the future.

The project proposes a comprehensive update to the County's current general plan and aims to address two overarching themes: protecting agricultural lands and the county's rural character, and encompassing sustainability as it relates to the environment, the economy, and social equity. To address these themes, the 2008 Draft General Plan is organized as topical chapters: Land Use, Agriculture, Resources, Public Health and Safety, Economic Development, Circulation, and Public Facilities and Services. The current Housing and Parks and Recreation Elements were recently updated and adopted before the comprehensive update, and are therefore not a part of the proposed project.

In analyzing the 2008 Draft General Plan, the DEIR examined two buildout scenarios for each project impact: the "Preferred Plan" scenario and the "Maximum Development Scenario," which are described in Chapter 3, "Project Description," of the DEIR, and further explained in Master Response B, "Use of Two Development Scenarios," in Chapter 2 of this FEIR. In addition to the 2008 Draft General Plan, the DEIR analyzed the following project alternatives (see Chapter 5, "Alternatives to the Proposed Project," of the DEIR for details):

- ▶ Alternative 1. No Project: Existing General Plan
- ▶ Alternative 2. Improved Environmental Sustainability
- ▶ Alternative 3. Reduced Commercial and Industrial Development
- ▶ Alternative 4. Reduced Rural Residential Development

The 2008 Draft General Plan FEIR consists of this document and the DEIR, which was published on April 18, 2008. The DEIR is hereby incorporated by reference. Copies of the FEIR are available for review during normal business hours at the County Department of Resource Management, 675 Texas Street, Suite 5500, in Fairfield; the FEIR is also available online at <[www.solanocountygeneralplan.net](http://www.solanocountygeneralplan.net)>.

The State CEQA Guidelines state that written responses to comments received on the DEIR must describe the disposition of significant environmental issues. In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed.

## 1.2 REQUIREMENTS FOR CERTIFICATION AND FUTURE STEPS

As the public agency principally responsible for approving or carrying out the proposed project, the County is the lead agency under CEQA and is responsible for reviewing and certifying the adequacy of the FEIR and approving the proposed project. The County Board of Supervisors will hold a public meeting after completion of the FEIR to consider certification of the FEIR and to decide whether or not to approve the proposed project (i.e., the 2008 Draft General Plan). The Board does have a choice to adopt the 2008 Draft General Plan as recommended by the Citizens' Advisory Committee or the Planning Commission or to modify the plan based on one or more of the alternatives analyzed in the EIR or combination thereof.

Alternatively, the board could elect to adopt one of the alternatives (listed above) instead of the 2008 Draft General Plan, or to modify the 2008 Draft General Plan based on components of one or more of the alternatives analyzed in the DEIR or a combination thereof. Following project approval, a notice of determination will then be filed. If the County Board of Supervisors approves the 2008 Draft General Plan, it will prepare and adopt written findings of fact for each significant environmental impact identified in the EIR; a statement of overriding considerations, if needed; and a mitigation monitoring and reporting program.

CEQA requires that an "environmentally superior" alternative among the alternatives to the proposed project (i.e., alternatives to the 2008 Draft General Plan) considered be selected and that the reasons for such selection be disclosed. In general, the environmentally superior alternative is the alternative that would generate the fewest or least severe adverse impacts. As described in the DEIR, based on the available information, Alternative 2 (Improved Environmental Sustainability) would be the environmentally superior alternative under CEQA because it would reduce impacts in the greatest number of topic areas relative to the 2008 Draft General Plan. The ability of the alternative to meet some or most of the project objectives is also an important consideration.

## 1.3 ORGANIZATION AND FORMAT OF THE FEIR

This FEIR is organized as follows:

- ▶ **Chapter 1, "Introduction,"** describes the purpose and content of the FEIR. This chapter also includes a summary of environmental impacts of the proposed project, mitigation measures, and the residual impact after mitigation measures are applied. Although the DEIR contained this summary in Chapter 2, "Executive Summary," certain mitigation measures may have been revised as part of the FEIR. As noted below, changes to mitigation measures contained in the DEIR are shown in strikeout and underlined text in Chapter 4 of this FEIR.
- ▶ **Chapter 2, "Master Responses,"** presents responses to environmental issues raised in multiple comments. These have been termed "master responses." They are organized by topic to provide a more comprehensive response than may be possible in responding to individual comments, and so that reviewers can readily locate all relevant information pertaining to an issue of concern.
- ▶ **Chapter 3, "Comments and Individual Responses,"** contains a list of all agencies and persons who submitted comments on the DEIR during the public review period, copies of the comment letters submitted, cross references to relevant master responses, and individual responses to the comments that are not addressed in master responses.
- ▶ **Chapter 4, "Corrections and Revisions to the DEIR,"** presents corrections and other revisions to the DEIR text based on issues raised by comments, clarifications, or corrections. Changes in the text are signified by strikeouts where text is removed and by underlined text where text is added.
- ▶ **Chapter 5, "Proposed General Plan Modifications,"** presents modifications that would be made to the 2008 Draft General Plan based on the EIR analysis.

- ▶ **Chapter 6, “FEIR References,”** includes the references cited within the master responses (Chapter 2) and individual responses to comments (Chapter 3) in this FEIR.
- ▶ **Chapter 7, “FEIR Preparers,”** lists the individuals who assisted in the preparation of this FEIR.

As mentioned previously, this document and the DEIR together comprise the FEIR.

## **1.4 SUMMARY OF IMPACTS AND MITIGATION MEASURES**

Table 1-1 lists the environmental impacts of the Preferred Plan and Maximum Development Scenario, the level of significance of each impact before mitigation, recommended mitigation measures, and the level of significance of each impact after mitigation. Changes to impacts and mitigation measures made since the DEIR was published are shown in ~~strikeout~~ and underlined text and can also be found in Chapter 4 of this FEIR.

<b>Table 1-1 Summary of Project Impacts and Mitigation Measures</b>			
Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.1 Land Use</b>			
<b>4.1-1a (Preferred Plan) and 4.1-1b (Maximum Development Scenario):</b> Division of Established Communities	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.1-2a (Preferred Plan) and 4.1-2b (Maximum Development Scenario):</b> Conflict with Other Plans	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.1-3a (Preferred Plan) and 4.1-3b (Maximum Development Scenario):</b> Conflict with Adopted Habitat Conservation Plans	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.1-4a (Preferred Plan) and 4.1-4b (Maximum Development Scenario):</b> Incompatibility with Established Land Uses	S	<b>Mitigation Measures 4.1-4a(1) (Preferred Plan) and 4.1-1b(1) (Maximum Development Scenario):</b> Require Minimum Mitigation Ratio of 1.5:1 or Higher for Farmland Conversion  <b>Mitigation Measures 4.1-4a(2) (Preferred Plan) and 4.1-1b(2) (Maximum Development Scenario):</b> Require Use of Clustering and Building Envelope Size and Locational Controls	SU
<b>4.1-5a (Preferred Plan) and 4.1-5b (Maximum Development Scenario):</b> Inducement of Population Growth	S	No feasible mitigation is available to reduce this impact. This impact would remain significant and unavoidable without a reduction in acreage devoted to residential use, a decrease in residential densities to reduce the projected number of dwelling units, or the regulation of the number of residential building permits that may be issued annually. These potential mitigation measures could increase the cost of housing in Solano County, thereby conflicting with Objective C.1 and Policy C.1 of the 2008 Draft General Plan Housing Element, which promote the production of housing for all segments of the population at all income levels.	SU
<b>4.1-6a (Preferred Plan) and 4.1-6b (Maximum Development Scenario):</b> Displacement of Substantial Existing Housing	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.1-7a (Preferred Plan) and 4.1-7b (Maximum Development Scenario):</b> Displacement of Substantial Numbers of People	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS

**Table 1-1  
Summary of Project Impacts and Mitigation Measures**

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.2 Air Quality</b>			
<b><u>4.2-1a (Preferred Plan) and 4.2-1b (Maximum Development Scenario):</u></b> Generation of Short-Term Construction-Related Emissions of Criteria Air Pollutants and Precursors	S	<b><u>Mitigation Measures 4.2-1a(1) (Preferred Plan) and 4.2-1b(1) (Maximum Development Scenario):</u></b> Require Implementation of Supplemental Measures to Reduce Construction-Related Exhaust Emissions  <b><u>Mitigation Measures 4.2-1a(2) (Preferred Plan) and 4.2-1b(2) (Maximum Development Scenario):</u></b> Require Implementation of Supplemental Measures to Reduce Fugitive PM <sub>10</sub> Dust Emissions	SU
<b><u>4.2-2a (Preferred Plan) and 4.2-2b (Maximum Development Scenario):</u></b> Consistency with Air Quality Planning Efforts	S	<b><u>Mitigation Measures 4.2-2a (Preferred Plan) and 4.2-2b (Maximum Development Scenario):</u></b> Coordinate with Air Districts on Assumptions from Air Quality Plan Updates	SU
<b><u>4.2-3a (Preferred Plan) and 4.2-3b (Maximum Development Scenario):</u></b> Generation of Long-Term Operational, Regional Emissions of Criteria Air Pollutants and Precursors	S	<b><u>Mitigation Measures 4.2-3a (Preferred Plan) and 4.2-3b (Maximum Development Scenario):</u></b> Require Implementation of YSAQMD Design Recommendations for Development Projects	SU
<b><u>4.2-4a (Preferred Plan) and 4.2-4b (Maximum Development Scenario):</u></b> Generation of Long-Term, Operational, Local Mobile-Source Emissions of CO	S	<b><u>Mitigation Measures 4.2-4a(1) (Preferred Plan) and 4.2-4b(1) (Maximum Development Scenario):</u></b> Require Implementation of Measures to Reduce Operational Emissions from Mobile Sources  <b><u>Mitigation Measures 4.2-4a(2) (Preferred Plan) and 4.2-4b(2) (Maximum Development Scenario):</u></b> Implement EPA Recommendations for Wood-Burning Appliances	SU
<b><u>4.2-5a (Preferred Plan) and 4.2-5b (Maximum Development Scenario):</u></b> Exposure of Sensitive Receptors to Emissions of Toxic Air Contaminants	LTS (construction) LTS (operation)	<b><u>Mitigation Measures 4.2-5a (Preferred Plan) and 4.2-5b (Maximum Development Scenario):</u></b> Require Implementation of Measures to Reduce the Potential for Exposure to TACs from Mobile Sources	SU
<b><u>4.2-6a (Preferred Plan) and 4.2-6b (Maximum Development Scenario):</u></b> Exposure of Sensitive Receptors to Emissions of Odors	S	<b><u>Mitigation Measures 4.2-6a (Preferred Plan) and 4.2-6b (Maximum Development Scenario):</u></b> Require Implementation of Measures to Reduce Exposure of Sensitive Receptors to Odorous Emissions	SU

**Table 1-1  
Summary of Project Impacts and Mitigation Measures**

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.3 Noise</b>			
<b>4.3-1a (Preferred Plan) and 4.3-1b (Maximum Development Scenario):</b> Development of Noise-Sensitive Land Uses within Areas Subject to Noise Impacts	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.3-2a (Preferred Plan) and 4.3-2b (Maximum Development Scenario):</b> <u>Development of Noise-Producing Uses near Existing Noise-Sensitive Land Uses</u>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.3-3a (Preferred Plan) and 4.3-3b (Maximum Development Scenario):</b> <u>Traffic Noise Level Increases Caused by Development Consistent with the 2008 Draft General Plan</u>	S	<b><u>Mitigation Measures 4.3-3a (Preferred Plan) and 4.3-3b (Maximum Development Scenario):</u></b> Adopt Countywide Noise Reduction Program	SU
<b>4.3-4a (Preferred Plan) and 4.3-4b (Maximum Development Scenario):</b> <u>Possible Temporary, Short-Term Exposure of Sensitive Receptors to Vibration</u>	PS	<b><u>Mitigation Measures 4.3-4a (Preferred Plan) and 4.3-4b (Maximum Development Scenario):</u></b> Require Implementation of Measures to Reduce Temporary, Short-Term Project-Generated Vibration Levels from Construction	LTS
<b>4.4 Transportation and Circulation</b>			
<b>4.4-1a (Preferred Plan) and 4.4-1b (Maximum Development Scenario):</b> <u>Degradation of Roadway Levels of Service</u>	S	No feasible mitigation is available to fully mitigate this impact to a less-than-significant level.	SU
<b>4.4-2a (Preferred Plan) and 4.4-2b (Maximum Development Scenario):</b> <u>Adverse Effects on Emergency Access</u>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.4-3a (Preferred Plan) and 4.4-3b (Maximum Development Scenario):</b> <u>Potential for Inadequate Parking Capacity</u>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.4-4a (Preferred Plan) and 4.4-4b (Maximum Development Scenario):</b> <u>Potential for Conflict with Adopted Plans, Policies, or Programs Supporting Alternative Transportation</u>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.4-5a (Preferred Plan) and 4.5-5b (Maximum Development Scenario):</b> <u>Potential for Air Traffic Safety Risks</u>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.5 Hydrology and Water Resources</b>			
<b>4.5-1a (Preferred Plan) and 4.5-1b (Maximum Development Scenario):</b> <u>Violation of Water Quality Standards</u>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS

**Table 1-1  
Summary of Project Impacts and Mitigation Measures**

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b><u>4.5-2a (Preferred Plan) and 4.5-2b (Maximum Development Scenario): On-Site and Downstream Erosion and Sedimentation</u></b>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.5-3a (Preferred Plan) and 4.5-3b (Maximum Development Scenario): Construction-Related Water Quality Impacts</u></b>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.5-4a (Preferred Plan) and 4.5-4b (Maximum Development Scenario): Interference with Groundwater Recharge</u></b>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.5-5a (Preferred Plan) and 4.5-5b (Maximum Development Scenario): Exposure of People or Structures to Flood Hazards</u></b>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.5-6a (Preferred Plan) and 4.5-6b (Maximum Development Scenario): Potential for Failure of a Levee</u></b>	S	No feasible mitigation is available to reduce this impact.	SU
<b><u>4.5-7a (Preferred Plan) and 4.5-7b (Maximum Development Scenario): Potential for Failure of a Dam</u></b>	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.6 Biological Resources</b>			
<b><u>4.6-1a (Preferred Plan) and 4.6-1b (Maximum Development Scenario): Loss of Habitat for Swainson's Hawk, Other Raptors, and Burrowing Owl</u></b>	S	<b><u>Mitigation Measures 4.6-1a (Preferred Plan) and 4.6-1b (Maximum Development Scenario): Preserve Agricultural Foraging Habitat</u></b>	LTS
<b><u>4.6-2a (Preferred Plan) and 4.6-2b (Maximum Development Scenario): Loss of Value of Upland Grassland, Oak Woodland, Oak Savanna, and Scrub/Chaparral Habitats</u></b>	S	<b><u>Mitigation Measures 4.6-2a (Preferred Plan) and 4.6-2b (Maximum Development Scenario): Require a Habitat Inventory and Mitigation and Management Plans, and Specify a Replacement Ratio for Native Trees and Shrubs</u></b>	LTS
<b><u>4.6-3a (Preferred Plan) and 4.6-3b (Maximum Development Scenario): Loss or Reduction in Habitat Values of Valley Floor Grassland and Vernal Pool Grassland Habitats</u></b>	S	<b><u>Mitigation Measures 4.6-3a (Preferred Plan) and 4.6-3b (Maximum Development Scenario): Require a Habitat Inventory, Buffer Zones, and Appropriate Avoidance and Compensatory Measures to Mitigate Habitat Loss</u></b>	LTS
<b><u>4.6-4a (Preferred Plan) and 4.6-4b (Maximum Development Scenario): Potential for Direct and Indirect Impacts on Riparian, Stream, and Open-Water Habitats</u></b>	S	<b><u>Mitigation Measures 4.6-4a (Preferred Plan) and 4.6-4b (Maximum Development Scenario): Require an Inventory for Special-Status Species and Uncommon Habitats, and Appropriate Mitigation of Impacts on Valley Elderberry Longhorn Beetle, Salmonid, and Other Habitats</u></b>	LTS

**Table 1-1  
Summary of Project Impacts and Mitigation Measures**

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b><u>4.6-5a (Preferred Plan) and 4.6-5b (Maximum Development Scenario):</u></b> Potential for Direct and Indirect Impacts on Seasonal Wetlands	S	<b><u>Mitigation Measures 4.6-5a (Preferred Plan) and 4.6-5b (Maximum Development Scenario):</u></b> Require Surveys for Seasonal Wetlands and Replacement at a Minimum 2:1 Ratio	LTS
<b><u>4.6-6a (Preferred Plan) and 4.6-6b (Maximum Development Scenario):</u></b> Potential Direct and Indirect Impacts on Marsh and Tidal Flat Habitat	S	<b><u>Mitigation Measures 4.6-6a (Preferred Plan) and 4.6-6b (Maximum Development Scenario):</u></b> Require Surveys for Wetlands and Special-Status Species, Develop an Avoidance and Mitigation Plan, and Replace Affected Habitats at a 2:1 Ratio	LTS
<b><u>4.6-7a (Preferred Plan) and 4.6-7b (Maximum Development Scenario):</u></b> Loss or Disturbance of Raptor and Loggerhead Shrike Nests	S	<b><u>Mitigation Measures 4.6-7a (Preferred Plan) and 4.6-7b (Maximum Development Scenario):</u></b> Require Nest Surveys and Buffers and Implement Mitigation Measures 4.6-1a, 4.6-2a, 4.6-3a, 4.6-4a, and 4.6-6a	LTS
<b><u>4.6-8a (Preferred Plan) and 4.6-8b (Maximum Development Scenario):</u></b> Loss or Disturbance of Bat Roost Sites and Loss of Foraging Habitat	S	<b><u>Mitigation Measures 4.6-8a (Preferred Plan) and 4.6-8b (Maximum Development Scenario):</u></b> Require Surveys for Bat Roosting Habitat and Development of Roost Replacements, and Implement Mitigation Measures 4.6-1a through 4.6-4a	LTS
<b><u>4.6-9a (Preferred Plan) and 4.6-9b (Maximum Development Scenario):</u></b> Direct Mortality of Bats and Birds from Expansion of Wind Energy Resources	S	<b><u>Mitigation Measures 4.6-9a (Preferred Plan) and 4.6-9b (Maximum Development Scenario):</u></b> Require Project-Specific Collision Risk Assessments, Enhanced Avoidance and Minimization Measures, Appropriate Compensatory Habitat Mitigation, and Contingency Plans	LTS
<b><u>4.6-10a (Preferred Plan) and 4.6-10b (Maximum Development Scenario):</u></b> Loss of Habitat and Mortality of California Red-Legged Frogs	S	<b><u>Mitigation Measures 4.6-10a (Preferred Plan) and 4.6-10b (Maximum Development Scenario):</u></b> Require Implementation of Specified Mitigation for California Red-Legged Frog Habitat Loss, as well as Management Plans and Applicable Funding Mechanisms	LTS
<b><u>4.6-11a (Preferred Plan) and 4.6-11b (Maximum Development Scenario):</u></b> Potential for Direct and Indirect Effects on Callippe Silverspot Butterfly and Its Habitat	S	<b><u>Mitigation Measures 4.6-11a (Preferred Plan) and 4.6-11b (Maximum Development Scenario):</u></b> Require Implementation of Specified Avoidance and Minimization Measures and Habitat Mitigation Measures for Impacts on Callippe Silverspot Butterfly	LTS
<b><u>4.6-12a (Preferred Plan) and 4.6-12b (Maximum Development Scenario):</u></b> Potential Spread of or Increase in Populations of Invasive Exotic Species	S	<b><u>Mitigation Measures 4.6-12a (Preferred Plan) and 4.6-12b (Maximum Development Scenario):</u></b> Require Avoidance and Minimization Measures and Implementation of Invasive Exotic Species Management Plans	LTS

**Table 1-1  
Summary of Project Impacts and Mitigation Measures**

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b><u>4.7 Geology and Soils</u></b>			
<b><u>4.7-1a (Preferred Plan) and 4.7-1b (Maximum Development Scenario):</u></b> Potential for Fault Rupture	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-2a (Preferred Plan) and 4.7-2b (Maximum Development Scenario):</u></b> Potential for Exposure to Seismic Ground Shaking	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-3a (Preferred Plan) and 4.7-3b (Maximum Development Scenario):</u></b> Potential for Seismic Ground Failure	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-4a (Preferred Plan) and 4.7-4b (Maximum Development Scenario):</u></b> Potential for Exposure to Landslides	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-5a (Preferred Plan) and 4.7-5b (Maximum Development Scenario):</u></b> Soil Erosion or Loss of Topsoil	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-6a (Preferred Plan) and 4.7-6b (Maximum Development Scenario):</u></b> Potential for Unstable Soils	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-7a (Preferred Plan) and 4.7-7b (Maximum Development Scenario):</u></b> Construction in Areas with Expansive Soils	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-8a (Preferred Plan) and 4.7-8b (Maximum Development Scenario):</u></b> Construction in Areas with Soils with Poor Septic Suitability	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-9a (Preferred Plan) and 4.7-9b (Maximum Development Scenario):</u></b> Loss of Availability of Known Mineral Resources	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.7-10a (Preferred Plan) and 4.7-10b (Maximum Development Scenario):</u></b> Potential for Loss of Availability of Locally Important Mineral Resource Recovery Sites	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b><u>4.8 Agricultural Resources</u></b>			
<b><u>4.8-1a (Preferred Plan):</u></b> Loss of Important Farmland	S	No feasible mitigation is available to reduce this impact	SU
<b><u>4.8-1b (Maximum Development Scenario):</u></b> Loss of Important Farmland	S	No feasible mitigation is available to reduce this impact	SU
<b><u>4.8-2a (Preferred Plan) and 4.8-2b (Maximum Development Scenario):</u></b> Conflict with Williamson Act Contracts	S	No feasible mitigation is available to reduce this impact	SU

<b>Table 1-1 Summary of Project Impacts and Mitigation Measures</b>			
Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.9 Public Services and Utilities</b>			
<b>4.9-1a (Preferred Plan) and 4.9-1b (Maximum Development Scenario):</b> Insufficient Water Supplies to Meet the Future Water Demand in Unincorporated Areas Served by the County	S	<p><b>Mitigation Measures 4.9-1a(1) (Preferred Plan) and 4.9-1b(1) (Maximum Development Scenario):</b> Implement Measures to Ensure Sufficient Water Supplies for Development Projects</p> <p><b>Mitigation Measures 4.9-1a(2) (Preferred Plan) and 4.9-1b(2) (Maximum Development Scenario):</b> Implement a Countywide Groundwater Balance Budget and Monitoring Program</p> <p><b>Mitigation Measure 4.9-1a(3) (Preferred Plan) and 4.9-1b(3) (Maximum Development Scenario):</b> <u>Comply with the Recommendations of the North Solano Groundwater Resources Report for a Staged Mitigation Plan.</u></p>	SU
<b>4.9-2a (Preferred Plan) and 4.9-2b (Maximum Development Scenario):</b> New or Expanded Water Supply Facilities	S	No feasible mitigation is available to reduce this impact.	SU
<b>4.9-3a (Preferred Plan) and 4.9-3b (Maximum Development Scenario):</b> <u>Increased Wastewater Treatment Demand</u>	S	<b>Mitigation Measures 4.9-3a (Preferred Plan) and 4.9-3b (Maximum Development Scenario):</b> Implement Measures to Ensure Sufficient Wastewater Collection and Removal Systems for Development Projects	SU
<b>4.9-4a (Preferred Plan) and 4.9-4b (Maximum Development Scenario):</b> New or Expanded Wastewater Facilities	S	No feasible mitigation is available to reduce this impact.	SU
<b>4.9-5a (Preferred Plan) and 4.9-5b (Maximum Development Scenario):</b> Increased Demand for Solid Waste Disposal	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.9-6a (Preferred Plan) and 4.9-6b (Maximum Development Scenario):</b> Demand for Public Education Services	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.9-7a (Preferred Plan) and 4.9-7b (Maximum Development Scenario):</b> Demand for Additional Fire Protection and Emergency Services Facilities	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.9-8a (Preferred Plan) and 4.9-8b (Maximum Development Scenario):</b> Demand for Additional Law Enforcement Facilities	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS

**Table 1-1  
Summary of Project Impacts and Mitigation Measures**

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.9-9a (Preferred Plan) and 4.9-9b (Maximum Development Scenario):</b> Increased Demand for Library Facilities	S	No feasible mitigation is available to reduce this impact	SU
<b>4.10 Cultural and Paleontological Resources</b>			
<b>4.10-1a (Preferred Plan) and 4.10-1b (Maximum Development Scenario):</b> Removal of Historical Built-Environment Resources	S	<b>Mitigation Measures 4.10-1a (Preferred Plan) and 4.10-1b (Maximum Development Scenario):</b> Determine Historical Significance of Built-Environment Resources Subject to Removal and Require Implementation of Recommended Feasible Mitigation	SU
<b>4.10-2a (Preferred Plan) and 4.10-2b (Maximum Development Scenario):</b> Alteration of Historical Built-Environment Resources	S	<b>Mitigation Measures 4.10-2a (Preferred Plan) and 4.10-2b (Maximum Development Scenario):</b> Determine Historical Significance of Built-Environment Resources Subject to Building Alteration or Alteration of Setting, and Require Implementation of Recommended Feasible Mitigation	SU (building alteration)/ LTS (alteration of setting)
<b>4.10-3a (Preferred Plan) and 4.10-3b (Maximum Development Scenario):</b> Destruction of Prehistoric and Historical Archaeological Deposits	S	<b>Mitigation Measures 4.10-3a (Preferred Plan) and 4.10-3b (Maximum Development Scenario):</b> Require Preparation of a Cultural Resources Study and Implementation of Recommended Feasible Mitigation for Destruction of Prehistoric and Historical Archaeological Deposits	LTS
<b>4.10-4a (Preferred Plan) and 4.10-4b (Maximum Development Scenario):</b> Loss of Integrity of Rural Historic Landscapes	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.10-5a (Preferred Plan) and 4.10-5b (Maximum Development Scenario):</b> Adverse Effects on Montezuma Hills and Suisun Marsh Area Cultural Resources	S	<b>Mitigation Measures 4.10-5a (Preferred Plan) and 4.10-5b (Maximum Development Scenario):</b> Conduct Viewshed Analysis and Install Buffers or Consider Alternate Siting Locations for Wind-Generating Structures to Reduce Impacts on Montezuma Hills Cultural Resources	LTS
<b>4.10-6a (Preferred Plan) and 4.10-6b (Maximum Development Scenario):</b> Loss of Integrity of Traditional Cultural Properties	S	<b>Mitigation Measures 4.10-6a (Preferred Plan) and 4.10-6b (Maximum Development Scenario):</b> Require Consultation with Native Americans and Consideration of Non-Native American TCPs	LTS

<b>Table 1-1 Summary of Project Impacts and Mitigation Measures</b>			
Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.10-7a (Preferred Plan) and 4.10-7b (Maximum Development Scenario):</b> Destruction of Paleontological Resources	PS	<b>Mitigation Measures 4.10-7a (Preferred Plan) and 4.10-7b (Maximum Development Scenario):</b> Determine the Need for a Paleontological Resources Analysis and Implement Recommended Mitigation	LTS
<b>4.10-8a (Preferred Plan) and 4.10-8b (Maximum Development Scenario):</b> Disturbance of Human Remains	S	<b>Mitigation Measures 4.10-8a (Preferred Plan) and 4.10-8b (Maximum Development Scenario):</b> Require Pre-Project Consideration of the Possibility of Human Remains Discoveries, and Require Appropriate Consultation with Descendant Communities	LTS
<b>4.11 Aesthetic Resources</b>			
<b>4.11-1a (Preferred Plan) and 4.11-1b (Maximum Development Scenario):</b> Adverse Impacts on Scenic Vistas	S	No feasible mitigation is available to reduce this impact	SU
<b>4.11-2a (Preferred Plan) and 4.11-2b (Maximum Development Scenario):</b> <u>Damage to Scenic Resources within a State Scenic Highway</u>	S	<b>Mitigation Measures 4.11-2a(1) (Preferred Plan) and 4.11-2b(1) (Maximum Development Scenario):</b> Require Consultation with Caltrans before Approval of Individual Development Projects near Rio Vista  <b>Mitigation Measures 4.11-2a(2) (Preferred Plan) and 4.11-2b(2) (Maximum Development Scenario):</b> Require Project Applicants to Submit Tentative Maps and Landscaping, Lighting, and Design Plans to the County before Approval of Individual Development Projects near Rio Vista	SU
<b>4.11-3a (Preferred Plan) and 4.11-3b (Maximum Development Scenario):</b> Degradation of Visual Character	S	<b>Mitigation Measures 4.11-3a (Preferred Plan) and 4.11-3b (Maximum Development Scenario):</b> Require Preparation of Design Guidelines and Landscaping Standards	SU
<b>4.11-4a (Preferred Plan) and 4.11-4b (Maximum Development Scenario):</b> <u>Increase in Nighttime Lighting and Daytime Glare</u>	S	<b>Mitigation Measures 4.11-4a(1) (Preferred Plan) and 4.11-4b(1) (Maximum Development Scenario):</b> Require Lighting and Building Materials that Minimize Glare and Reflectance  <b>Mitigation Measures 4.11-4a(2) (Preferred Plan) and 4.11-4b(2) (Maximum Development Scenario):</b> Require Preparation of Design Guidelines with Appropriate Lighting and Signage Standards	SU

<b>Table 1-1 Summary of Project Impacts and Mitigation Measures</b>			
Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.12 Energy</b>			
<b>4.12-1a (Preferred Plan) and 4.12-1b (Maximum Development Scenario):</b> Effects on Energy Consumption from Land Use Locations and Patterns	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.12-2a (Preferred Plan) and 4.12-2b (Maximum Development Scenario):</b> Increased Energy Demand and Need for Additional Energy Infrastructure	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required.	LTS
<b>4.13 Hazards and Hazardous Materials</b>			
<b>4.13-1a (Preferred Plan) and 4.13-1b (Maximum Development Scenario):</b> Release of Hazardous Materials	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required	LTS
<b>4.13-2a (Preferred Plan) and 4.13-2b (Maximum Development Scenario):</b> Safety Hazards Associated with Public and Private Airports	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required	LTS
<b>4.13-3a (Preferred Plan) and 4.13-3b (Maximum Development Scenario):</b> Interference with an Adopted Emergency-Response Plan	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required	LTS
<b>4.13-4a (Preferred Plan) and 4.13-4b (Maximum Development Scenario):</b> Exposure of Structures to Urban and Wildland Fires	LTS	No mitigation beyond the 2008 Draft General Plan policies and programs is required	LTS
<b>4.14 Recreation</b>			
<b>4.14-1a (Preferred Plan):</b> Need for New or Expanded Parks or Recreational Facilities	S	<b>Mitigation Measure 4.14-1a (Preferred Plan):</b> Require Developers to Pay Fair-Share Park and Recreation Impact Fees	LTS
<b>4.14-1b (Maximum Development Scenario):</b> Need for New or Expanded Parks or Recreational Facilities	S	<b>Mitigation Measure 4.14-1b (Maximum Development Scenario):</b> Require Developers to Pay Fair-Share Park and Recreation Impact Fees	LTS
<b>6.2 Climate Change</b>			
<b>6.2-1a (Preferred Plan) and 6.2-1b (Maximum Development Scenario):</b> Increases in Greenhouse Gas Emissions	S	Implementation of the 2008 Draft General Plan goals, policies, and implementation programs would reduce emissions of GHGs, but the degree of future impacts and applicability, feasibility, and success of future mitigation measures cannot be adequately	SU

**Table 1-1  
Summary of Project Impacts and Mitigation Measures**

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		known for each specific future project at this program level of analysis. Therefore, it cannot be determined whether these measures would reduce GHG levels to a less-than-significant level.	
<b>6.2-2a (Preferred Plan) and 6.2-2b (Maximum Development Scenario):</b> Effects of Climate Change on Solano County	S	Implementation of the 2008 Draft General Plan policies and implementation programs would serve to reduce the impacts of climate change on Solano County. However, the efficacy of such policies and programs is uncertain. No other feasible mitigation measures exist to reduce the impact to a less-than-significant level.	SU

**Cumulative Impacts**

The 2008 Draft General Plan would make a cumulatively considerable contribution to significant cumulative impacts related to:

- ▶ land use conflicts between urban, rural residential, commercial, industrial, and agricultural uses
- ▶ population increase
- ▶ emissions of ozone and particulate matter (both PM<sub>10</sub> and PM<sub>2.5</sub>)
- ▶ exposure to TAC emissions from mobile sources
- ▶ carbon monoxide emissions from local mobile sources
- ▶ traffic noise level increases
- ▶ degradation of roadway levels of service
- ▶ demand for and resulting effects on groundwater and surface-water supplies
- ▶ loss of sensitive wildlife habitat (grassland, vernal pool, oak woodland and savanna, marsh, and riparian woodland)
- ▶ foraging habitat for Swainson’s hawk and burrowing owl from loss of agricultural land
- ▶ conversion of Important Farmland
- ▶ insufficiency of available water supplies to incorporated areas and portions of unincorporated areas to accommodate projected future growth
- ▶ historical built-environment resources
- ▶ conversion of local viewsheds from agricultural land uses and open spaces to urban development
- ▶ increases in demand for energy
- ▶ County parks and recreation programs, from increased growth in the unincorporated county
- ▶ climate change

## 2 MASTER RESPONSES

This chapter presents “master responses,” or responses to environmental issues raised in multiple comments. The master responses are organized by topic so that reviewers can readily locate all relevant information pertaining to an issue of concern.

When issues are addressed in the broader context provided by master responses, the interrelationships between some of the individual issues raised can be better clarified. It is also possible to provide a single explanation of an issue that is more thorough and comprehensive than separate, narrowly focused responses without any context.

The following issues are discussed in the master responses:

- A—Proposed Changes in Policy Language
- B—Use of Two Development Scenarios
- C—Rationale for Rural Residential Land Use Designation
- D—Reasonable Range of Alternatives
- E—Programmatic Nature of EIR
- F—CEQA Requirements Regarding Recirculation
- G—Deferred Mitigation
- H—Mitigation for Significant and Unavoidable Impacts
- I—Orderly Growth Initiative
- J—Biological Resources Mitigation Strategies
- K—Solano HCP
- L—Inadequate Drainage and Flooding Analysis
- M—Risk of Dam Failure
- N—Risk of Levee Failure
- O—Inadequate Water Quality Impact Analysis
- P—Insufficient Wastewater Analysis
- Q—Inadequate Analysis of Energy Demands
- R—Inadequate Water Supply Assessment

### 2.1 MASTER RESPONSE A: PROPOSED CHANGES IN POLICY LANGUAGE

Several commenters proposed specific changes in policy language to be included in the 2008 Draft General Plan. In reviewing these proposed changes, the County has been aware of its legal obligation under CEQA to substantially lessen or avoid significant environmental effects to the extent feasible. Moreover, the County recognizes that comments frequently offer thoughtful suggestions indicating how a commenter believes that a particular proposed policy can be modified, or perhaps changed significantly, to reduce the severity of environmental effects more effectively, in the commenter’s eyes.

The County is also aware, however, that, with the exception of new policy language presented in the DEIR, the draft policy language in the 2008 Draft General Plan represents the fruit of a very long public process. During this process, draft language was developed through the input of numerous individuals and organizations with many different objectives and perspectives, and much public discussion was required to arrive at particular language. The County believes that such language, which often represents a careful balancing of competing interests expressed by various stakeholders, should not be lightly altered. Thus, the County, in determining whether to accept proposed changes to draft policy language either in whole or in part, has considered (among other things) whether:

- ▶ the proposed language relates to a significant and unavoidable environmental effect of the proposed project, or instead relates to an effect that can already be mitigated to less-than-significant levels by language already included in the proposed 2008 Draft General Plan or through implementation of the mitigation measures recommended in the DEIR;
- ▶ the proposed language represents a clear improvement, from an environmental standpoint, over the draft language that a commenter seeks to replace;
- ▶ the proposed language is sufficiently clear as to be easily understood by those who will implement a new General Plan;
- ▶ the proposed language would essentially duplicate language already in place elsewhere within the 2008 Draft General Plan;
- ▶ the language might be too inflexible to allow the County to deal with project-specific issues as they arise over time, or limit the County’s ability to balance competing policy considerations as they present themselves;
- ▶ the proposed language might create an internal inconsistency within the 2008 Draft General Plan that the commenter has not identified and for which the commenter has offered no remedy;
- ▶ the policy suggestions embodied in the proposed language appear to be feasible from an economic, technical, legal, or other standpoint;
- ▶ the proposed language would address design issues in more detail than is appropriate for a long-term general plan, as opposed to subsidiary documents such as the Zoning Ordinance or development standards;
- ▶ the language might be more appropriate in a policy or legal document other than the 2008 Draft General Plan; and
- ▶ the proposed language is consistent with the project objectives, including the vision of fostering a sustainable environment, economy and social equity.

(See “A Vision for Solano County in 2030” in Chapter 1, “Introduction,” of the 2008 Draft General Plan.)

As is often evidenced from the specific responses given to specific suggestions, County staff and consultants spent large amounts of time carefully considering and weighing proposed policy language, and in many instances adopted some or all of what a commenter suggested. In some instances, the County developed alternative language addressing the same issue that was of concern to a commenter. In no instance did the County fail to take seriously a suggestion made by a commenter or fail to appreciate the effort that went into the formulation of suggestions.

## **2.2 MASTER RESPONSE B: USE OF TWO DEVELOPMENT SCENARIOS**

Comment letter 26 (individual comments 26-2 through 26-10 in Chapter 3 of this FEIR) asserts that the DEIR’s analysis of two potential development scenarios (the Preferred Plan and the Maximum Development Scenario) is misleading, underestimates the impacts of the proposed project, and is not supported by substantial evidence.

It should be noted that a general plan provides *general* policy direction for the development of a community over a long time frame, typically 20–30 years. The 2008 Draft General Plan looks forward approximately 22 years to the year 2030. General plans are typically implemented through a series of follow-up implementation steps such as specific plans and zoning, which translate the general directions of the general plan into more specific directives for particular areas and standards for development.

Individual project proposals, such as a subdivision or specific plan, by contrast, tend to be much more specific, tend to be carried out in much shorter time frames, and tend to require fewer steps to actual development than do general plans. General plans typically specify state-mandated standards of “population density and building intensity” in terms of a *maximum* or a *range* of dwelling units per acre or floor area ratios. The 2008 Draft General Plan specifies maximum dwelling units per acre, floor area ratios, and/or lot coverage percentage.

In analyzing the potential impacts of implementing a general plan, it is reasonable and common planning practice to estimate future development under the plan based on a series of assumptions derived from all of the following:

- ▶ the historical density and intensity of development in the county and other counties and communities with similar development patterns;
- ▶ environmental constraints (physical and environmental conditions of land designated for developed uses that would have the effect of reducing development potential);
- ▶ the amount of potentially developable land that would be used for roads and other public rights-of-way, easements, and other public facilities; and
- ▶ professional experience in other communities and the application of reasonable judgment based on that experience.

The DEIR also analyzes a Maximum Development Scenario, which represents the highest theoretical amount of development possible under the 2008 Draft General Plan after consideration of environmental constraints. Although the EIR does not analyze the Maximum Development Scenario to the level of detail used to analyze the Preferred Plan, the Maximum Development Scenario analysis attempts to provide a reasonable amount of information about a “worst-case scenario” that could result from the proposed plan.

Although the DEIR analyzes buildout of the 2008 Draft General Plan under a Maximum Development Scenario to disclose the highest possible level of environmental impact that could potentially result from the proposed plan, it is not reasonable to assume that every single parcel of vacant or redevelopable land will build out to its maximum allowable density or intensity by the end of the planning horizon. Although any given parcel *may* build out to its maximum allowable density or intensity during the time frame of the 2008 Draft General Plan, this will not be true on average for similarly designated parcels, and the County does not consider it reasonable to assume that this would be the case for the purpose of analysis in the DEIR. In addition, because of the need for supporting infrastructure requirements, such as roadways, detention basins, and schools, building to the theoretical maximum development intensity of the 2008 Draft General Plan may be difficult, if not impossible, to achieve.

The experiences of other counties in California support this approach. A 2003 study conducted by the Reason Public Policy Institute (RPPI) and the Solimar Research Group (SRG) found that residential projects approved in Ventura County developed on average at less than 80% of the maximum density specified in the general plan (see Appendix A to this FEIR). This pattern of project approvals resulting in 80% or less of the maximum density allowed by the general plan is common in California cities and counties. The RPPI/SRG study constitutes substantial evidence that large-scale plans rarely, if ever, build out to the maximum theoretical holding capacity.

If a community were to assume that every single parcel of land would be built to its maximum allowable density or intensity, development impacts would likely be overstated and infrastructure such as roadways and water and wastewater facilities would likely be oversized. At the same time, infrastructure would be underfunded because there would be less actual development to pay infrastructure impact fees.

Based on the RPPI/SRG study and the County’s past experiencing in monitoring the development process, plan areas are never built out to their maximum theoretical capacity because of site constraints, the choices of landowners, and other variables associated with the development process. Nevertheless, although it is extremely unlikely (if not impossible) that Solano County would ever be built to the maximum density permitted under the

2008 Draft General Plan, the DEIR analyzes such a scenario in good faith to assist County decision makers and the public in understanding the theoretical worst-case consequences of adopting the 2008 Draft General Plan. The DEIR also analyzes, and devotes the most attention to, the Preferred Plan, which represents the most probable intensity of development under the proposed Plan. (The County Board of Supervisors is also entitled to rely on the expertise of planning staff regarding what likely “buildout” entails. *No Slo Transit, Inc. v. City of Long Beach* [1987] 197 Cal.App.3d 241, 254–256 [staff estimate of construction time]; *Greenbaum v. City of Los Angeles* [1984] 153 Cal.App.3d 391, 413 [differing opinions are not grounds for invalidating an EIR].)

CEQA grants agencies broad discretion to determine the appropriate approach for analyzing a project’s impacts (State CEQA Guidelines Sections 15151 and 15204[a].) “Drafting an EIR...necessarily involves some degree of forecasting...an agency must use its best efforts to find out and disclose all that it reasonably can” (State CEQA Guidelines Section 15144). An agency has discretion to determine what methods to use, and the existence of competing methods does not invalidate the agency’s approach (*Association for Irrigated Residents v. County of Madera* [2003] 107 Cal.App.4th 1382, 1392).

The recent case *Save Round Valley Alliance v. County of Inyo* (2007) 157 Cal.App.4th 1437 (*Save Round Valley Alliance*) is also applicable to this issue. There, the county approved a tentative tract map for a subdivision project. The county’s general plan and zoning classifications allowed one dwelling unit on the project site per 2.5 acres, but the owner of the land could apply for a conditional use permit to build other structures, including a second dwelling unit, potentially doubling the number of dwelling units allowed on the project site. If each of the 27 future lot owners built a second dwelling unit, then the subdivision would hold 54 dwelling units. This possibility was not mentioned in the project description of the EIR prepared for the subdivision project. Project opponents argued that the EIR should have treated the potential maximum 54-unit project, not the proposed 27-lot subdivision, as the project, contending that the project description led the EIR to underestimate the project’s environmental impacts. The Court of Appeal disagreed, finding that “the possibility that future lot owners will or will not build a second unit is extremely uncertain, and any impacts of such second units is highly speculative” (*Save Round Valley Alliance*, page 1450). Unlike the cases cited by the petitioner in that case (many of which are also cited by the commenter and addressed below), the respondent county had no basis other than pure speculation to anticipate that any future owners of the lots created by the subdivision would seek or obtain permits to build second units. Therefore, the Court of Appeal held that the county acted within its discretion in omitting the possibility that future owners might build second dwelling units from the project description (*Save Round Valley Alliance*, page 1454).

Here, too, it would be speculative to assume that development would occur at the maximum allowable densities and intensities permitted under the 2008 Draft General Plan throughout the county. Nevertheless, the County has used its best efforts to disclose all that it reasonably can in analyzing the impacts of the 2008 Draft General Plan under both the Preferred Plan and the Maximum Development Scenario (see *Save Round Valley Alliance*, page 1454; see also Section 15144 of the State CEQA Guidelines).

The commenter cites a series of court cases purportedly supporting the theory that the EIR must analyze only the Maximum Development Scenario, and in more detail, and not the Preferred Plan. Those cases, however, involved agencies claiming that approval of a plan or policy would have *no* significant impacts, a position strikingly different from the County’s approach here. Each of these cases is discussed below.

The commenter relies primarily on an *unpublished* trial court decision—*Sierra Watch et al. v. Placer County et al.* (Placer County Superior Court No. SCV 16652)—which by definition has no value as any kind of precedent binding on Solano County. There, the trial court held that Placer County’s EIR for the *Martis Valley Community Plan* was inadequate for failing to analyze full buildout at maximum allowable densities and intensities. The County views this trial court’s decision as an anomaly because no other court has ever followed its thinking in published precedent. (Notably, the commenter did not produce any appellate decision upholding the trial court’s reasoning.)

The reported Court of Appeal decisions invoked by the commenter also fail to support its position and are easily distinguishable from the situation at hand. In *City of Redlands v. County of San Bernardino* (2002) 96 Cal.App.4th 398 (*City of Redlands*), for example, the county prepared a negative declaration to analyze the amendment of general plan policies applicable to projects within city spheres of influence. Under the existing general plan, the county committed to “incorporate” a city’s policies to projects in that city’s sphere. Other policies were deleted. Several cities objected to the amendments and inventoried ways the amendments would relax standards. Nevertheless, the county approved the amendments based on a negative declaration. The cities sued. The court required preparation of an EIR because the cities’ comments constituted “substantial evidence of a fair argument that the amendments may have a significant effect on the environment” (*City of Redlands*, pages 405–414).

Similarly, in *City of Carmel-by-the-Sea v. Board of Supervisors of Monterey County* (1986) 183 Cal.App.3d 229 (*City of Carmel-by-the-Sea*), the county relied on a negative declaration in rezoning a parcel designating two different areas on the site: one as “open space” and the other for resort or residential uses. In relying on a negative declaration, the county maintained that, because no expansion of an existing resort was proposed, no physical impacts would occur. The court disagreed and directed the county to prepare an EIR. Evidence in the record indicated the developer planned to expand its resort, and that the rezone was “a necessary first step to approval of a specific development project” (*City of Carmel-by-the-Sea*, pages 245–246).

Likewise, in *Christward Ministry v. Superior Court* (1986) 184 Cal.App.3d 180 (*Christward Ministry*), the Court of Appeal found a negative declaration prepared for a general plan amendment (designating a landfill site to allow a “waste-to-energy” facility) inadequate because it wrongly stated that an earlier EIR for the landfill had adequately addressed the potential impacts of the proposed waste incinerator. In fact, the agency ignored evidence in the administrative record showing that the waste-to-energy facility would produce previously unidentified significant effects (*Christward Ministry*, pages 196–197). The court also rejected the agency’s argument that an EIR for a general plan amendment was not required because later related approvals would require environmental review, stating that “[t]he fact later development or expansion of facilities can occur only after a permit is obtained and an EIR prepared does not excuse the city from addressing the potential impacts of [the general plan amendment]” (*Christward Ministry*, page 194). Here, in contrast, the county prepared an EIR for the proposed general plan evaluating its potential environmental consequences, including “the secondary effects that can be expected to follow from [its] adoption” (see *Christward Ministry*, page 195, quoting Section 15146[b] of the State CEQA Guidelines).

Finally, in *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645 (*San Joaquin Raptor*), the appellate court invalidated an EIR for a mining project because the county analyzed only existing production levels, ignoring peak production levels that were higher than those occurring in recent past. The court held that the project description was “fundamentally inadequate and misleading” because the EIR stated that “[t]he expansion includes the mining of additional acreage, *but it is not proposed to substantially increase daily or annual production*” [emphasis added], yet the DEIR reported that the proposed conditional use permit would allow for annual mine production that was more than double the production average over the prior 4 years. In other words, despite assurances to the contrary, the project included a substantial increase in mine production, which the EIR failed to properly analyze. Unlike *San Joaquin Raptor*, where it made logical sense to require analysis of the maximum permitted amount for a site-specific mining project, here it is highly unlikely that maximum permitted densities on each and every parcel in the 2008 Draft General Plan will ever be realized. Moreover, the EIR does analyze a Maximum Development Scenario, even though it is unrealistic to assume such a scenario could ever actually occur within the planning time frame of the 2008 Draft General Plan. Thus, the present situation is readily distinguishable from *San Joaquin Raptor*.

## **2.3 MASTER RESPONSE C: RATIONALE FOR RURAL RESIDENTIAL LAND USE DESIGNATION**

Several commenters on the DEIR expressed concern that the large amount of land designated in the 2008 Draft General Plan for rural residential development would result in a variety of increased environmental impacts.

The 2008 Draft General Plan establishes three classifications of residential development within Solano County: Rural Residential, Traditional Community, and Urban Residential. The 2008 Draft General Plan designates 13,721 acres for rural residential development. Rural Residential areas have a density range of 1 unit per 2.5 acres to 1 unit per 10 acres.

The Traditional Community designation recognizes existing residential communities located outside agricultural areas and municipal service areas (MSAs) where previous development has occurred at higher densities (1–4 units per acre) than currently allowed under County policy. Residential infill development may occur within Traditional Community residential areas, but the areas cannot be expanded.

The Urban Residential designation within the MSAs includes low-, medium-, and high-density residential development with a density range of 2–25 units per acre. The MSAs are based on planned urban areas under city general plans within city spheres of influence. Under the proposed 2008 Draft General Plan policies, urban residential development within the MSAs would occur through city annexation, with the city providing the supporting municipal services.

The County is limited to the Rural Residential land use designation. The County does not have the necessary facilities and services to support higher density development. Locating higher density development outside of established communities and city MSAs would be contrary to the County’s guiding principles of fostering city-centered development and “what is urban shall be municipal.” The Rural Residential land use designation complements the densities and housing types that the cities provide by allowing for a broad range of housing types within Solano County as a whole.

The County cannot remove all new Rural Residential land use designations proposed in the 2008 Draft General Plan. The County is obligated under state law to accommodate its fair share of housing through the Association of Bay Area Governments’ allocation process, called the regional housing needs determination (RHND). Although the County has relied on cities to accommodate a portion, but not all, of the County’s RHND allocation, no guarantee exists that the cities will accommodate any or all of the County’s future RHND allocations during the time frame of the 2008 Draft General Plan. The County still has an independent responsibility under state housing element law to provide adequate sites that are appropriately zoned to accommodate its assigned RHND allocation. Nonetheless, the County did analyze in the DEIR two alternatives that include less new Rural Residential development—Alternative 2, the Improved Environmental Sustainability Alternative; and Alternative 4, the Reduced Rural Residential Alternative (see Chapter 5 of the DEIR). The County Board of Supervisors may exercise its discretion to adopt any of the alternatives analyzed in the DEIR instead of the 2008 Draft General Plan, or to modify the 2008 Draft General Plan to reduce the amount of Rural Residential development to a level that is different than that proposed in the 2008 Draft General Plan or any of the alternatives.

## **2.4 MASTER RESPONSE D: REASONABLE RANGE OF ALTERNATIVES**

Several commenters stated that the DEIR does not describe and analyze a reasonable range of alternatives to the proposed project or that the alternatives analyzed in the DEIR do not sufficiently reduce potential environmental impacts of the 2008 Draft General Plan. Some comments addressed the need for alternatives that would result in reduction of specific impacts (e.g., stormwater drainage, greenhouse gas [GHG] emissions, consistency with the Orderly Growth Initiative). Other comments sought quantitative comparisons of the alternatives with the proposed project (e.g., quantitative comparisons of GHG emissions).

As stated on page 5-1 of the DEIR, Section 15126.6(a) of the State CEQA Guidelines states:

An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.

As stated on page 5-1 of the DEIR, Section 15126.6(f)(1) of the State CEQA Guidelines states, in part:

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

In addition to this guidance, CEQA provides the following guidelines for considering a reasonable range of alternatives to a proposed project, which are listed in the DEIR on page 5-2:

- ▶ If an alternative would cause one or more significant environmental effects in addition to those that would be caused by the project, the significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the project. (State CEQA Guidelines, Section 15126.6[d])
- ▶ The range of alternatives required by an EIR is governed by the “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The key issue is whether the selection and discussion of alternatives fosters informed decision-making and informed public participation. An EIR need not consider an alternative whose effect cannot be ascertained and whose implementation is remote and speculative. (State CEQA Guidelines, Section 15126.6[f])

Pages 5-2 through 5-4 of the DEIR contain substantial documentation of the process leading to the selection of alternatives for analysis. This process began with consideration of numerous land use alternatives for each of four Special Study Areas (Collinsville/Montezuma Hills, Middle Green Valley, Suisun Valley, and Old Town Cordelia) and five geographic areas of the county (Rio Vista/southeast county area, North Vacaville area, Dixon area, South Vacaville/Fairfield/Suisun City area, and Vallejo/Benicia area) before the Citizens Advisory Committee and general public. As identified in Section 5.3 (page 5-4) of the DEIR, the County considered approximately 15 different land use and circulation alternatives as part of the General Plan update process, and determined that a simple repeat of this earlier range of alternatives would not serve decision makers or the public as well as the proposed range within the DEIR, as many of the previous alternatives would have increased environmental impacts relative to the 2008 Draft General Plan.

The four alternatives presented in the DEIR were identified after publication of the notice of preparation for the project, but before the release of the public-review DEIR, at a point in time where many potential impacts of the 2008 Draft General Plan were known. Accordingly, each of the alternatives—with the exception of the CEQA-required No Project alternative—were formulated with the objective of reducing potential environmental impacts. Alternative 1 is the No Project Alternative, which represents continued implementation of the County’s current General Plan and Zoning Code, subject to the Orderly Growth Initiative through its termination in 2010, unless extended by voter approval. Alternatively, Alternatives 2, 3, and 4 were developed by the County to provide rational and meaningful modifications to proposed land uses and General Plan policies that would reduce

environmental impacts while still achieving most project objectives. The alternatives illustrate how impacts could be reduced by reducing the amount of land designated for residential, commercial, or industrial uses in the 2008 Draft General Plan; and by modifying proposed policies on agricultural processing to narrow the area within which permitted processing facilities may accept products, thus reducing vehicle miles traveled (VMT) and GHG emissions. The alternatives also show how certain potential growth-inducing impacts could be reduced by limiting the conditions under which centralized sewage treatment systems may be used. Each of these policy changes may also have valuable co-benefits to other impact areas (e.g., noise, water quality, climate change). Each of the alternatives is potentially feasible, fosters informed decision-making (e.g., the County Board of Supervisors may consider components of the proposed alternatives as preferable to components of the proposed project), and informs public participation (e.g., members of the public also may recommend components of the proposed alternatives during public hearings on the 2008 Draft General Plan).

Several comments described the need for the DEIR to incorporate alternatives that reduce specific impacts of the 2008 Draft General Plan (see Comment 13-11 regarding drainage impacts; Comments 23-2, 30-11, 30-12, and 30-13 regarding GHG emissions; and Comment 25-7 regarding extension of the Orderly Growth Initiative). The County acknowledges that no single alternative targets any single significant environmental impact. However, the County is not obligated under CEQA to identify alternatives that reduce *all* potentially significant impacts to a less-than-significant level. (For example, see *Sierra Club v. City of Orange* [2008] 163 Cal.App.4th 523, 545–547, which rejected the argument that an EIR’s alternative analysis was insufficient because each alternative had environmentally disadvantageous aspects.) Rather, as stated above, Section 15126.6(a) of the State CEQA Guidelines allows the County to select alternatives that would result in reduction of *any* significant effects of the project, and does not require reduction of impacts to a less-than-significant level. Project alternatives are not required to reduce specific individual impacts of the proposed project, so long as the County has established a reasonable range of feasible alternatives that address the significant effects of the project. Table 5-7 on page 5-28 of the DEIR compares the environmental impacts of the alternatives to those of the proposed project (i.e., the 2008 Draft General Plan).

Numerous comments focused on the need to quantify the GHG emissions of the alternatives and compare these to the GHG emissions associated with the 2008 Draft General Plan. Additional comments sought creation of a carbon reduction alternative within the EIR showing attainment of Assembly Bill (AB) 32 goals related to the proposed climate action plan. As stated above, Section 15126.6(d) of the State CEQA Guidelines states that if an alternative would cause one or more significant environmental effects in addition to those that would be caused by the project, the significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the project. The DEIR meets this requirement. The quantified levels of GHG emissions are stated for the proposed project in Chapter 6, “Other CEQA Considerations,” of the DEIR. The relative levels of emissions for each alternative are qualitatively stated in Chapter 5, “Alternatives to the Proposed Project,” without quantifying the GHG emissions of each alternative in the same level of detail that was prepared for the Proposed Project. Such quantification is not required pursuant to Section 15126.6(d) of the State CEQA Guidelines.

## **2.5 MASTER RESPONSE E: PROGRAMMATIC NATURE OF EIR**

Several commenters on the DEIR requested additional impact analysis of specific developments that may occur with implementation of the 2008 Draft General Plan.

According to the State CEQA Guidelines (Section 15168[a]), a local agency may prepare a program-level EIR to address a series of actions that can be characterized as one large project and are related either geographically; as logical parts of a chain of contemplated events; through rules, regulations, or plans that govern the conduct of a continuing program; or as individual activities carried out under the same authorizing statutory or regulatory authority, and that have generally similar environmental effects that can be mitigated in similar ways. This EIR was prepared as a program EIR. As a program EIR, this document serves as a “first-tier” document that assesses and documents the broad environmental impacts of a program with the understanding that a more detailed site-specific environmental review may be required to assess future projects implemented under the program. As

individual projects with specific site plans and facilities are planned, the County will evaluate each project to determine the extent to which this EIR adequately addresses the potential impact of the project and to what extent additional environmental analyses may be required for each specific future project. (See Public Resources Code Sections 21083.3, 21093, and 21094 and State CEQA Guidelines Sections 15152, 15168, and 15183.)

The California Supreme Court recently upheld a program EIR in *Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143 (*Bay-Delta*), and in doing so, provided a useful explanation of the use of such EIRs. A consortium of federal and state agencies known as the CALFED Bay-Delta Program (CALFED) had created a long-term comprehensive plan, known as “the CALFED Program,” to address pollution problems of the San Francisco Bay/Sacramento–San Joaquin Delta region. Because of the plan’s comprehensive and long-term nature, CALFED had opted to proceed in stages and prepare a program environmental impact statement/environmental impact report (PEIS/EIR) for the project. In the *Bay-Delta* case, project opponents claimed that, among other things, the PEIS/EIR lacked sufficient detail regarding the sources of water that would be used to implement the CALFED Program because the PEIS/EIR merely listed *potential* sources of water, indicating that the ultimate source determination would be made later. The Court of Appeal agreed, holding that the PEIS/EIR needed to more specifically identify potential water sources and needed to include additional analysis of the impacts of supplying water from each identified potential source. However, the California Supreme Court reversed, holding that the PEIS/EIR fully complied with CEQA in identifying potential sources of water and analyzing the associated environmental effects in general terms. As explained by the court (*Bay-Delta*, page 1173):

The purpose of tiering is to allow a lead agency to focus on decisions ripe for review. (Pub. Resources Code, § 21093, subd. (a); [State CEQA Guidelines], § 15385, subd. (b).) An agency that chooses to tier may provide analysis of general matters in a broader EIR, then focus on narrower project-specific issues in later EIR’s. ([CEQA Guidelines], § 15152, subd. (a).) Future environmental documents may incorporate by reference general discussions from the broader EIR, but a separate EIR is required for later projects that may cause significant environmental effects inadequately addressed in the earlier report. (*Id.*, § 15152, subds. (a), (f).) ...

Although *later* project-level EIR’s may not simply tier from the PEIS/R analysis and will require an independent determination and disclosure of significant environmental impacts (see [State CEQA Guidelines], § 15152, subd. (f)), this stage of program development did not require a more detailed analysis of the Program’s future water sources, nor did it appear practicable. By compelling CALFED at the first-tier stage to provide greater detail about potential sources of water for second-tier projects, the Court of Appeal’s decision undermined the purpose of tiering and burdened the program EIR with detail that would be more feasibly given and more useful at the second-tier stage. Such details were properly deferred to the second-tier of the CALFED Program, when specific projects can be more fully described and are ready for detailed consideration.

Here, too—given the broad, programmatic nature of the EIR for the 2008 Draft General Plan—future CEQA review of site-specific projects would require detailed analysis of potential impacts where those impacts have not been addressed. However, consistent with the long-term and comprehensive nature of the 2008 Draft General Plan, a program EIR with program level analysis is appropriate in this circumstance. (See *Bay-Delta*, above; see also Public Resources Code Sections 21083.3, 21093, and 21094 and State CEQA Guidelines Sections 15152, 15168, and 15183.)

## **2.6 MASTER RESPONSE F: CEQA REQUIREMENTS REGARDING RECIRCULATION**

Many commenters expressed the belief that in light of the comments they raised, the additional studies they requested, or other reasons such as the issuance of the May 6, 2008, errata sheet, the County must recirculate the DEIR for further public review.

CEQA requires a lead agency to issue a new notice and “recirculate” all or portions of a revised EIR for additional commentary and consultation only if the lead agency adds “significant new information” to an EIR after public review and interagency consultation have begun but before the FEIR is to be certified (see Section 21092.1 of the Public Resources Code; Section 15088 of the State CEQA Guidelines; and *Laurel Heights Improvement Association v. Regents of the University of California* [1993] 6 Cal.4th 1112 [*Laurel Heights II*]). Section 15088.5 of the State CEQA Guidelines provides four examples of disclosure that constitutes “significant new information” for purposes of requiring recirculation of a revised EIR:

- ▶ A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
- ▶ A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
- ▶ A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project’s proponents decline to adopt it.
- ▶ The DEIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

The comments asserting that the DEIR for the 2008 Draft General Plan must be recirculated do not specify or identify any “significant new information” that would require recirculation. In addition, none of the responses to comments on the DEIR and associated information meet the CEQA definition of “significant new information” requiring recirculation. Nor does the FEIR identify any significant new environmental impacts, a substantial increase in the severity of an impact without mitigation to less than significant, or a feasible project alternative or mitigation measure considerably different from others previously identified that would clearly lessen the environmental impacts of the proposed 2008 Draft General Plan.

## 2.7 MASTER RESPONSE G: DEFERRED MITIGATION

Several commenters raised concerns that the mitigation measures included in the DEIR impermissibly deferred mitigation. In particular, some commenters expressed the belief that the programs and policies designed to reduce the impacts of the 2008 Draft General Plan improperly deferred the formulation of precise mitigation. Preparation of a subsequent climate action plan to mitigate climate change impacts, as described in Chapter 6 of the DEIR, was cited as one example of deferral.

The commenters are correct that, as a general matter, a lead agency must not defer the formulation of mitigation until after project approval (State CEQA Guidelines Section 15126.4[a][1][B]). The state courts have developed legal principles regarding the extent to which an agency can rely on a mitigation measure that defers some amount of environmental problem-solving until after project approval. In particular, deferral is permissible where the adopted mitigation measure commits the agency to a realistic performance standard or criterion that will ensure the mitigation of the significant effect, or lists alternative means of mitigating an impact that must be considered, analyzed, and possibly adopted in the future.

(See Section 15126.4[a][1][B] of the State CEQA Guidelines, which states that “measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way.” See also the following court decisions:

- ▶ *Endangered Habitats League v. County of Orange* [2005] 131 Cal.App.4th 777 [*Endangered Habitats League*], 793–794, which states that deferral is permissible where the agency commits itself to mitigation and either [1] adopts a performance standard and makes further approvals contingent on finding a way to meet the

standard or [2] lists alternative means of mitigating the impact that must be considered, analyzed, and possibly adopted in the future;

- ▶ *Riverwatch v. County of San Diego* [1999] 76 Cal.App.4th 1428, 1448–1450, which states that a deferred approach may be appropriate where it is not reasonably practical or feasible to provide a more complete analysis before approval and the EIR otherwise provides adequate information of the project’s impacts;
- ▶ *Sacramento Old City Assn. v. City Council* [1991] 229 Cal.App.3d 1011 [*Sacramento Old City Assn.*], 1029–1029; and
- ▶ *Defend the Bay v. City of Irvine* [2004] 119 Cal.App.4th 1261, 1275.)

The use of performance standards is particularly appropriate in connection with “program EIRs,” such as the DEIR for the 2008 Draft General Plan, that will necessarily be followed by additional, project-level environmental review. As noted in a passage cited in comment letter 26:

...for kinds of impacts for which mitigation is known to be feasible, but where practical considerations prohibit devising such measures early in the planning process (e.g., at the general plan amendment or rezone stage), the agency can commit itself to eventually devising measures that will satisfy specific performance criteria articulated at the time of project approval. Where future action to carry a project forward is contingent on devising means to satisfy such criteria, the agency should be able to rely on its commitment as evidence that significant impacts will in fact be mitigated.

(See *Sacramento Old City Assn.*, pages 1028–1029; see also *Rio Vista Farm Bureau Center v. County of Solano* [1992] 5 Cal.App.4th 351.)

Consistent with the CEQA requirements set forth above, the mitigation set forth in the DEIR, and the policies and programs included in the 2008 Draft General Plan, the County proposes to adopt performance standards to ensure the efficacy of the mitigation measures, policies, and programs. (*Endangered Habitats League*, pages 793–794.) For instance, Program HS.I-73 of the 2008 Draft General Plan, which requires the preparation of a comprehensive climate action plan and which certain commenters claim improperly defers mitigation, requires the climate action plan to identify benchmarks, monitoring procedures, and other steps needed to ensure that the county achieves its reduction of GHGs. The following benchmarks, which notably go beyond the requirements of AB 32, would be included:

- ▶ Overall emissions reductions of at least 10% below 1990 levels by 2015
- ▶ Overall emissions reductions of at least 20% below 1990 levels by 2020
- ▶ Reduction of total countywide energy consumption of at least 2% per year to achieve a minimum 20% reduction

Further, the climate action plan would include a chapter calculating GHG emissions for the base year 1990 and would forecast emissions in 2020 under a business-as-usual scenario. The chapter would also identify GHG emissions and target levels per sector. This inventory and forecast would provide a benchmark for planning and monitoring progress in government operations and the community.

Policies and measures to achieve the targeted reductions included in the climate action plan would be created through public input from all stakeholders and would require multisector efforts. Each measure would include a timeline, describe financing mechanisms, and assign responsibility to relevant agencies and departments. Developing strategies to achieve the ambitious benchmarks set forth above will necessarily involve considerable effort and time beyond that expended during the 2008 Draft General Plan planning process, which itself involved efforts by multiple stakeholders to study, weigh, and devise planning objectives for Solano County.

Moreover, the 2008 Draft General Plan includes numerous policies and programs that do not defer some amount of formulation. Among these policies and programs are the following:

- ▶ Policies LU.P-24, LU.P-25, and LU.P-37 in the Land Use chapter
- ▶ Policies AG.P-19 and AG.P-21 in the Agriculture chapter
- ▶ Policies RS.P-48, RS.P-50, and RS.P-55 in the Resources chapter
- ▶ Programs RS.I-8, RS.I-40, RS.I-42, RS.I-44, RS.I-45, RS.I-46, RS.I-47, RS.I-49, and RS.I-50 in the Resources chapter
- ▶ Policies HS.P-20, HS.P-22, and HS.P-43 in the Public Health and Safety chapter
- ▶ Programs HS.I-3, HS.I-60, and HS.I-64 in the Public Health and Safety chapter
- ▶ Policy TC.P-16 in the Transportation and Circulation chapter
- ▶ Program TC.I-10 in the Transportation and Circulation chapter
- ▶ Policy PF.P-27 in the Public Facilities and Services chapter
- ▶ Program PF.I-26 in the Public Facilities and Services chapter

The fact that certain policies and programs do not include detailed site-specific information on how the policy or program will be implemented is attributable to the programmatic and necessarily broad nature of the 2008 Draft General Plan (please refer to Master Response E, “Programmatic Nature of EIR,” and Master Response B, “Use of Two Development Scenarios”). Section 15152(c) of the State CEQA Guidelines recognizes that:

[w]here a lead agency is using the tiering process in connection with an EIR for a large-scale planning approval...site-specific information may not be feasible but can be deferred, in many instances, until such time as the lead agency prepares a future environmental document in connection with a project of a more limited geographical scale.

In the discussion that accompanies Section 15152 of the State CEQA Guidelines, the Governor’s Office of Planning and Research acknowledges that “not all effects can be mitigated at each step of the process. There will be some effects for which mitigation will not be feasible at an early step of approving a particular development project.” Supplemental CEQA review would then be required to develop the detailed mitigation.

Some commenters have compared the 2008 Draft General Plan to the situation in *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296 (*Sundstrom*). In that case, the Court of Appeal set aside a county’s approval of a conditional use permit for the construction of a sewage treatment plant. Among the conditions of approval were directions to the project applicant to prepare a hydrological study evaluating the project’s potential environmental effects and proposing mitigation measures that would then be implemented. The court held that the county violated CEQA in approving the project based on a negative declaration. The court reasoned that the deferral of the environmental assessment until after project approval violated CEQA’s policies that impacts must be identified before a project’s momentum eliminates or reduces the agency’s ability to change its course of action. (*Sundstrom*, pages 307–308.)

As may be clear from the description of that case, there are important distinctions between that case and Solano County’s process for preparing the 2008 Draft General Plan. First, the county in *Sundstrom* prepared a negative declaration for the wastewater treatment project, meaning that the county had determined there would be no significant effects on the environment, even before the required studies were performed. Solano County, however, has acknowledged several potentially significant environmental impacts of the 2008 Draft General Plan, such as those related to climate change, and in the DEIR, the County does not minimize or ignore these impacts in reliance on future studies.

Further, the county in *Sundstrom* approved the project without so much as considering or addressing any mitigation measures for the project. In contrast, here, Solano County has set forth numerous mitigation measures, as well as 2008 Draft General Plan policies and programs designed to mitigate the plan’s environmental

consequences. As noted, where the mitigation measures, policies, or programs require future action, performance standards are included to ensure effectiveness of the mitigation.

The *San Joaquin Raptor* case, cited in Comment 26-132 and discussed above in Master Response B, “Use of Two Development Scenarios,” is also distinguishable. In *San Joaquin Raptor*, the petitioners attacked an EIR’s analysis of the project’s impacts on vernal pools and burrowing owl habitat. The EIR stated that the project would maintain a setback of at least 25 feet from the nearest vernal pools, and concluded that this setback would be sufficient to avoid impacts. The EIR also called for follow-up protocol surveys for special-status plants before commencement of mining operations within 300 feet of the vernal pools, and required the development of management plans and consultation with wildlife agencies if the surveys detected special-status species. Specifically, as stated in the *San Joaquin Raptor* decision (*San Joaquin Raptor*, page 669), the mitigation at issue required that:

no mining activity within the 300-foot buffer would occur until specified conditions are met, namely (1) a protocol survey is conducted showing the absence of such species or (b) implementation of a management plan developed by a qualified biologist in consultation with the appropriate jurisdictional agencies.

The petitioner attacked these measures as impermissibly deferring mitigation. The Court of Appeal agreed, finding that the mitigation measures set forth in the EIR did not identify criteria or standards or identify the specific management activities that would be carried out. Mitigation adopted to address potential impacts on burrowing owls suffered from the same defect. The court’s holding was premised largely on its concern that “[t]he success or failure of the mitigation efforts in regard to impact on such vernal pool species may largely depend on management plans that have not yet been formulated, and have not been subject to analysis and review within the EIR” (*San Joaquin Raptor*, page 671). According to the court, the lead agency violated CEQA by “simply requir[ing] a project applicant to obtain a biological report and then comply with any recommendations that may be made in the report” (*San Joaquin Raptor*, page 671, citing *Endangered Habitats League*, page 793). Thus, the court determined that “the EIR leaves the reader in the dark about what land management steps will be taken, or what specific criteria or performance standard will be met” (*San Joaquin Raptor*, page 671).

Unlike *San Joaquin Raptor*, here, Solano County’s proposed mitigation measures, policies, and programs do not leave readers in the dark as to what mitigation will occur. Rather, where details are not currently available, the mitigation measures, policies, and programs set forth specific performance standards that the mitigation must achieve and require monitoring and benchmarks to ensure that those standards will be achieved.

## **2.8 MASTER RESPONSE H: MITIGATION FOR SIGNIFICANT AND UNAVOIDABLE IMPACTS**

Several commenters expressed disagreement with the conclusion of the DEIR that many of the significant and unavoidable adverse impacts of the 2008 Draft General Plan cannot be mitigated to a less-than-significant level. Many of these commenters also asserted that the County is not recommending mitigation measures, revising policies, or changing the proposed growth patterns in the 2008 Draft General Plan in an attempt to mitigate the plan’s environmental impacts to the extent feasible as required by CEQA.

The County has not simply “thrown up its hands” and given up trying to address the impacts of growth, as asserted by some commenters. Rather, the County has comprehensively addressed the environmental challenges associated with long-term planning for population growth, and has developed detailed policies and implementation programs intended to reduce environmental effects to a less-than-significant level, where feasible. The seemingly large number of significant and unavoidable environmental impacts is a function of:

- ▶ the County’s conservative approach in characterizing the significance of impacts (i.e., concluding in close or uncertain situations that effects are significant);

- ▶ the long-term time horizon of the 2008 Draft General Plan and EIR;
- ▶ the inevitability of some growth under any realistic long-term planning scenario, given projected population increases;
- ▶ the specificity used in the DEIR in formulating categories of environmental impacts;
- ▶ the nature of existing environmental conditions within the region; and
- ▶ the magnitude of development pressures in the region, regardless of the County’s actions.

The CEQA statute and State CEQA Guidelines do not limit or provide guidance on any particular number of “significant and unavoidable” impacts that an EIR may or must identify. Typically, general plans are broad in scope and scale in terms of land coverage, population, and impacts on resources and services. Impacts on resources and public services are often considered significant and unavoidable at this stage of planning because individual project-specific details are not yet known, but that information will likely become available as specific projects are brought forward for their own consideration. Specific projects that are considered after the 2008 Draft General Plan is adopted may be required to undergo additional environmental review that will investigate site-specific impacts and provide necessary mitigation measures in accordance with policies of the 2008 Draft General Plan and other federal, state, and local regulatory requirements (please refer to Master Response E, “Programmatic Nature of EIR”).

In this instance, the DEIR has also sufficiently analyzed impacts of the proposed project and has proposed mitigation for those impacts to the extent feasible in accordance with CEQA’s requirements for a program EIR (State CEQA Guidelines Section 15168). The DEIR is intended to analyze impacts of the 2008 Draft General Plan and must identify measures to minimize any significant impacts (State CEQA Guidelines Section 15121[a]). Although the DEIR includes several recommended mitigation measures in addition to the policies and programs contained in the 2008 Draft General Plan (which are intended as self-mitigation for plan implementation), many of the impacts will remain significant and unavoidable despite these measures.

In a further attempt to minimize or avoid significant impacts of the 2008 Draft General Plan and to comply with the requirements of State CEQA Guidelines Section 15126.6, the DEIR compares four alternatives to the proposed project. As described more fully in Chapter 5, “Alternatives to the Proposed Project,” of the DEIR, these alternatives were formed as a result of close consultation between the preparer of the DEIR and County staff. Among the alternatives considered is Alternative 2, Improved Environmental Sustainability. As noted in the DEIR’s description of Alternative 2, the public process of developing the 2008 Draft General Plan sought to increase sustainability within the county with regard to the economy, the environment, and social equity to the greatest extent feasible; at the same time, it was recognized that these three goals may require some balancing such that none are perfectly achieved. Alternative 2 seeks to maximize environmental sustainability by modifying the land use diagram, certain land use designations, and certain policies and programs of the 2008 Draft General Plan that are designed to achieve primarily economic or social-equity objectives. Ultimately, although many impacts would be reduced under Alternative 2, many other impacts would actually be similar to those under the 2008 Draft General Plan (see Chapter 5 of the DEIR).

## **2.9 MASTER RESPONSE I: ORDERLY GROWTH INITIATIVE**

Some commenters raised a concern that the 2008 Draft General Plan would conflict with Solano County’s Orderly Growth Initiative, which will sunset in 2010. These comments generally fell into two categories:

- ▶ The 2008 Draft General Plan cannot be consistent with the Orderly Growth Initiative because the 2008 Draft General Plan proposes changes to that initiative.

- ▶ Proposed industrial, commercial, and rural residential development outside the MSAs is inconsistent with the Orderly Growth Initiative’s direction that “what is urban shall be municipal.”

## 2.9.1 CONSISTENCY WITH THE ORDERLY GROWTH INITIATIVE

The proposed changes to the policies put in place in the current General Plan by the Orderly Growth Initiative merely update the terminology of the policies to conform with the terminology used in the 2008 Draft General Plan. The proposed changes would not substantively change the policies set in place by the Orderly Growth Initiative, such as directing new urban development and growth to municipal areas and establishing maximum permitted densities in agricultural regions.

The replacement of the “Intensive Agriculture” and “Extensive Agriculture” land use designations with the “Agriculture” designation does not substantively change the policies put in place under the Orderly Growth Initiative. These designations are used in the current General Plan to define minimum parcel sizes. The 2008 Draft General Plan also defines minimum parcel sizes as shown in Table AG-3 in the Agriculture chapter. Minimum densities are established for each agricultural region defined in the 2008 Draft General Plan. In all agricultural regions except Suisun Valley and Green Valley, the proposed minimum parcel sizes (and thus development densities) in Table AG-3 correspond to existing agricultural zoning within the region. In the case of Suisun Valley, a new 20-acre minimum lot size is being proposed as an outcome of an extensive community input process within that community. In the case of Green Valley, a 20-acre minimum lot size is proposed, subject to refinement within the *Middle Green Valley Specific Plan*, to be completed as a 2008 Draft General Plan implementation item. The environmental effects of these proposals have been evaluated in the DEIR.

Contrary to some commenters’ assertions, the DEIR did not hide the fact that the policies put in place through the Orderly Growth Initiative would be slightly modified. In fact, throughout the DEIR all changes to those policies were shown in ~~strike through~~ and underline format. The DEIR also explained that the changes would need to be eventually approved through voter approval.

## 2.9.2 MUNICIPAL SERVICE AREAS

The use of MSAs actually encourages urbanization to occur and remain within municipal areas because it allows the County to guide urban development toward the county’s cities, which will undoubtedly grow within the time frame of the 2008 Draft General Plan.

An MSA defines the area of current and/or future jurisdictional responsibility of a city to provide public services and infrastructure necessary to support planned urban land uses. Within MSAs, future development of urban land uses would be facilitated and served through city annexation. Existing land uses within MSAs and future uses consistent with agricultural zoning would continue under the County’s jurisdiction until the land is annexed to the city for conversion to urban uses. Land uses proposed within the MSAs are generally consistent with the planned land uses within each city’s general plan. Designating urban uses within the MSAs ensures that future urban uses will occur within municipal areas, once those areas are annexed.

As shown in Chapter 4 of this FEIR, the second paragraph of Section 1.6 on page 1-5 of the DEIR is revised as follows:

The County’s adoption of the 2008 Draft General Plan may lead to revisions to the County’s Development Code, including the Zoning Ordinance. It is possible that changes could be made to other existing County plans and programs as well, including changes to the Orderly Growth Initiative, depending on the final adopted provisions of the 2008 Draft General Plan. Any inconsistencies with the Orderly Growth Initiative would require approval by Solano County voters to allow the County Board of Supervisors to adopt the 2008 Draft General Plan.

A number of future actions may be based, in whole or in part, on the environmental evaluation undertaken as part of the 2008 Draft General Plan and this EIR. Review and approval of subsequent development projects may require review and approval by agencies including but not limited to:

## 2.10 MASTER RESPONSE J: BIOLOGICAL RESOURCES MITIGATION STRATEGIES

Some commenters asserted that the DEIR mitigation recommended for biological resources is insufficient. In particular, a few commenters expressed the belief that the 1:1 mitigation ratio for vernal pool grassland and the 1:1 mitigation ratio for loss of habitat for Swainson's hawk, other raptors, and burrowing owl is legally inadequate.

The Third District Court of Appeal, in *Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018 (*ECOS*), recently clarified the appropriateness of mitigation ratios to address biological impacts. The *ECOS* court held that, in light of the project's entire mitigation strategy, the purchase of one-half acre for habitat reserves for every acre of development under the project satisfied the mitigation requirements under CEQA and the California Endangered Species Act. Refusing to disturb the lead agencies' decision to reject a 1:1 mitigation ratio based on issues of feasibility, practicality in meeting planned objectives, and other overriding considerations, the court noted that the project mitigated impacts on covered species in a variety of ways beyond the purchase of one-half acre for every acre developed. The *ECOS* court made clear that the mitigation ratio should not be viewed in isolation, but should be seen as part of a larger comprehensive and integrated mitigation program involving long-term management of properties, enhancement and restoration of some portions of some of the properties, and preservation against future development prospects.

In upholding the mitigation ratio employed in *ECOS* (0.5:1), the court noted that every acre within the project area must be replaced at the mitigation ratio, whether or not the land proposed for development provides habitat, and regardless of the quality of habitat or the occurrence of known or documented species. The *ECOS* court also underscored the principle that mitigation under CEQA must be "roughly proportional" to the impacts caused by the project. (State CEQA Guidelines Section 15126.4[a][4][B]; *Napa Citizens for Honest Government v. Napa County Bd. of Supervisors* [2001] 91 Cal.App.4th 342, 360.) In *ECOS*, the lead agencies found the 1:1 ratio alternative infeasible expressly because it would result in developers paying mitigation fees at a level that would exceed the impact caused by their projects. In upholding this approach, the appellate court affirmed that CEQA permits a lead agency to rely on legal feasibility constraints in setting the mitigation ratio.

Mitigation Measures 4.6-1a and 4.6-1b, "Preserve Agricultural Foraging Habitat," and Mitigation Measures 4.6-3a and 4.6-3b, "Require a Habitat Inventory, Buffer Zones, and Appropriate Avoidance and Compensatory Measures to Mitigate Habitat Loss," in the DEIR each constitute a global mitigation strategy to mitigate impacts on agricultural foraging habitat and loss of habitat values of valley floor grassland and vernal pool grassland habitats. These measures include a variety of strategies to mitigate the biological impacts of the 2008 Draft General Plan, beyond simply preserving habitat at the 1:1 ratio (see DEIR pages 4.6-36 and 4.6-37 for Mitigation Measures 4.6-1a and 4.6-1b and pages 4.6-43 through 4.6-45 for Mitigation Measures 4.6-3a and 4.6-3b). The mitigation measures also include the following other strategies:

- ▶ additional criteria for protecting the burrowing owl (Mitigation Measures 4.6-1[a] and 4.6-1[b], measure [2]);
- ▶ requiring habitat inventory and assessment (Mitigation Measures 4.6-3[a] and 4.6-3[b], measure [1]);
- ▶ requiring site-specific buffer zones for extremely rare and/or range-limited species (Mitigation Measures 4.6-3[a] and 4.6-3[b], measure [2]);
- ▶ special measures to avoid special-status plant species, vernal pool invertebrates, and California tiger salamanders (Mitigation Measures 4.6-3[a] and 4.6-3[b], measures [4]–[6]); and

- ▶ measures to restore and protect lands preserved in accordance with the 1:1 ratio (Mitigation Measures 4.6-1[a] and 4.6-1[b], measure [1]; Mitigation Measure 4.6-3[a] and 4.6-3[b], measure [3]).

Notably, the proposed 1:1 mitigation ratio is *twice* the ratio at issue in *ECOS*.

Viewing the County's proposed mitigation strategies as a whole, as the *ECOS* court suggests, the County has determined that the impacts of the 2008 Draft General Plan are satisfactorily mitigated under CEQA. Taking into consideration economic feasibility and practicality in meeting the County's planning objectives, the County believes that the proposed mitigation strategies satisfy commenters' concerns as well as the objectives and mandates of CEQA.

Some comments suggested that preservation is not sufficient mitigation in the sense that even with preservation, there would still be a net loss to the resource (see, e.g., Comments 26-28 and 26-29). First, as noted, Mitigation Measures 4.6-1(a) and 4.6-1(b) and Mitigation Measures 4.6-3(a) and 4.6-3(b) do not simply require setting aside land to preserve. Instead, these measures require restoration, which would ensure that the habitat developed upon would not be "lost" in the sense that the preserved land may not be as valuable habitat as the land being developed, and restoration would help to improve the quality of the preserved habitat.

Further, in addressing similar arguments, other recent appellate court decisions have upheld the use of preservation as mitigation. For instance, in *Mira Mar Mobile Community v. City of Oceanside* 119 Cal.App.4th 477 (*Mira Mar*), the Fourth District Court of Appeal heard a challenge to the City of Oceanside's approval of a condominium project on 7.5 acres of private property. The project would cause the loss of about 0.86 acre of coastal sage scrub, which was identified as a significant impact on a sensitive resource. The EIR required the applicant to mitigate this loss at a ratio of 3:1 (or 2.58 acres of mitigation for 0.86 acre of lost habitat). In implementing this mitigation measure, the city required the preservation of 0.65 acre of undisturbed coastal sage scrub, the restoration and preservation of 1.3 acres of disturbed coastal sage scrub, and the creation of 0.63 acre of new coastal sage scrub on-site. Petitioners argued that this mitigation was inadequate because preservation of coastal sage scrub does not mitigate the loss of habitat, making the measure "illusory and inadequate" (*Mira Mar*, page 495). The court disagreed, citing Section 15370 of the State CEQA Guidelines, as well as the opinions of various resource agencies, for the proposition that preservation can be a feasible means of reducing or eliminating the impact of lost habitat. (See also *Defend the Bay v. City of Irvine* [2004] 119 Cal. App. 4th 1261, which upheld on-site preservation for mitigation of loss of agricultural resources.)

## 2.11 MASTER RESPONSE K: SOLANO HCP

Several commenters suggested that that a wide range of potential environmental impacts on biological resources would be mitigated if only the County would participate in the *Solano Multi-Species Habitat Conservation Plan* (Solano HCP), which is in preparation.

Solano County Water Agency (SCWA) is preparing the Solano HCP for portions of Solano County. In March 1999, the U.S. Fish and Wildlife Service (USFWS), in accordance with Section 7 of the federal Endangered Species Act (ESA), issued a biological opinion regarding the Solano Project Water Service Contract Renewal between the U.S. Bureau of Reclamation and SCWA. The 25-year contract provides for continued delivery of Solano Project water for agricultural, municipal, and industrial purposes throughout the SCWA service area. SCWA delivers Solano Project water in accordance with contracts with its eight member agencies: the Cities of Vacaville, Fairfield, Suisun City, and Vallejo; Solano Irrigation District (SID); Maine Prairie Water District (MPWD); the University of California, Davis (UC Davis); and the California Medical Facility/California State Prison, Vacaville. The County does not receive water from the Solano Project and therefore is not required to participate in the Solano HCP. When preparation of the Solano HCP began, SCWA provided the opportunity for other agencies to participate. At that time the County chose not to participate in the Solano HCP out of concern that it could have adverse impacts on the agricultural community. However, the County has monitored the preparation of the Solano HCP and may choose to join the program at a later date.

Once USFWS has approved the Solano HCP, USFWS will be able to issue incidental take permits to the participating agencies to cover the activities listed in the Solano HCP, including local development projects. As a result, regulatory processes would be streamlined. Project proponents would be able to submit individual applications directly to local agencies for incidental take permits, rather than also needing to obtain incidental take permits directly from USFWS. Therefore, whether the County participates in the Solano HCP or not, the mitigation proposed for impacts on biological resources that are subject to the jurisdiction of USFWS would be the same.

## **2.12 MASTER RESPONSE L: INADEQUATE DRAINAGE AND FLOODING ANALYSIS**

Several commenters were concerned that the analysis of regional and local drainage and flooding impacts was inadequate. The commenters suggested that the DEIR fully evaluate the extent of current and potential future problems and that it address current problems in both the unincorporated and urban areas as well as potential problems created by new development. The majority of those providing comments on this topic expressed the opinion that the DEIR does not adequately support its conclusion that the impacts would be less than significant and stated that additional studies and mitigation measures are necessary.

The established significance thresholds used to determine potential impacts on drainages or risks of flooding included an evaluation of whether implementation of the 2008 Draft General Plan would:

- ▶ substantially alter the existing drainage pattern of the area;
- ▶ substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- ▶ create or contribute runoff water that would exceed the capacity (peak flow) of existing or planned stormwater drainage systems;
- ▶ place within a 100-year flood hazard area, as mapped on a federal flood hazard boundary map or Flood Insurance Rate Map (FIRM) or other flood hazard delineation map, structures that would impede or redirect flood flows; or
- ▶ place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or FIRM or other flood hazard delineation map.

As discussed in Section 4.5, “Hydrology and Water Quality,” of the DEIR, the changes in Public, Residential, Commercial, and Industrial land use designations consistent with the 2008 Draft General Plan would result in the potential development of residential, industrial, or commercial structures in floodplains, thereby exposing people and structures to flood hazards. Similar exposure could occur in shoreline areas that would be subject to flooding because of extreme high tides or concurrent high tides and watershed flooding. Development as a result of land use changes would also increase the amount of impervious surfaces, thereby increasing the total volume and peak discharge rate of stormwater runoff. This could alter local drainage patterns, increasing watershed flow rates above the natural background level (i.e., peak flow rates). Increased peak flow rates may exceed drainage system capacities, exacerbate erosion in overland flow and drainage swales and creeks, and result in downstream sedimentation. Sedimentation, in turn, could increase the rate of soil deposition in natural receiving waters and reduce conveyance capacities, possibly contributing to localized flooding.

In response to commenters’ concerns relating to addressing current and future problems created by new development, the methodology section of DEIR Section 4.5, “Hydrology and Water Quality,” has been revised to further describe the responsibilities of the County and respective cities for land use changes located within the

boundaries of MSAs and the approach for environmental impact analysis within these areas. As shown in Chapter 4 of this FEIR, the “Methodology” section on page 4.5-37 of the DEIR is revised as follows:

## **METHODOLOGY**

The environmental analysis for hydrology and water quality was based largely on the information in SCWA’s *Phase I Integrated Regional Water Resources Plan* (SCWA 2004), *Integrated Regional Water Management Plan and Strategic Plan* (SCWA 2005b), and *Urban Water Management Plan* (SCWA 2005c). The Water Resources, Public Facilities and Services, and Health and Safety background reports prepared for the 2008 Draft General Plan (Solano County 2006a, 2006b, 2006c) were also consulted, along with the local and regional agency information sources listed in Chapter 8, “References,” of this EIR and described more fully in preceding portions of this section. The effects of the 2008 Draft General Plan were compared to environmental baseline conditions (i.e., existing conditions) to determine impacts. There is overlap of some 2008 Draft General Plan policies, regulations, and programs as they pertain to water quality and hydrology. For instance, flooding is addressed in the Land Use, Public Facilities and Services, Transportation and Circulation, and Health and Safety chapters. Where policies, regulations, or programs are utilized for mitigation in more than one impact, their first instance will be described and referred to in subsequent references.

The hydrology and water resources impact analysis focuses primarily on proposed development and land use changes in the 2008 Draft General Plan for lands located within the unincorporated areas of the county outside the boundaries of the MSAs. The cities would be responsible for determining potential impacts of proposed development or land use changes within the MSAs. Environmental impacts associated with proposed land use changes and developments within the MSAs are to be covered within each city’s general plan and its associated environmental analysis. Environmental impacts would also be evaluated by each city on a project-level basis. As presented in Policy LU.P-7 of the 2008 Draft General Plan, temporary land uses and uses that are consistent with the current zoning on unincorporated lands within MSAs, and that do not conflict with planned land uses, would be permitted until the property is annexed to a city for urban development. At present, until property located within an MSA is annexed by a city, the only approved land use designation for such a property is agricultural use. Therefore, existing and future uses of agricultural land would be evaluated for portions of the unincorporated county within and outside of the MSAs.

To address comments regarding an insufficient discussion of countywide existing drainage conditions and existing drainage and flooding problems, supplemental information has been incorporated into the environmental setting of the DEIR. As shown in Chapter 4 of this FEIR, the “Surface-Water Resources” section in Section 4.5.1, “Existing Conditions,” beginning on page 4.5-1 of the DEIR is revised as follows:

## **SURFACE-WATER RESOURCES**

Surface-water resources within Solano County are diverse and include many creeks, drainages, sloughs, marshes, and bays. Exhibits 4.5-1 and 4.5-2 show the water service areas and major water resources, watersheds, and water bodies in Solano County. ~~As shown in Exhibit 4.5-2, Solano County has two major drainage provinces, the Sacramento River/Delta Drainage Province and the San Francisco Bay Drainage Province. As a result, Solano County falls within the jurisdiction of two regional water quality control boards (RWQCBs), the San Francisco Bay RWQCB and the Central Valley RWQCB.~~ Each of the major water resources in Solano County is described in more detail below. Water quality characteristics of significant water bodies are discussed in additional detail in the “Water Supply and Water Demand” section of the Water Resources Background Report prepared for the 2008 Draft General Plan (Solano County 2006).

## **Major Creek and Drainage Systems**

Solano County has two major drainage provinces, the Sacramento River/Delta Drainage Province and the San Francisco Bay Drainage Province. Major drainage features are shown in Exhibit 4.5-2. As a result, Solano County falls within the jurisdiction of two regional water quality control boards (RWQCBs), the San Francisco Bay RWQCB and the Central Valley RWQCB. The San Francisco Bay Province includes the southwestern portion of the county and includes the local watersheds of the Napa River, American Canyon Creek, Green Valley Creek, Suisun Creek, Ledge wood Creek, Laurel Creek, McCoy Creek, Union Creek, and their tributaries, which drain into San Francisco Bay through Suisun Bay and San Pablo Bay. The Sacramento River Province includes local watersheds in the northeast portion of the county. Major drainages in this province include Alamo Creek, Ulatis Creek, Putah Creek and their tributaries, which drain into the Sacramento–San Joaquin Delta.

To further address comments regarding an insufficient discussion of existing drainage and flooding problems in the county, as shown in Chapter 4 of this FEIR, the following text is added at the end of Section 4.5.1, “Existing Conditions,” in Section 4.5, “Hydrology and Water Resources,” following the existing Table 4.5-5 on page 4.5-19 of the DEIR:

### **DRAINAGE AND FLOODING**

Five major drainage regions (Suisun, Ulatis, Dixon, Vallejo, and Montezuma Hills) within Solano County have been established for flood control planning purposes. The drainage regions are based on major watersheds and resource conservation district (RCD) jurisdictions so that flooding problems and potential solutions can be addressed on a watershed basis through the representative RCDs. The following presents a brief summary of each region.

#### **Suisun Region**

This region is located at the western side of the county and includes the Fairfield Streams Group, Suisun Creek, Green Valley Creek, Hennessey Creek, Jameson Canyon Creek, American Canyon Creek, and Freeborn Creek subareas. It also includes Suisun Marsh.

The Fairfield Streams Group includes five streams: from east to west, McCoy Creek, Laurel Creek, Union Avenue Creek, Pennsylvania Avenue Creek, and Ledge wood Creek. Drainage within this region originates in the Vaca Mountains, flowing through Fairfield and discharging into a tidal channels tributary to Suisun Slough. Major drainage improvements have been completed by USACE and the City of Fairfield, and most areas have a 100-year level of flood protection. The only remaining area that experiences drainage problems is the upper reaches of Ledge wood Creek, above the Fairfield Stream Flood Control Project. The banks have been overtopped with shallow flooding in the vicinity of Ledge wood Road, Mankas Corner Road, and Abernathy Road. The Suisun Creek subarea, located west of Ledge wood Creek, has several problems. Shallow flooding in the upstream reaches is caused by limited capacity and significant vegetation within the channel. South of I-80, channel banks have been reported to overtop. Channel capacity has been reduced because of heavy vegetative growth and siltation.

In 1962, USACE constructed the Green Valley Project and turned it over to SCWA for operation and maintenance. The project consisted of improvements to Green Valley Creek and Dan Wilson Creek. More recently, the City of Fairfield has improved Green Valley Creek from Central Way to Reservoir Road to provide 100-year flood protection within the North Cordelia Improvement District. The Green Valley Country Club Estates, located above the Green Valley Project, lies within the 100-year floodplain. Flood protection for this area and future development downstream in Fairfield is a concern.

Hennessey Creek is a small tributary that enters Green Valley Creek northwest of Mangels Boulevard. The downstream reach of Hennessey Creek has been realigned to the east along Reservoir Lane,

eliminating the natural channel within the area. Because of the diversion of Hennessey Creek, through three 72-inch concrete pipes, the areas have experienced significant siltation problems.

Suisun Marsh has many areas that are up to 3 feet higher because of heavy siltation. There has been little or no removal of tules and silt from the creeks in recent years because of environmental regulations. The tules restrict the flow, causing the silt to settle, further decreasing channel capacity. Eventually, the channel is overtopped and sediment is deposited within the adjacent marsh area. The siltation process is amplified during storms.

### **Ulatis Region**

The Ulatis region is drained primarily by Ulatis Creek and its tributaries. The major tributary creeks are Ulatis Creek, Alamo Creek, Horse Creek, Gibson Canyon Creek, Sweeney Creek, and McCune Creek. The creek system drains to Cache Slough, which flows into the Sacramento River. Stream channels are generally straight and confined with steep slopes. Natural channels crossing the valley floor were generally sinuous, braided, and poorly defined. Historically, the bulk of runoff within the watershed originated in the mountainous upper watersheds.

In recent years, improvements within this region to the channels in the Ulatis watershed consisted of realigning and widening some existing creek channels, constructing new channels, and building several miles of levees. The improvements were intended to protect the area from the 10-year storm event and maintain a design freeboard of 1.5 to 3.5 feet. The objective was to provide flood protection for the agricultural lands east of Vacaville and to carry some increased flows from the developing city of Vacaville. Increasing development in and around Vacaville has resulted in drainage improvements, including detention storage to reduce downstream flows to predevelopment levels. Rural residences have also developed in the lower portions of the foothills and across the valley floor. Most development has been single homes, and in most cases, no significant drainage improvements were included in the development.

### **Dixon Region**

The Dixon region covers the northeastern section of the county. Most of the natural streams within this area have been filled and the area is now drained by numerous interconnected human-made ditches that traverse the area in a north-to-south and west-to-east pattern. The entire region is relatively flat and the ditches are sized for drainage, not flood control. Runoff from small storms may remain in roadside ditches; however, heavy storm runoff may overtop a road, sheet flow across fields, and then discharge into nearby but separate facilities. Most of the drainage ditches have very limited capacity and also have culvert crossings at frequent intervals. Runoff in excess of the culvert capacity ponds in the upstream channel until the channel is overtopped. Enlarging a culvert or several culverts along a reach of ditch could decrease the ponding in the immediate area but would generally exacerbate downstream ponding. Most of the problems in this region can be characterized as shallow ponding in fields and along roads. Extreme storms can cause extensive flooding over large areas in the southeastern portion of the region, especially when the flow is high in the Yolo Bypass. With increased runoff from more intensive agricultural practices, even small storms now cause widespread local ponding.

### **Vallejo Region**

The Vallejo region is located in the western panhandle of the county. A series of drainage basins have been established in this region to provide for drainage. The current flood control issues in this region center around needs within the city of Vallejo, which is the responsibility of the Vallejo Sanitation and Flood Control District and the City of Benicia.

## **Montezuma Hills Region**

The Montezuma Hills region is located in the southeast portion of the county. The region contains the city of Rio Vista. Flooding within Rio Vista is related to high flows in the Sacramento River that inundate waterfront areas and surcharge the city's storm drain system. The rural areas of the region are sparsely populated and have relatively good drainage. The streams are intermittent with relatively small flows and few problems.

## **Regional Drainage Problems**

Even with the many flood control projects and initiatives in place, numerous rural drainage problems exist within Solano County. The Suisun, Ulatis, and Dixon regions cover the areas where the majority of rural drainage problems have been identified. Three primary factors influence runoff characteristics and contribute to these problems:

- ▶ *Hydrologic patterns.* Rainfall intensities, based on rainfall gauge data, have increased recently compared to earlier records.
- ▶ *Urban development.* Impervious areas such as rooftops, parking areas, driveways, and streets generate greater runoff than natural areas.
- ▶ *More intensive agricultural usage.* With irrigation water available from Lake Berryessa, dryland farming has been displaced by more extensive and intensive cropping patterns. Much of the earlier irrigated pasture and alfalfa is now orchards, croplands, and extensive row crops. Most fields have been leveled and significant increases of runoff from agricultural lands within these areas have been reported.

Solving the existing flood control problems for a problem area or an entire watershed requires a more comprehensive and coordinated planning effort than solving local problems. Typically, additional data must be gathered and studies of the problems and drainage systems must be conducted to determine the most viable solution and to minimize downstream impacts are necessary. In addition, the solutions may require more complex permitting and funding mechanisms. In addition to a wide range of flooding problems, there is erosion in the upper reaches and siltation throughout the lower reaches of the channel network.

To provide further discussion of the existing drainage and flooding conditions within the unincorporated areas of the county, the description of the SCWA *Flood Control Master Plan* on page 4.5-36 of the DEIR is expanded as follows (please note that all subsequent tables in Section 4.5, and text references to these tables, are renumbered to reflect the insertion of the new table below):

## **SCWA Flood Control Master Plan**

SCWA has adopted a master plan governing flood control and flood control improvements within its territory. In February 1997, SCWA staff outlined a two-phased approach to develop the countywide *Flood Control Master Plan* that would include an analysis of both infrastructure and institutional issues. Phase I of the master plan was completed in November 1997. The Phase I report documented flood-related problems reported by individuals, the Solano County Department of Transportation, the flood control task force working groups, the local resource conservation districts, cities, and site-specific information provided by SCWA. This information was used in Phase II to analyze the problems and establish the basis for their consideration by SCWA in developing an overall master plan. The plan also included an inventory of major drainage systems and identified the agency responsible for maintenance. Table 4.5-7 contains general information for waterways that are partially or entirely maintained by SCWA.

<b>Table 4.5-7 Waterways Maintained by SCWA</b>		
<u>Drainage Region</u>	<u>Channel Name</u>	<u>Receiving Water</u>
<u>Suisun</u>	<u>Dan Wilson Creek</u>	<u>Suisun Creek</u>
	<u>Green Valley Creek</u>	<u>Cordelia Slough</u>
	<u>Putah South Canal</u>	<u>Terminal Reservoir</u>
<u>Ulatis</u>	<u>Alamo Creek</u>	<u>Ulatis Creek</u>
	<u>Gibson Canyon</u>	<u>Creek McCune Creek</u>
	<u>Horse Creek</u>	<u>Ulatis Creek</u>
	<u>Laguna Creek</u>	<u>Alamo Creek</u>
	<u>Lower Alamo Creek</u>	<u>Ulatis Creek</u>
	<u>McCune Creek</u>	<u>Ulatis Creek</u>
	<u>Sweeney Creek</u>	<u>McCune Creek</u>
	<u>Ulatis Creek</u>	<u>Cache Slough</u>
Note: SCWA = Solano County Water Agency Source: Data compiled by EDAW in 2008		

The Flood Control Master Plan also identifies problem drainage areas and potential causes for drainage problems, and ranks problem watersheds to prioritize recommendations for flood control improvements. The majority of identified problem areas are also located within the 100-year floodplain; however, many identified problem areas are within the Dixon and Ulatis regions located outside of the 100-year floodplain. 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; for the Ledge wood, Suisun, Dixon, McCune, Sweeney, Gibson Canyon, and Horse watersheds and many projects are being considered for implementation. The watershed studies evaluate problem areas from the standpoint of all lands that drain into a waterway and identify potential solutions to flooding and drainage problems. The studies also look at potential downstream impacts so that any potential solutions will not adversely affect downstream interests. After the studies are complete, SCWA staff works on implementing solutions. SCWA coordinates with the Flood Control Advisory Committee and local residents to develop projects as recommended in the watershed studies. It is SCWA policy that SCWA will consider funding part of the capital costs of a potential project, but others must fund permanent operations and maintenance. Solutions are usually difficult to implement, as many of the problem areas are rural and it is difficult to find cost-effective solutions and to get operations and maintenance funding.

SCWA has established the following flood control objectives:

- ▶ Manage the Ulatis Flood Control Project to provide the 10-year recurrence level of flood protection for which the project was designed and work with interested agencies and determine responsibility for provision of greater levels of flood protection.
- ▶ Manage the Green Valley Flood Control Project to provide the 40-year recurrence level of flood protection for which the project was designed and work with interested agencies and determine responsibility for provision of greater levels of flood protection.
- ▶ Facilitate communication and coordination of flood control projects in Solano County so that projects and developments within a watershed mitigate their runoff impacts on existing and planned facilities for flood control.

- ▶ Actively pursue adequate protection for Solano County from flooding from the Sacramento River and tributaries by advocating adequate flood protection along the west side of the Yolo Bypass to protect agricultural land.
- ▶ Keep abreast of new regulations and technology in flood control management.
- ▶ Prepare to be able to respond to flood situations.
- ▶ Monitor and assist in planning for flood protection for areas served by unimproved channels.

In addition, SCWA has prepared a flood awareness manual that provides homeowners helpful information about preparing for floods, how homeowners can reduce their flooding risks, what to do if flooding occurs, and cleaning up after a flood event. Included within the manual are county maps that identify FEMA flood zones, FEMA flood probabilities, county water systems, and county watershed basins.

SCWA has also developed a Flood Hazard Warning Program to help ensure that county residents who live in areas with a high probability of flooding have time to prepare and evacuate, if needed.

To further address commenters' drainage concerns, the portion of the analysis for Impact 4.5-2a that begins after the impact summary on page 4.5-45 and ends with the second paragraph of "Erosion and Sediment Control Programs" on page 4.5-46 is revised as follows:

~~Solano County cities are each responsible for their own storm drainage and flood control. Flood control improvements are generally funded by the cities through taxes and/or assessments. SCWA is not responsible for city flood control issues, even though it sometimes assists Solano County's cities in addressing upstream and downstream impacts.~~

~~SCWA is responsible for operations and maintenance of the Ulatis Flood Control Project and the Green Valley Flood Control Project. Flood control functions for the Delta (from precipitation and tides) rely on levees. Levee protection is addressed in Impact 4.5-6a, "Potential for Failure of a Levee," below.~~

~~The Ulatis Flood Control Project is located in the Vacaville-Elmira drainage basin. The primary purpose of the Ulatis project is to protect agricultural land downstream of Vacaville. It was designed to control storm drain systems with a capacity to handle a 10-year recurrence level, or a storm that occurs on an average once in every 10 years. About 57 miles of channel in the Ulatis Project is maintained. The Green Valley Flood Control Project is located in the Cordelia area and partially within the city of Fairfield. When the Green Valley Project was first built, the service area was unincorporated and largely undeveloped. It is designed to control a storm with a 40-year recurrence level. A total of 6 miles of channel is located in the Green Valley Project.~~

~~Both projects include unlined earth channels where some vegetation is allowed to grow for slope protection. As development in the watersheds continues, SCWA must ensure adequate capacity for additional runoff. SCWA works with the cities to ensure that development projects adequately mitigate their stormwater runoff impacts. Part of SCWA's long-term maintenance program includes monitoring the channels to ensure that they maintain the ability to carry designated flows.~~

An increase in the amount of impervious surfaces (e.g., rooftops, sidewalks, driveways, streets, parking lots) within unincorporated areas of the county as a result of implementation of the 2008 Draft General Plan under the Preferred Plan would result in higher rates of runoff during rain events or other forms of irrigation, which could exacerbate erosion in overland flow and drainage swales and creeks and modify downstream sedimentation or drainage patterns. An increase in flows could also amplify erosion potential and sedimentation rates within established drainage problem areas.

Modification or filling of existing waterways as part of development could also contribute to an increase in downstream erosion and sedimentation. Alteration during construction or placement of structures within the 100-year floodplain could disrupt existing floodways and flow velocities during storm events, causing an increase in scouring and amplifying erosion of exposed soil and sedimentation. Other sources of erosion and sedimentation as a result of proposed development include construction sites, roads and parking lots, destabilized landscape areas, streambanks, unprotected slopes, and denuded or disturbed areas.

## **Erosion and Sediment Control Provisions**

The County does not own or operate any storm drain systems other than roadside culverts and bridge piping. The majority of the land in the unincorporated area has relatively flat topography, with grassy swales and creeks as the primary drainage system. The California Department of Transportation constructs and maintains the County rights-of-way and the roadside grassy swale drainage systems. Solano County cities are each responsible for their own storm drainage and flood control. Flood control improvements are generally funded by the cities through taxes and/or assessments. SCWA is not responsible for city flood control issues, even though it sometimes assists Solano County's cities in addressing upstream and downstream impacts.

Stormwater discharges within the unincorporated county are regulated by the County's NPDES Phase II general MS4 permit and managed in accordance with the SWMP. The SWMP sets forth a program that the County implements to ensure compliance with the general MS4 permit and reduce the potential for erosion and sedimentation from new development and redevelopment in unincorporated Solano County. In accordance with NPDES permit requirements, the County has also developed a program to control the discharge of pollutants, including sediment, from construction sites. The program includes inspections of construction sites and enforcement actions against violators.

The SWMP also identifies County ordinances that provide the backbone for NPDES compliance, including Chapter 31, "Grading and Erosion Control." This ordinance provides standards, permitting, and enforcement for controlling soil erosion, sedimentation, stormwater runoff, and environmental damage associated with construction and maintenance of fills, excavations, and clearing of vegetation, and enforcement of projects that change the topography and drainage of land.

In 1998, SCWA approved a flood control master plan. The plan identifies the agencies responsible to maintain the major drainages within Solano County. SCWA is responsible for maintaining multiple channel systems within the Suisun and Ulatis regions. SCWA has developed several flood control projects that address these drainages. The plan also recommended the preparation of flood control watershed studies to address the problem areas in Solano County. Watershed studies analyze potential problem areas from a regional view that all lands drain into a single point and that potential downstream impacts could result if not properly maintained. After the studies are complete, SCWA works to implement solutions to flood control problems.

As mentioned above, the Solano County Grading and Erosion Control Ordinance (County Code Chapter 31) establishes minimum design standards and provides regulations to minimize or eliminate on-site and downstream erosion and sedimentation. Specifically, Chapter 31, Article III, Section 31-30 of the County Code requires that development plans identify project-specific mitigation measures that result in no net increase in peak runoff as a result of the project.

In addition, Chapter 12.2, Article V of the County Flood Protection Ordinance provides for provisions for flood hazard reductions and requires new construction and substantial improvements of any structure to have the lowest floor, including the basement, elevated at least 1 foot above the base flood elevation and

certified by a registered professional engineer or surveyor, or verified by the building inspector to be properly elevated.

For projects that would alter existing waterways or drainages determined to be waters of the United States, a USACE permit would be required under CWA Sections 401 and 404. The permit would require provisions to control erosion and increased sedimentation as a result of the project.

Most construction, as a result of the implementation of the 2008 Draft General Plan, would require an NDPEs general construction permit. The permit requirements would control the potential for erosion and sedimentation during project construction.

The Suisun Marsh Policy Addendum certified by the San Francisco Bay Conservation and Development Commission on November 3, 1982, and amended to the *Solano County General Plan* on February 2, 1999, contains principles and standards for all diking, dredging, filling, and other construction to reduce the potential for erosion and sedimentation in the marsh. No development shall be permitted that would interfere with existing channel capacity or that would substantially increase erosion, siltation, or other contributors to the deterioration of any marsh watercourse.

In addition, the conclusion to Impact 4.5-2a and subsequent mitigation measure statement on page 4.5-50 of the DEIR are revised as follows:

### **Conclusion**

Any proposed new development as a result of implementation of the 2008 Draft General Plan would be required to meet regulatory requirements and strict design requirements set forth by the County to prevent development-related changes in stormwater runoff from causing, or further accelerating, stream channel erosion, sedimentation, or other adverse impacts on beneficial stream uses. Design standards require that projects have no net increase in peak runoff from existing conditions; therefore, any new development would not substantially contribute to existing drainage problems.

With the adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, combined with regulatory requirements, and current grading, erosion, and flood control regulations, this impact would be less than significant.

### **Mitigation Measure**

No mitigation beyond regulatory requirements and the 2008 Draft General Plan policies and programs is required.

Commenters requested detailed studies of the regional drainage system and problem areas; however, it is not necessary to conduct such an in-depth quantitative analysis as part of the 2008 Draft General Plan because the County requires new development to result in no net increase in runoff from existing conditions. Several policies and implementation programs, including Policy HS.P-6 and Policy PF.P-34, have been developed as part of the 2008 Draft General Plan to help address the existing regional drainage problems. A reanalysis of the existing drainage systems did indicate that, because of existing drainage problems, the risk of flooding may be increased in drainage problem areas and new development within these areas could expose people or structures to flood hazards.

To address this risk and commenters' concerns about an inadequate flooding analysis, the portion of the analysis for Impact 4.5-5a that begins with the impact summary on page 4.5-55 and ends with the second paragraph on page 4.5-56 of the DEIR is expanded as follows:

**IMPACT**      **Exposure of People or Structures to Flood Hazards – Preferred Plan.**  
**4.5-5a**      *Development and land use changes consistent with the 2008 Draft General Plan under the Preferred Plan would result in the development of residential or commercial structures in floodplains and existing drainage problem areas, thereby exposing people and structures to flood hazards. Similar exposure could occur in shoreline areas that would be subject to flooding because of extreme high tides or concurrent high tides and watershed flooding. Sea level rise associated with global climate change would exacerbate these risks. However, with implementation of the proposed policies and programs in the 2008 Draft General Plan, ~~combined with~~ as well as flood control regulations, this impact would be *less than significant*.*

Development ~~and that could result from changes in~~ land use ~~changes-designations~~ consistent with the 2008 Draft General Plan would result in the development of residential, ~~or~~ commercial, and industrial structures in floodplains, thereby exposing people and structures to flood hazards (Exhibit 4.5-4). Similar exposure could occur in shoreline areas that would be subject to flooding because of extreme high tides or concurrent high tides and watershed flooding. A large portion (30–40%) of developed and undeveloped lands in Solano County is located within the 100-year floodplain and is subject to flooding because of periodic heavy winter rainfall, tidal fluctuations, and the potential for canal, levee, and dam failure from seismic activity (Exhibit 4.5-4). Sea level rise associated with global climate change would exacerbate these risks (see Section 6.2, “Effects Related to Climate Change,” in Chapter 6, “Other CEQA Considerations”).

Most flood-prone lands in Solano County are subject to inundation because of heavy rainfall and resulting stream overflows. These areas are typically identified as being within the 100-year floodplain. A number of streams in the county have long histories of seasonal flooding, often resulting in significant damage. Such floods can occur anytime during the rainfall months from November 1 to May 1. Flood risk is intensified in the lower stream reaches by the likelihood of coincident high tides and strong offshore winds during heavy rainfall. However, areas outside of the 100-year floodplain have been identified by the County as prone to flooding caused by problems with the regional drainage system. The Suisun, Ulatis, and Dixon drainage regions cover the areas where the majority of rural drainage problems have been identified. New development proposed within drainage problem areas could increase the risk of exposure of people and structures to flood hazards.

The potential for flood damage in the county is further aggravated by spreading urbanization. Urbanization is encroaching upon and reducing floodplain area in the low-lying areas while increasing the rates and volumes of runoff from overlying higher lands (e.g., through construction of structures and paving), thereby restricting natural infiltration. Potential for flood damage is high in the vicinity of Cordelia and Rockville along Green Valley, Dan Wilson, and Suisun Creeks. These streams have a long history of flooding, particularly along the lower reaches of Green Valley Creek, which are influenced by Suisun Bay tides. The most severe flood conditions occur in these areas when heavy rainfall coincides with high tides and offshore winds. Eighteen flood events have occurred in Solano County since 1937, or one every 3–4 years on average. The largest and most damaging flood occurred in 1955 and was estimated to be a 40-year event. Investigations indicate that larger flood-producing storms could be expected in the future (USACE 1967). Recent flood events include the December 31, 2005, storm that caused significant damage in several of the county’s cities and rural areas. The storms of December 13–16, 2002, also caused extensive localized flooding damage (Okita, pers. comm., 2006).

~~As explained in Impact 4.5-2a, the cities in Solano County are each responsible for their flood control projects; SCWA sometimes assists the cities and is also responsible for operations and maintenance of the Ulatis Flood Control Project and the Green Valley Flood Control Project. Flood control functions for the~~

~~Delta (from precipitation and tides) rely on levees. Levee protection is addressed in Impact 4.5-6a, “Potential for Failure of a Levee.”~~

## **Flood Provisions**

SCWA has approved a flood control master plan. The plan identifies the agencies responsible to maintain the major drainages within Solano County. Solano County cities are each responsible for their own storm drainage and flood control. Flood control improvements are generally funded by the cities through taxes and/or assessments. SCWA is not responsible for city flood control issues, even though it sometimes assists Solano County’s cities in addressing upstream and downstream impacts. SCWA is responsible for maintaining multiple channel systems within the Suisun and Ulatis regions. SCWA has developed several flood control projects that address these drainages. The plan also recommends the preparation of flood control watershed studies to address the problem areas in Solano County. Watershed studies analyze potential problem areas from a regional view that all lands drain into a single point and that potential downstream impacts could result if not properly maintained. After the studies are complete, SCWA works to implement solutions to flood control problems.

The County Flood Damage Prevention Ordinance (Chapter 12 of the County Code) establishes provisions for flood hazard reduction to minimize public and private losses caused by flood conditions in specific areas and requires strict design standards to prevent damage during flood events. The ordinance provides the following methods of reducing flood losses:

- ▶ restricting or prohibiting uses that are dangerous to health, safety, and property because of water hazards, or that result in damaging increases in flood heights or velocities;
- ▶ requiring that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
- ▶ controlling the alteration of natural floodplains, stream channels, and natural protective barriers that help accommodate or channel flood waters;
- ▶ controlling filling, grading, dredging, and other development that may increase flood damage; and
- ▶ preventing or regulating the construction of flood barriers that will unnaturally divert flood waters or that may increase flood hazards in other areas.

Chapter 12.2, Section 50, presents construction standards for any new construction or substantial improvement of any structure requiring that the lowest floor, including the basement, be elevated at least 1 foot above the base flood elevation and certified by a registered professional engineer or surveyor, or verified by the building inspector to be properly elevated. Chapter 12.2, Section 54, prohibits any encroachments, including fill, new construction, substantial improvements, and other development, unless certification is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

SCWA has also prepared a flood awareness manual that provides homeowners helpful information about preparing for floods, reducing flooding risks, taking action if flooding occurs, and cleaning up after a flood event. Included within the manual are county maps that identify FEMA flood zones, FEMA flood probabilities, County water systems, and county watershed basins. SCWA has also developed a Flood Hazard Warning Program to help ensure that county residents living in areas with a high probability of flooding have time to prepare and evacuate, if needed.

The conclusion to Impact 4.5-5a on page 4.5-58 is revised as follows:

## Conclusion

~~Adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, combined with flood control regulations, would minimize the exposure of people or structures to flood hazards resulting from development under the 2008 Draft General Plan. Therefore, this impact would be less than significant.~~

Portions of areas proposed for new development as a result of changes in land use designations under the 2008 Draft General Plan would be exposed to periodic flooding. Flood control provisions and policies and programs proposed in the 2008 Draft General Plan are designed to address this issue. Flood control provisions and regulatory requirements would be implemented by development projects allowed under the 2008 Draft General Plan. New development would be subject to strict design standards to reduce flood damage and would be required to install individual stormwater on-site collection systems. The systems would be the responsibility of the individual project developers. Public-awareness programs established by SWCA promote community flood awareness and alert systems to help ensure that county residents living in areas with a high probability of flooding have time to prepare and evacuate in advance of potential flooding. For these reasons, impacts from an increase in runoff or construction within the 100-year floodplain as a result of the 2008 Draft General Plan are considered less than significant.

There are several drainage problem areas where localized flooding occurs within the unincorporated areas of the county that have been identified as part of the development of the *Flood Control Master Plan*. This type of localized flooding is attributable to drainage problems, and not to the location of these areas within the 100-year floodplain. With the adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, as well as flood control regulations, the risk would remain for exposure of people or structures to flood hazards as a result of new construction within identified drainage problem areas in the unincorporated portions of the county, but the risk would be reduced. This impact would be less than significant. Nonetheless, to further reduce the risk, implementation of Mitigation Measure 4.5-5a is recommended.

### Mitigation Measure 4.5-5a: Develop and Use a Drainage Problem Area Overlay during Project Review.

Together with SCWA, the County shall prepare a Drainage Problem Area Overlay for the unincorporated portion of the county that identifies areas subject to flooding caused by existing drainage problems, as identified within the *Flood Control Master Plan* and available WMPs for Solano County. The County shall use the overlay during review of proposed project designs. Where development within existing drainage problem areas is proposed, the County shall require additional project-specific mitigation measures to reduce potential of impacts from localized flooding within these problem areas as necessary before project approval.

Mitigation Measure 4.5-5a would reduce the impact of exposure of people or structures to flood hazards as a result of new construction within identified drainage problem areas. For this reason, the impact would be reduced to a **less-than-significant level**.

~~No mitigation beyond the 2008 Draft General Plan policies and programs is required.~~

Impact 4.5-5b on page 4.5-58 of the DEIR is revised as follows:

<b>IMPACT</b>	<b>Exposure of People or Structures to Flood Hazards – Maximum</b>
<b>4.5-5b</b>	<i>Development Scenario. Development and land use changes consistent with the 2008 Draft General Plan under the Maximum Development Scenario would result in the development of residential or commercial structures in floodplains and existing drainage problem areas, thereby exposing people and structures to flood</i>

*hazards. Similar exposure could occur in shoreline areas that would be subject to flooding because of extreme high tides or concurrent high tides and watershed flooding. Sea level rise associated with global climate change would exacerbate these risks. However, with implementation of the proposed policies and programs in the 2008 Draft General Plan, ~~combined with~~ as well as flood control regulations, this impact would be **less than significant**.*

This impact is similar to Impact 4.5-5a for the Preferred Plan, except that there is the potential for a greater impact because more development would be permitted under the Maximum Development Scenario. Adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, however, combined with flood control regulations, would minimize the exposure of people or structures to flood hazards resulting from development under the 2008 Draft General Plan. ~~Therefore,~~ This impact would be less than significant. However, for the same reasons as described under Impact 4.5-5a, implementation of Mitigation Measure 4.5-5b is recommended.

Mitigation Measure 4.5-5b: Develop and Use a Drainage Problem Area Overlay during Project Review.

~~No mitigation beyond the 2008 Draft General Plan policies and programs is required. This measure is the same as Mitigation Measure 4.5-5a above. For the same reasons as described above, implementation of this mitigation measure under the Maximum Development Scenario would reduce the impact to a **less-than-significant** level.~~

## **2.13 MASTER RESPONSE M: RISK OF DAM FAILURE**

Several commenters were concerned that the analysis of risk of flooding from dam failures and impacts was inadequate, and indicated that the DEIR should fully evaluate the extent of potential inundation within the county as a result of dam and levee failures and address how new development authorized by the 2008 Draft General Plan would be affected.

The established significance threshold presented within the proposed 2008 Draft General Plan was an evaluation of whether people or structures would be exposed to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

In response to commenters' concerns relating to inadequate analysis, the regulatory setting of Section 4.5, "Hydrology and Water Resources," of the DEIR has been updated to fully document the regulations and provisions already in place that reduce the risk of exposure to dam failures. As shown in Chapter 4 of this FEIR, the following text is added at the end of the "Federal Plans, Policies, Regulations, and Laws" section on page 4.5-31 of the DEIR:

### **National Dam Safety Program Act**

The National Dam Safety Program was established in 1972 and is administered by FEMA. The primary purpose of the program is to provide financial assistance to the states for strengthening their dam safety programs.

### **Dam Safety and Security Act**

The Dam Safety and Security Act (Public Law 107-310, 43 United States Code 467) was enacted in 2002 to assist states in improving their dam safety programs, support increased technical training for state dam safety engineers and technicians, provide funding for dam safety research, and maintain the National Inventory of Dams.

As shown in Chapter 4 of this FEIR, the text under “California Department of Water Resources” and “Governor’s Office of Emergency Services” in the “State Plans, Policies, Regulations, and Laws” section on page 4.5-32 of the DEIR is revised and supplemented as follows:

### **California Department of Water Resources**

DWR is responsible for preparation of the *California Water Plan*, management of the SWP, protection and restoration of the Delta, regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources. These other functions include helping water agencies prepare their UWMPs and reviewing such plans to ensure that they comply with the related Urban Water Management Planning Act. The DWR Division of Safety of Dams has several programs that ensure dam safety. DSOD thoroughly reviews the plans and specifications prepared by the dam owner to ensure that the structure is designed to meet minimum requirements and that the design is appropriate for the known geologic conditions, oversees the construction, and inspects each dam annually to ensure that the dam is safe, is performing as intended, and is not developing problems. Inspections may include in-depth instrumentation reviews of the dam surveillance network data. DSOD also periodically reviews the stability of dams and their major appurtenances in light of improved design approaches and requirements, as well as new findings regarding earthquake hazards and hydrologic estimates in California.

### **Senate Bill 896**

Senate Bill (SB) 896 (Chapter 780, Statutes of 1972) established emergency procedures for the evacuation and control of populated areas below dams that could be used to save lives and reduce injury in the event of a dam failure.

### **Governor’s Office of Emergency Services**

Dam inundation mapping procedures (Title 19, Section 2575 of the California Code of Regulations [19 CCR Section 2575]) are required by the Governor’s Office of Emergency Services (OES) for all dams where human life is potentially endangered by dam flooding inundation. Dam owners are responsible for obtaining recent hydrologic, meteorological, and topological data as well as land surveys denoting the floodplain, to be utilized for the preparation of a dam inundation map. This information is to be submitted to OES 60 days before the filling of any dam. Canal and levee inundation mapping procedures (19 CCR Section 2585) are similar to dam inundation mapping procedures and are required by OES for all canals and levees where human life is potentially endangered by canal or levee flooding inundation. Canal and levee owners are responsible for obtaining recent hydrologic, meteorological, and topological data as well as land surveys denoting the flood plain to be utilized for the preparation of a canal or levee inundation map.

As a result of SB 896, OES established the dam failure inundation mapping and emergency procedure program (Government Code Section 8589.5). This program sets forth regulations that require owners of dams under state jurisdiction to submit inundation maps and studies to OES for review and approval in accordance with guidance issued by OES. Copies of the approved inundation maps are sent to the city and county emergency services coordinators of affected local jurisdictions. Based upon approved inundation maps, or the delineated areas, cities, and counties with territory in the mapped areas are required to adopt emergency procedures for the evacuation and control of populated areas below the dams.

As shown in Chapter 4 of this FEIR, the description of the Solano County Grading and Erosion Control Ordinance in the “Regional and Local Plans, Policies, Regulations, and Ordinances” section on page 4.5-36 of the DEIR is revised as follows:

## Solano County Grading and Erosion Control Ordinance

The Solano County Grading and Erosion Control Ordinance (Chapter 31 of the County Code) establishes that it is unlawful for any person to destroy, remove, damage, or interfere with the operation or maintenance of any levee, embankment, channel, dam, reservoir, canal, stream, protective work, access easement, or other water delivery, drainage, or flood control facility constructed, operated, or maintained by any public agency without approval. The purpose of the County Grading and Erosion Control Ordinance (Chapter 31 of the County Code) ordinance is to provide the means for controlling soil erosion, sedimentation, increased rates of water runoff, and related environmental damage by establishing minimum standards and providing 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 protect downstream waterways and wetlands and to promote the safety, public health, convenience and general welfare of the community.

To fully document existing conditions, as shown in Chapter 4 of this FEIR, the following text is added at the end of the “Surface-Water Resources” section on page 4.5-9 of the DEIR (please note that all subsequent tables in Section 4.5, and text references to these tables, are renumbered to reflect the insertion of the new table below):

### **DAMS**

A total of 18 dams are located within Solano County, 10 of which have been identified as potentially causing injury or loss of life in the event of failure. Two additional dams outside of Solano County have also been identified as potentially causing injury or loss of life in the county. These 12 dams are regulated and routinely inspected under the jurisdiction of DWR’s Division of Safety of Dams (DSOD) (see the description of DWR under “State Plans, Policies, Regulations, and Laws” below). Table 4.5-1 presents a summary of dams located in or near Solano County that would affect the county in the event of dam failure.

<b><u>Table 4.5-1</u></b>				
<b><u>Dams in and in the Vicinity of Solano County</u></b>				
<b><u>Name or Location of Dam</u></b>	<b><u>Structural Type</u></b>	<b><u>Capacity (af)</u></b>	<b><u>Owner</u></b>	<b><u>Date of Construction</u></b>
<b><u>Dams Located in Solano County Capable of Causing Injury or Loss of Human Life with Failure</u></b>				
<u>1. Fleming Hill No. 2</u>	<u>Earth</u>	<u>34</u>	<u>City of Vallejo</u>	<u>1912</u>
<u>2. Lake Chabot</u>	<u>Earth</u>	<u>1,120</u>	<u>City of Vallejo</u>	<u>1870</u>
<u>3. Lake Frey</u>	<u>Earth</u>	<u>1,075</u>	<u>City of Vallejo</u>	<u>1894</u>
<u>4. Lake Herman</u>	<u>Earth</u>	<u>2,210</u>	<u>City of Benicia</u>	<u>1906</u>
<u>5. Lake Madigan</u>	<u>Earth</u>	<u>1,711</u>	<u>City of Vallejo</u>	<u>1908</u>
<u>6. Pennsylvania Creek</u>	<u>Earth</u>	<u>160</u>	<u>State Highways</u>	<u>1958</u>
<u>7. Pine Lake</u>	<u>Earth</u>	<u>360</u>	<u>City of Benicia</u>	<u>1942</u>
<u>8. Summit Reservoir</u>	<u>Earth</u>	<u>221</u>	<u>City of Vallejo</u>	<u>1968</u>
<u>9. Swanzy Lake</u>	<u>Earth</u>	<u>107</u>	<u>City of Vallejo</u>	<u>1931</u>
<u>10. Putah Creek Division</u>	<u>Gravity</u>	<u>720</u>	<u>U.S. Bureau of Reclamation</u>	<u>1957</u>
<b><u>Dams Located within the County, but Declared Exempt for the OES Inundation Mapping Program since No Injury or Loss of Human Life is Anticipated with Failure</u></b>				
<u>11. Bascherini Dam</u>	<u>Earth</u>	<u>19</u>	<u>Solano Irrigation District</u>	
<u>12. Dickson Hill Dam</u>	<u>Earth</u>	<u>23</u>	<u>City of Fairfield</u>	
<u>13. Giles Dam</u>	<u>Earth</u>	<u>119</u>	<u>Billy Yarbrough</u>	
<u>14. Green Valley Lake Dam</u>	<u>Earth</u>	<u>150</u>	<u>J. J. Willard</u>	

<b>Table 4.5-1 Dams in and in the Vicinity of Solano County</b>				
<u>Name or Location of Dam</u>	<u>Structural Type</u>	<u>Capacity (af)</u>	<u>Owner</u>	<u>Date of Construction</u>
15. Harris Dam	Earth	40	William J. McGuire	
16. Main Prairie Dam #3	=	96	Main Prairie Water District	
17. Mangels Dam	Earth	276	Lewis Mangels	
18. Municipal Dam	Earth	169	City of Suisun City	
<b><u>Dams Located Outside the County that, with Failure, Would Inundate Planning Area Lands</u></b>				
19. Lake Curry	Earth	10,700	City of Vallejo	1926
20. Monticello Dam	Concrete Arch	1,600,000	U.S. Bureau of Reclamation	1957
Notes: af = acre-feet; OES = Governor's Office of Emergency Services				
Source: Solano County 1977				

Four of the dams listed in Table 4.5-1 above—the dams at Lakes Chabot, Frey, Herman, and Madigan—are relatively old and, if failure were to occur, could endanger population centers in Solano County. However, based on 2005 inspections and current information for these dams, they are deemed satisfactory for continued use (DSOD 2005). Monticello Dam retains one of the largest reservoirs in northern California, storing 1,600,000 acre-feet of Putah Creek water; it is likely that extensive flooding of county lands would occur if this dam were to fail. Monticello Dam was constructed relatively recently (1957) and is considered to be seismically sound. The Association of Bay Area Governments (ABAG) found the following for Solano County: 16,766 urban acres are subject to dam inundation; 3,577 miles of roadway are in an area subject to dam inundation; and 23 critical health care facilities, schools, or County-owned facilities are in an area subject to dam inundation (ABAG 2008a).

According to the existing land use data for the unincorporated areas of Solano County for 2005, ABAG reported that approximately 24% of urban areas and 29% of nonurban areas would become inundated as a result of dam failure (ABAG 2008b). ABAG has prepared maps of areas within the unincorporated areas of Solano County, including the cities of Vacaville, Rio Vista, Suisun-Fairfield, Benicia, Vallejo, and Dixon that would be inundated as a result of dam failure (ABAG 2007). The maps show that the entire northeast corner of the county, including the entire city of Dixon and portions of Vacaville and Rio Vista, would be inundated from a failure of Monticello Dam. In addition, incorporated areas southwest of Fairfield and Suisun City would also be inundated as a result of failures of the Pennsylvania Creek and Lake Curry Dams. Failures of the Pine Lake and Lake Herman Dams would inundate lands located within the Benicia Municipal Service Area (MSA). A small portion of land located south of the Vallejo MSA would become inundated by failures of the failure of the Summit Reservoir, Swanzy Lake, Lake Chabot, Fleming Hill No. 2, and Lake Frey Dams. These inundation maps are available from ABAG and the OES.

To further address commenters' concerns, as shown in Chapter 4 of this FEIR, the analysis for Impacts 4.5-7a and 4.5-7b beginning on page 4.5-61 of the DEIR is expanded as follows. Please note that although the expansion of the analysis is presented here only under Impact 4.5-7a, it applies to Impact 4.5-7b as well.

**IMPACT** **Potential for Failure of a Dam – Preferred Plan.** *Of the 18 dams in Solano County, 4.5-7a* ~~The state OES has identified 10 dams within Solano County and two dams outside Solano County where dam inundation has the potential to cause human injury or loss of life. In the unlikely event of dam failure, people and structures are exposed to inundation, and death, injury, or loss of property could result. Implementation of the proposed policies and programs in the 2008 Draft General Plan under the Preferred Plan, combined with other relevant state and local regulations, would minimize the potential for effects on the county from dam failure. This impact would be less than significant.~~

Dam inundation occurs when a dam is not structurally sound or is unable to withstand damages resulting from seismic activity. In addition, if an increase in runoff during a major storm event were to exceed the capacity of the dam, waters could overtop, cause flooding, or potentially increase the probability of dam failure. The degree and rapidity of dam failure depends on the dam’s structural characteristics.

~~Of the 18 dams in Solano County, 12 dams are regulated under the jurisdiction of the DSOD and is evaluated and inspected on an annual basis. For security reasons, maps showing dam inundation areas are not made available to the public, although~~ The state OES has identified 10 dams within Solano County and two dams outside Solano County where dam inundation has the potential to cause human injury or loss of life. Each of these 12 dams is regulated under the jurisdiction of the DSOD and is evaluated and inspected on an annual basis. For security reasons, maps showing dam inundation areas are not made available to the public, although ~~The Association of Bay Area Governments (ABAG) found the following for Solano County: 16,766 urban acres are subject to dam inundation; 3,577 miles of roadway are in an area subject to dam inundation; and 23 critical health care facilities, schools, or County-owned facilities are in an area subject to dam inundation (ABAG, 2008a). Staff in the County Department of Resource Management would evaluate projects in dam inundation areas on a case-by-case basis using the current data available to them (Solano County 2006).~~ The Association of Bay Area Governments (ABAG) found the following for Solano County: 16,766 urban acres are subject to dam inundation; 3,577 miles of roadway are in an area subject to dam inundation; and 23 critical health care facilities, schools, or County-owned facilities are in an area subject to dam inundation (ABAG, 2008a). Staff in the County Department of Resource Management would evaluate projects in dam inundation areas on a case-by-case basis using the current data available to them (Solano County 2006). According to the existing land use data for the unincorporated areas of Solano County for 2005, ABAG reported that approximately 24% of urban areas and 29% of nonurban areas would become inundated as a result of dam failure (ABAG 2008b). New development proposed as part of the 2008 Draft General Plan in northern portions of the unincorporated portion of the county, south of Vallejo, southwest of Fairfield and Suisun City, could be subject to inundation as a result of dam failure.

### **Provisions Procedures for Protection Against Threats of Dam Failure**

As described in Section 4.5.2, “Regulatory Framework,” dam inundation mapping procedures (19 CCR Section 2575) are required by the state OES for all dams where human life is potentially endangered by dam flooding inundation.

Also as described in Section 4.5.2, the County OES provides for the development, establishment, and maintenance of programs and procedures to help protect the lives and property of Solano County residents from the effects of natural or human-caused disasters, including floods from dam failures. The County OES works with the County and individual city departments with disaster exercises and evacuation preparations. Additionally, the County OES conducts emergency preparedness training and awareness presentations for citizens and various organizations so that they will better understand what they should do before, during, and after a disaster or major emergency, including flooding from failure of a dam.

Staff in the County Department of Resource Management would evaluate projects in dam inundation areas on a case-by-case basis using the current data available to them (Solano County 2006).

DSOD has established strict design requirements for all new dam construction. Dams are required to withstand the largest earthquake and maximum probable flood that could conceivably affect the dam. Specific guidelines have also been developed that require dams, that impound more than 5,000 acre-feet

of water, have outlet facilities that are capable of lowering the maximum storage depth by 10% within 10 days, should an unsafe condition at the dam arise. These outlet facilities are also required to be routinely maintained. Required outlet facilities are designed to reduce the severity of inundation should a dam failure occur.

## **Relevant Policies of the 2008 Draft General Plan**

### ***Public Health and Safety Chapter***

The following policies and program from the Public Health and Safety chapter of the 2008 Draft General Plan mitigate potential impacts related to the potential for dam failure:

- ▶ **Policy HS.P-7:** Require new-development proposals in dam, canal, or levee inundation areas to consider risk from failure of these facilities and to include mitigation measures to bring this risk to a reasonable level.
- ▶ **Policy HS.P-8:** Work with responsible parties to ensure dams, levees, and canals throughout the county are properly maintained and/or improved.
- ▶ **Program HS.I-11:** Where new development for human occupancy is proposed within dam, canal, or levee inundation areas, require the applicant to prepare a report describing the results of an inspection of the dam, canal, or levee by a state-registered civil engineer, including the reliability of the facility during a 100-year flood, potential for failure during seismic shaking, likely inundation area, and predicted evacuation times. The report should also include any necessary dam, levee, or canal improvements to protect life and property in the proposed development.

## **Conclusion**

The proposed land use changes and new development that would occur pursuant to the 2008 Draft General Plan would not contribute to a substantial increase in runoff that could result in exceeding dam storage capacities and result in overtopping. Because of strict dam construction standards, the likelihood of catastrophic dam failure is low. Policies of the 2008 Draft General Plan would require new development to include mitigation measures to reduce risk of exposure of inundation caused by dam failure. In addition, SCWA has also prepared a flood awareness manual and developed a Flood Hazard Warning Program to help ensure that county residents living in areas with a high probability of flooding have time to prepare and evacuate, if needed. Because the implementation of the 2008 Draft General Plan would not otherwise affect the structural integrity of an existing dam's structure or substantially add to the risk of dam failure along with the A-adoption and implementation of the proposed policies in the 2008 Draft General Plan and ~~combined with~~ other relevant state and local regulations, ~~would minimize the potential for effects~~ this impact would be less than significant.

## **Mitigation Measure**

No mitigation beyond the 2008 Draft General Plan policies and programs is required.

## **2.14 MASTER RESPONSE N: RISK OF LEVEE FAILURE**

Several commenters were concerned that the DEIR's analysis of risk of flooding from levee failure and its discussion of related impacts were inadequate. The commenters stated that the DEIR should fully evaluate the extent of inundation that could occur within Solano County as a result of levee failure; address how new development authorized by the 2008 Draft General Plan would be affected; and mitigate the risks of inundation.

The established significance threshold presented within the DEIR was whether implementation of the 2008 Draft General Plan would result in exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

In response to commenters' concerns about an inadequate DEIR analysis, the discussion of existing levee conditions has been expanded. As shown in Chapter 4 of this FEIR, the following discussion of levee conditions is added to the end of Section 4.5.1, "Existing Conditions," of Section 4.5, "Hydrology and Water Resources," on page 4.5-19 of the DEIR:

### **LEVEE CONDITIONS**

Solano County's levees define the configuration of the channels and land areas of the Delta and Suisun Marsh. As a result of land subsidence, primarily through microbial oxidation of organic peat soils, most of the Delta islands sit below sea level, some as much as 25 feet.

The old levee system that exists in some Solano County marshlands was constructed initially by hand labor, and later by dredging to hold back river floods and daily tides, to obtain additional lands for grazing and crop growing. Today, these levees remain as embankments, generally 5–6 feet high, with foundations roughly 20–30 feet wide. Roads have been constructed atop a number of these levees, which were generally constructed using weak materials excavated from adjacent water courses, including sands, silts, and peat (USACE 1972).

Constant maintenance is necessary to hold these levees against the high tides and river floods that threaten reclaimed marsh lands. New material must be added to these levees continually to compensate for peat oxidation and erosion. Sand, silt, and peat are weak in shear strength and erode easily. Each year, as farmlands adjacent to levees subside, hydrostatic pressure against the levees increases, adding to the potential for failure. In addition, most of these levees are not maintained to any specific standards, which increases the likelihood of failure and inundation.

Levee failure as a result of liquefaction constitutes a potential hazard in much of the southern half of Solano County. Some enclosed areas, including most of the Delta, lie several feet or more below sea level and are subsiding at a rate of up to 3 inches per year. Most of these diked areas are in agricultural use, and some are so far below sea level that it would be economically infeasible to drain them should they be flooded as a result of levee failure. Roads in the Suisun Marsh and in the east county are constructed almost exclusively on levees; thus levee failures could also disrupt travel through these areas. Although these roads primarily serve local farmers, increasing levels of recreational traffic would also be affected. Failure of levees south of Suisun City could flood parts of that city, causing damage to residential areas. No comprehensive studies have been performed on levee failure because of the difficulty in correctly assessing levee safety. Even inspected levees are prone to failure under certain conditions; an example is the Jones Tract levee that failed in 2004 after having been inspected (Okita, pers. comm., 2006). Undetected problems, such as activity by burrowing animals, can cause levees to fail during normal, nonflood flow periods as was the case for the Jones Tract levee. Water in Delta channels that is accelerated by high winds can also weaken levees by erosion. Wind-driven waves are especially damaging to the unprotected land side of the levees when islands are flooded. Large stormwater flows into the Delta can raise the water surface above the tops of the levees and increase pressure for seepage through and under the levees, which can also cause them to fail.

On February 24, 2006, after sustained heavy rainfall and runoff, Governor Arnold Schwarzenegger declared a state of emergency for California's levee system. Following the emergency declaration, DWR was designated to secure the necessary means to fast-track repairs of critical erosion sites. Levee evaluations in 2005 identified three sites within Solano County, near Steamboat Slough near River Miles 16 and 21, where more than 3,325 linear feet of levees were in need of critical emergency repairs. In

2006, 2,185 feet of levees also needing repairs were identified near Sutter Slough along River Mile 25 and Steamboat Slough along River Mile 19 (DWR 2008). Repairs to these areas have either been completed or are scheduled to be completed in the near future. The repairs are not improvements, but are necessary to maintain the functionality of flood control systems that have deteriorated over time and/or do not meet current design standards. There are also ongoing levee evaluation efforts to help ensure long-term flood protection for the Delta, Rio Vista, and Collinsville (DWR 2008).

As shown in Chapter 4 of this FEIR, the portion of the discussion of Impact 4.5-6a, “Potential for Failure of a Levee – Preferred Plan,” that begins with the last paragraph of page 4.5-58 and ends with the second paragraph of “Procedures for Protection Against Threats of Levee Failure,” on page 4.5-59 of the DEIR is revised as follows. Please note that these changes also apply to Impact 4.5-6b for the Maximum Development Scenario.

When levees fail, people and structures are exposed to inundation, and death, injury, or loss of property could result. The Delta includes much of southern, eastern, and southeastern Solano County. For protection against floods and high tides, the Delta relies on a maze of levees to protect land and key infrastructure. In all, more than 1,100 linear miles of levees are located in the Delta, including many built more than a century ago to protect farmland. Were it not for the levees, the Delta would be a 740,000-acre inland sea. The Delta’s aging, fragile levee system protects farmland, highways, a railroad, natural gas and electric transmission facilities, and aqueducts that provide water to parts of the Bay Area. Delta levees also protect the residents of Rio Vista and multiple communities and rural areas in unincorporated Solano County. A Delta levee in Solano County could fail because of earthquake-induced slumping, landslides, and liquefaction. High flood events create large flows into the Delta that can raise the water surface above the tops of the levees and increase pressure for seepage through and under the levees, which could also cause them to fail. Undetected problems, such as activity by burrowing animals, can cause levees to fail during normal, non-flood flow periods. The need to maintain and enhance the Delta levee system is one of the biggest and most urgent flood control concerns in Solano County.

Because levees are vulnerable to peat oxidation as well as sand, silt, and peat erosion, new material is continually added to maintain them. Subsiding farmlands adjacent to levees may increase water pressure against levees, adding to the potential for levee failure. In addition, most levees are not maintained to any specified standard, which can increase the likelihood of failure and inundation. Potential failure of levees as a result of liquefaction constitutes a flood hazard in much of the southern half of Solano County. Some enclosed areas lie several feet below sea level and are subsiding at a rate of up to 3 inches per year. Most of these diked areas are currently used for agriculture, and some lie so far below sea level that it would be economically infeasible to drain them should they be flooded as a result of levee failure.

~~Failure of levees protecting Collinsville could flood parts of that community, causing damage to residential areas. No comprehensive studies have been performed on levee failure because of the difficulty of correctly assessing levee safety. Even inspected levees are prone to failure under certain conditions. Roads in Suisun Marsh and in the east county are constructed almost exclusively on levees. Thus, levee failures could also disrupt travel through these areas.~~

The 2008 Draft General Plan proposes new industrial development along areas protected by levees near Collinsville and Rio Vista and south of Suisun City. Levee failure in these regions could expose people and structures to flooding. The 2008 Draft General Plan does not propose additional rural residential land uses in areas that are protected by levees; however, it is likely that additional residential development would occur within existing lands designated for residential use near Collinsville and Rio Vista.

### **Provisions Procedures for Protection Against Threats of Levee Failure**

As described in Section 4.5.2, “Regulatory Framework,” canal and levee inundation mapping procedures (19 CCR Section 2585) are required by the state OES for all canals and levees where human life is

potentially endangered by canal or levee flooding inundation. Canal and levee owners are responsible for obtaining recent hydrologic, meteorological, and topological data, as well as land surveys denoting the floodplain to be utilized for the preparation of a canal or levee inundation map.

Also as described in Section 4.5.2, the County OES provides for the development, establishment, and maintenance of programs and procedures to help protect the lives and property of Solano County residents from the effects of natural or human-caused disasters, including floods from levee failures. The County OES works with the County and individual city departments with disaster exercises and evacuation preparations. Additionally, the County OES conducts emergency preparedness training and awareness presentations for citizens and various organizations so that they will better understand what they should do before, during, and after a disaster or major emergency, including flooding from failure of a levee.

The Solano County Grading and Erosion Control Ordinance (Chapter 31 of the County Code) prohibits the destruction, removal, or interference with the operation or maintenance of any flood control structure, including levees, before such activity has been approved by and a permit has been obtained from the County.

SCWA has prepared a flood awareness manual that provides homeowners helpful information about preparing for floods, how homeowners can reduce their flooding risks, what to do if flooding occurs, and cleaning up after a flood event. Included within the manual are county maps that identify FEMA flood zones, FEMA flood probabilities, county water systems, and county watershed basins.

SCWA has also developed a Flood Hazard Warning Program to help ensure that county residents who live in areas with a high probability of flooding have time to prepare and evacuate, if needed.

In addition, as shown in Chapter 4 of this FEIR, the impact conclusion for Impact 4.5-6a (and Impact 4.5-6b) on page 4.5-60 of the DEIR is revised as follows:

## **Conclusion**

The proposed land use changes and new development that would occur pursuant to the 2008 Draft General Plan would not contribute to an increase in erosion or otherwise affect the structural integrity of an existing levee; therefore, implementation of the 2008 Draft General Plan, in itself, would not substantially contribute to the risk of levee failure. New industrial development within unincorporated areas protected by levees is proposed as part of the 2008 Draft General Plan. Policies proposed in the plan require that new development include mitigation measures to reduce risk of exposure of inundation caused by levee failure. County ordinance also prohibits any new development in areas identified as subject to potential canal or levee failure unless necessary levee or canal improvements are made or special flood-related site and building design standards are met. In addition, Policies RS.P-26 and HS.P-8 of the 2008 Draft General Plan would ensure that improvements are made to levee systems and that the levees are properly maintained. SCWA has also prepared a flood awareness manual and developed a Flood Hazard Warning Program to help ensure that County residents who live in areas with a high probability of flooding have time to prepare and evacuate, if needed.

Adoption and implementation of ~~the proposed policies~~ Policies and Programs RS.P-23, RS.P-26, HS.P-7, HS.P-8, HS.I-11, SS.I-8, and TC.P-23 in the 2008 Draft General Plan, combined with other relevant state and local regulations, would reduce the potential for effects on Solano County from levee failure. However, even with implementation of these policies and programs, the potential for failure of a Delta levee would remain because of the existing conditions of the levee system. In many portions of the Delta, the levees are only designed to withstand a 10-year flood event. This means that a flood has a 10% chance of being equaled or exceeded in any given year. Such flood frequencies are not considered to be an adequate level of protection for any land uses protected by such levees. Much is currently being done to

improve the existing levee system; however, ~~Therefore,~~ this impact would ~~be~~ remain significant because although levees are designed to a specific level of protection from flooding events (e.g., 10-year or 100-year flood event), the same level of protection cannot be guaranteed or the risk of flooding eliminated for any new development within these areas.

### Mitigation Measure

No additional feasible mitigation is available to reduce this impact. This impact would remain **significant and unavoidable** because the potential for failure of a Delta levee would remain even with implementation of the policies in the 2008 Draft General Plan and relevant state and local regulations.

In response to commenters' recommendations of mitigation measures to be added to the DEIR, an analysis of the measures recommended by the commenters indicated that they either are infeasible or would not reduce the impact of exposure to flooding as a result of levee failure. Section 1102 of the California Civil Code requires that property sellers or their agents give prospective buyers a natural hazard disclosure statement for areas located within hazard zones, including special flood areas. For new development, a flood hazard assessment would be required as part of project review and approval, thereby disclosing whether the project would be located within a special flood area. Because of this existing law, it is unnecessary to add a mitigation measure requiring that a notice that the property is at risk of inundation be recorded within the property title or that the county add a land use overlay to the 2008 Draft General Plan to designate properties within a potential inundation zone. Requiring that property owners in the inundation zone obtain flood insurance will not reduce the risk of exposure to flooding; therefore, this is not an appropriate mitigation measure. Solano County is a participant in the National Flood Insurance Program; therefore, any property in the county located within a Federal Emergency Management Agency (FEMA)-designated 100-year floodplain is required to obtain flood insurance. All construction located within a 100-year inundation zone is required to comply with strict building codes and mitigate flooding risks to an acceptable level. Because feasible mitigation measures are available to reduce the risks of a 100-year event to a less-than-significant level, prohibiting the development of subdivisions or more than one single-family home on properties in the 100-year inundation zone, or requiring very large minimum parcel sizes in the 100-year inundation zone is unnecessary.

As part of the 2008 Draft General Plan, the County has proposed only additional industrial land uses within areas protected by levees. Although residential infill development would be likely to occur in areas previously designated as residential, the 2008 Draft General Plan includes no new residential land use designations.

Feasible mitigation measures for proposed new development within areas at risk of levee failure include reducing the amount of stormwater runoff; requiring that additional studies be performed for larger projects to determine the flooding risk; establishing minimum building standards to protect against flood damage; developing emergency and evacuation procedures for potential flooding events; establishing programs to properly inspect and maintain levee systems; and coordinating with lead agencies on levee improvements. These feasible mitigation measures have already been established as regulatory requirements and/or policies and implementation programs in the 2008 Draft General Plan.

Please also refer to Master Response L, "Inadequate Drainage and Flooding Analysis."

## 2.15 MASTER RESPONSE O: INADEQUATE WATER QUALITY IMPACT ANALYSIS

Several commenters were concerned that the water quality analysis in the DEIR was inadequate. The majority of those providing comments on this topic expressed the opinion that the DEIR does not adequately support its conclusion that the impact on water quality would be less than significant.

The established significance threshold used to determine water quality impacts was an evaluation of whether a violation of any water quality standards or waste discharge requirements—National Pollutant Discharge Elimination System (NPDES) waste discharge or stormwater runoff requirements, federal or state antidegradation policies, enforceable water quality standards contained in the applicable RWQCB’s basin plans, statewide water-quality control plans, or federal rule makings to establish water quality standards in California—would result from implementation of the 2008 Draft General Plan.

This impact is typically determined by evaluating the project’s compliance with water quality standards and considering the project’s potential effect on water bodies on the Section 303(d) list, as well as the potential for conflict with applicable receiving water quality objectives for surface water or groundwater or degradation of beneficial uses.

As discussed in Impact 4.5-1a on pages 4.5-38 through 4.5-45 of the DEIR, proposed Public, Residential, Commercial, and Industrial land use designations within the 2008 Draft General Plan would result in additional discharges of pollutants to receiving water bodies from nonpoint and potentially new point sources. Such pollutants would result in adverse changes to water quality in Solano County.

In response to comments alleging an insufficient water quality analysis, additional information has been added to the DEIR to fully explain the regulatory context of water quality protection. In addition, the discussion of potential water quality impacts has been expanded.

Because urban runoff or stormwater pollution is the primary contributor to adverse water quality impacts as a result of new development or redevelopment, the regulatory setting within the DEIR is expanded to further explain the NPDES Permit Program and subsequent Stormwater Management Program that is currently being implemented by the County as required by its NPDES Phase II MS4 General Permit. The “National Pollutant Discharge Elimination System Permit Program” section on pages 4.5-20 and 4.5-21 of the DEIR is revised as follows:

### **National Pollutant Discharge Elimination System Permit Program**

As authorized by the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating sources that discharge pollutants into waters of the United States. A discharge from any point source is unlawful unless the discharge is in compliance with an National Pollutant Discharge Elimination System (NPDES) permit. In California, EPA delegates much of the implementation of the CWA to the SWRCB. While the SWRCB has issued a few NPDES permits, the vast majority of NPDES permits are issued by the RWQCB. NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, stormwater associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre of soil, mining operations, and animal feedlots and agricultural facilities above certain thresholds. Typically, NPDES permits are issued for a 5-year term.

The NPDES Phase I rule was issued in 1990 and covered medium and large municipal separate storm sewer systems (MS4s), cities or jurisdictional entities serving populations greater than 100,000. In addition, operators of construction activities disturbing more than 5 acres and 11 categories of industrial activities were required to obtain permit coverage under Phase I. The Phase II rule was issued in 2003 and extended NPDES stormwater permit requirements to small MS4s (i.e., those located in an incorporated city or a county of fewer than 100,000 people) and construction activities disturbing more than 1 acre. Phase II is intended to further reduce adverse impacts on water quality and aquatic habitat by instituting the use of BMPs on previously unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation (EPA 2000).

The General MS4 Permit requires large and small MS4s to develop and implement a stormwater management plan (SWMP) that describes BMPs, measurable goals, and timetables for implementation in the following six program areas (minimum control measures):

- ▶ Public Education—The permittee must educate the public in its permitted jurisdiction about the importance of the stormwater program and the public’s role in the program.
- ▶ Public Participation—The permittee must comply with all state and local notice requirements when implementing a public involvement/participation program.
- ▶ Illicit Discharge Detection and Elimination—The permittee must adopt and enforce ordinances or take equivalent measures that prohibit illicit discharges. The permittee must also implement a program to detect illicit discharges.
- ▶ Construction Site Stormwater Runoff Control—The permittee must develop a program to control the discharge of pollutants from construction sites greater than or equal to 1 acre in size within its permitted jurisdiction. The program must include inspections of construction sites and enforcement actions against violators.
- ▶ Postconstruction Stormwater Management—The permittee must require incorporation of long-term postconstruction BMPs protecting water quality and controlling runoff flow into development and significant redevelopment projects. Postconstruction programs are most efficient when they stress low-impact design, source controls, and treatment controls.

Stormwater discharges from both large and small construction sites are now subject to NPDES requirements. Large construction sites are those that involve 5 or more acres of soil disturbance and small construction sites are those that involve more than 1 acre of soil disturbance. The SWRCB has issued an NPDES general permit for discharges of storm water associated with construction activity under Construction Activities Storm Water General Permit Order No. 99-08-DWQ (General Construction Permit) under the CWA. The permit requires the preparation of a storm water pollution prevention plan (SWPPP) for proposed construction activities of greater than ~~5~~1 acres in size. A SWPPP is an operational plan that identifies and describes the BMPs to be implemented at the construction site to control pollution of stormwater runoff. ~~Since March 10, 2003, small construction sites (those involving disturbance of less greater than 1.5 acres of soil) have also required an NPDES permit as part of Phase II of EPA’s NPDES Storm Water Program. Phase II is intended to further reduce adverse impacts on water quality and aquatic habitat by instituting the use of BMPs on previously unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation (EPA 2000). The Phase II requirements also impose new obligations on municipal separate storm sewer systems (MS4s). Small MS4s (i.e., those located in an incorporated city or a county of less than 100,000 people) that are located within urbanized areas as defined by the U.S. Census must now be covered by a NPDES permit.~~

The County released its ~~Storm Water Management Plan (SWMP)~~ in February 2003 to be consistent with the NPDES Phase II permit procedures that enable the County to comply with the CWA. ~~The plan comprises six major sections:~~

- ▶ ~~Section 1, “Background,” provides a brief history of water quality regulations.~~
- ▶ ~~Section 2, “Administration, Planning and Funding,” describes the structure, staff involvement, and funding mechanisms of the program.~~
- ▶ ~~Section 3, “Geography and Land Use,” provides demographics, maps, and other physical descriptions of Solano County.~~

- ▶ ~~Section 4, “Pollutants of Concern,” delineates known impaired water bodies and pollutants of concern, as well as actions the program will take to address specific pollutants that are impairing water quality.~~
- ▶ ~~Section 5, “Minimum Control Measures,” describes elements of the County’s program for controlling stormwater quality.~~
- ▶ ~~Section 6, “Monitoring and Evaluation,” lists and describes Solano County’s measurable goals to bring the program into compliance.~~

In 2005, the County’s SWMP was modified for the 2004–2005 reporting year to address requirements set forth in the Proposed Small MS4 General Permit issued by the SWRCB on January 9, 2003. ~~As described above, construction activities associated with projects 1 acre or larger are regulated by the SWRCB under Construction Activities Storm Water General Permit Order No. 99-08-DWQ (General Construction Permit).~~ The SWMP sets forth a program that the County implements to ensure compliance with the General MS4 Construction Permit and control the potential for detrimental effects on water quality caused by new development and redevelopment within the unincorporated areas of the county. The County is also required to submit annual reports on the status of its SWMP to the RWQCB. Solano County’s current MS4 General Permit expires in August 2008; therefore, the County will be required to submit a permit renewal application and a revised SWMP. ~~Until a new permit is issued by the SWRCB, the County will continue its current level of effort to implement its SWMP. for construction activities carried out by the County, and for construction activities carried out by private interests seeking grading, building, or other development permits from the County. The SWMP is intended to minimize construction impacts.~~

~~The SWMP also sets forth a process to be applied to the review of development site plans to address long-term water quality issues and impacts associated with proposed land uses following construction. The SWMP identifies BMPs that are required of all development projects in the Prescribed Base Program of the Design/Construction Storm Water Management Program.~~

The SWRCB has also adopted a General Industrial Storm Water Permit (Order No. 97-03-DWQ), which covers facilities that discharge stormwater as part of industrial activity. The general permit requires industrial dischargers to eliminate illicit discharges to storm drains, develop and implement a SWPPP, and perform monitoring of discharges to stormwater systems. Individual permits are issued for industrial facilities that are not covered by general industrial storm permits and are tailored to a specific type of discharge. The general industrial storm water permit covers the following industries:

- ▶ facilities subject to stormwater effluent limitations guidelines, new-source performance standards, or toxic pollutant effluent standards (40 CFR Subchapter N);
- ▶ manufacturing facilities;
- ▶ mining/oil and gas facilities;
- ▶ hazardous waste treatment, storage, or disposal facilities;
- ▶ landfills, land application sites, and open dumps that receive industrial waste;
- ▶ recycling facilities such as metal scrap yards, battery reclaimers, salvage yards, and automobile yards;
- ▶ steam electric generating facilities;
- ▶ transportation facilities that conduct any type of vehicle maintenance such as fueling, cleaning, or repairing;

- ▶ sewage treatment plants;
- ▶ construction activity (covered by a separate general permit); and
- ▶ certain facilities (often referred to as “light industry”) where industrial materials, equipment, or activities are exposed to stormwater.

NPDES permits are also issued to point-source dischargers of pollutants to surface waters and are issued pursuant to Chapter 5.5 of the California Water Code, which implements the federal CWA. Examples include but are not limited to public wastewater treatment facilities, industries, power plants, and groundwater cleanups discharging to surface waters. In California, adopted waste discharge requirements (WDRs) for discharges to surface waters that are issued by the RWQCB also serve as the NPDES permits for these dischargers. Wastewater discharges from WWTPs are also required to have an NPDES permit. WWTPs are typically required to obtain individual permits from the appropriate RWQCB. The WDRs permits also include findings, discharge prohibitions, effluent limitations, provisions, and self-monitoring requirements. The findings of the NPDES permit process provide information about treatment plant design and operations, beneficial uses to be protected, and applicable standards.

The following text discussing Solano County’s Stormwater Management Plan has been added to the “Regional and Local Plans, Policies, Regulations, and Ordinances” section of the DEIR, between “Urban Water Management Plans” and “SCWA Flood Control Master Plan,” on DEIR page 4.5-36:

### **Solano County Stormwater Management Plan**

The County’s SWMP describes the ordinances and policies in place to protect stormwater and details the County’s actions, through the year 2008, to bring Solano County into full compliance with NPDES Phase II. An SWMP was developed in February 2003 and later revised in 2005 to be consistent with the NPDES Phase II permit procedures that enable the County to comply with the CWA. The plan comprises six major sections:

- ▶ Section 1, “Background,” provides a brief history of water quality regulations.
- ▶ Section 2, “Administration, Planning and Funding,” describes the structure, staff involvement, and funding mechanisms of the program.
- ▶ Section 3, “Geography and Land Use,” provides demographics, maps, and other physical descriptions of Solano County.
- ▶ Section 4, “Pollutants of Concern,” delineates known impaired water bodies and pollutants of concern, as well as actions the program will take to address specific pollutants that are impairing water quality.
- ▶ Section 5, “Minimum Control Measures,” describes elements of the County’s program for controlling stormwater quality.
- ▶ Section 6, “Monitoring and Evaluation,” lists and describes Solano County’s measurable goals to bring the program into compliance.

According to the SWMP, the County does not own or operate any storm drain systems other than roadside culverts and bridge piping. The majority of the land in the unincorporated area has relatively flat topography, with grassy swales and creeks as the primary drainage system. The County Department of Transportation constructs and maintains the County rights-of-way and the roadside grassy-swale drainage systems. The County also identified limited sewer systems in only two areas of the county, and each of

these is served by and operated through a city sewer service. One service area is the unincorporated town of Elmira, served by the City of Vacaville, and the second is the unincorporated area between Vallejo and Benicia, served by Vallejo Sanitation and Flood Control.

After research on the CWA Section 303(d) listing of impaired water bodies was performed, the SWMP reported that the following water bodies in the unincorporated areas of Solano County had known impairments for the following pollutant(s) of concern:

- ▶ Lake Herman—Mercury
- ▶ Laurel Creek—Diazinon
- ▶ Ledgewood Creek—Diazinon
- ▶ Suisun Bay—Chlordane, dichlorodiphenyltrichloroethane (DDT), diazinon, dieldrin, dioxin compounds, furan compounds, mercury, nickel, polychlorinated biphenyls (PCBs), selenium
- ▶ Suisun Marsh wetlands—metals, nutrients, organic enrichment/low dissolved oxygen, salinity/TDS/chlorides
- ▶ Suisun Slough—Diazinon
- ▶ Lower Putah Creek—Mercury

The SWMP also identifies the following existing County ordinances that provide the backbone for NPDES compliance:

- ▶ Chapter 23, Refuse and Garbage—Provides standards, fees, permitting, and enforcement for garbage storage and collection by the public, commercial facilities, and permitted dump sites.
- ▶ Chapter 23.5, Litter Control Program—Provides standards against and enforcement of littering caused by the public, vehicles, construction, or commercial facilities.
- ▶ Chapter 24, Roads, Streets, and Other Public Property—Provides standards, permitting, and enforcement of encroachments into the County road rights-of-way (including roadside drainage projects), use of prisoner labor on public works projects, and traffic reduction.
- ▶ Chapter 25, Pumping and Sewage Disposal—Provides standards, permitting, and enforcement of chemical toilets, septic tanks and leach fields, waste pumping trucks, biosolids disposal, and industrial wastewater disposal.
- ▶ Chapter 26, Subdivision Ordinance—Provides standards and permitting for the subdivision of land, supplementing the requirements of the *Solano County General Plan* and California's Subdivision Map Act.
- ▶ Chapter 31, Grading and Erosion Control—Provides standards, permitting, and enforcement for controlling soil erosion, sedimentation, stormwater runoff, and environmental damage associated with construction and maintenance of fills, excavations, and clearing of vegetation, and enforcement of projects that change the topography and drainage of land.
- ▶ Solano County Road Improvement Standards (adopted June 12, 2001)—Provide standards for construction of public and private roads and drainage facilities, conditions applicable to use permitting, and conditions applicable to subdivisions of land.

To further address commenters' concerns, the analysis for Impact 4.5-1a beginning on page 4.5-38 of the DEIR has been expanded as follows. Please note that although only Impact 4.5-1a is presented, this analysis also applies to Impact 4.5-1b.

**IMPACT 4.5-1a** **Violation of Water Quality Standards – Preferred Plan.** *The changes in Public, Residential, Commercial, and Industrial land use designations consistent with the 2008 Draft General Plan under the Preferred Plan would result in additional discharges of pollutants to receiving water bodies from nonpoint and potentially new point sources. Such pollutants would result in adverse changes to the water quality of Solano County. If not properly constructed or maintained, additional septic systems and water supply wells required for new development may result in adverse changes in water quality. However, with adoption and implementation of the proposed goals, policies, and programs in the 2008 Draft General Plan, combined with current land use, stormwater, grading, and erosion control regulations, this impact would be **less than significant**.*

An increase in the amount of impervious surfaces (e.g., rooftops, sidewalks, driveways, streets, parking lots) within unincorporated areas of the county as a result of implementation of the 2008 Draft General Plan under the Preferred Plan would result in higher rates of runoff during rain events or other forms of irrigation, which can be a source of surface-water pollution. Sediment, organic contaminants, nutrients, trace metals, pathogens (e.g., bacteria and viruses), and oil and grease compounds are common urban runoff pollutants. Urban runoff pollutants may stem from agricultural practices, erosion of disturbed areas, deposition of atmospheric particles derived from automobiles or industrial sources, corrosion or decay of building materials, rainfall contact with toxic substances, and spills of toxic materials on surfaces that receive rainfall and generate runoff. New urban industrial and commercial development can generate urban runoff from parking areas as well as any areas of hazardous materials storage exposed to rainfall.

Sediment sources include construction sites, roads and parking lots, ~~as well as~~ destabilized landscape areas, streambanks, unprotected slopes, and denuded or disturbed areas. Sediments, in addition to being contaminants in their own right, transport other contaminants such as trace metals, nutrients, and hydrocarbons that adsorb to suspended sediment particles. Nutrients include nitrogen, phosphorus, and other organic compounds that can be found in organic litter, fertilizers, food waste, sewage, and sediment. Pet or farm animal wastes, sanitary sewer overflow, improperly sited or functioning septic systems, and landfill areas can contribute bacteria and viruses either to surface waters or to groundwater through percolation. Sources of oil and grease compounds include motor vehicles, food service establishments, and fueling stations.

As a result of implementation of the 2008 Draft General Plan, ~~C~~construction activities would occur over large areas, and substantial construction-related alteration of drainages could result in soil erosion and stormwater discharges of suspended solids, increased turbidity, and potential mobilization of other pollutants from project construction sites, as contaminated runoff to on-site and ultimately off-site drainage channels. ~~This is discussed in Impact 4.5-3a below.~~

Large areas of industrial uses are proposed by the 2008 Draft General Plan west of Suisun City, east and northeast of Dixon, northeast of Vacaville along I-505, and in areas surrounding the community of Collinsville. These designations, in addition to proposed additional commercial land uses within the unincorporated areas, may create new point-source stormwater discharges into the County's MS4 and could result in greater pollutant loads in receiving surface waters. This could contribute to greater pollutant loads within already designated impaired waters within the unincorporated areas of the county, which include Lake Herman, Laurel Creek, Ledgewood Creek, Suisun Bay, Suisun Marsh wetlands, Suisun Slough, and lower Putah Creek.

With increased development, the potential for illicit discharges into the County's MS4 also increases and may contribute to potential water quality violations. Illicit discharges are defined as any discharge to the storm drainage system that is not composed entirely of stormwater, with some exceptions. Illicit discharges enter the storm drainage system either through direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drain) or illegal dumping of materials that contain pollutants. Common sources of illicit discharges include sanitary wastewater, effluent from septic tanks, radiator flushing disposal, laundry wastewater, and improper disposal of auto and household toxics.

New commercial and industrial development may also require the use and storage of hazardous materials. These properties may also generate hazardous waste. If hazardous materials are not properly managed at the sites and hazardous waste is not properly disposed of, the properties could contribute to adverse changes to water quality. Please refer to Section 4.13, "Hazards and Hazardous Materials," for an additional discussion of the regulatory provisions of and potential impacts from hazardous materials.

Proposed new development would also require the installation of additional septic systems and water supply wells. If water supply wells are not properly constructed with an adequate sanitary seal, surface water could migrate along the well casing to underlying groundwater and adversely affect groundwater quality. If septic systems are not properly constructed or maintained, the system could fail and wastewater could enter into nearby waterways or underlying groundwater.

### **Stormwater Pollution, Erosion, and Sediment Control Provisions**

Stormwater discharges within the unincorporated county are regulated by the County's NPDES Phase II general MS4 permit and managed in accordance with the SWMP. The SWMP sets forth a program that the County implements to ensure compliance with the general MS4 permit and reduce and control the potential for detrimental effects on water quality caused by new development and redevelopment within the unincorporated areas of the county. The SWMP also describes the ordinances and policies in place to protect stormwater and details the County's actions to bring Solano County into full compliance with NPDES Phase II.

Solano County is required to describe the sources of the pollutants identified within receiving water bodies, determine whether the County has influence over the sources, and establish BMPs to reduce the pollutants under the County's jurisdiction. The SWMP also requires that the County adopt and enforce ordinances or take equivalent measures that prohibit illicit discharges and implement a program to detect illicit discharges. In accordance with NPDES permit requirements, the County has also developed a program to control the discharge of pollutants from construction sites that includes inspections of construction sites and enforcement actions against violators.

The SWMP also identifies County ordinances that provide the backbone for NPDES compliance, including Chapter 31, Grading and Erosion Control. This ordinance provides standards, permitting, and enforcement for controlling soil erosion, sedimentation, stormwater runoff, and environmental damage associated with construction and maintenance of fills, excavations, and clearing of vegetation, and enforcement of projects that change the topography and drainage of land.

Most construction, as a result of the implementation of the 2008 Draft General Plan, would require a NPDES general construction permit. New proposed industrial uses would likely require a general industrial storm water permit. Permit requirements would control the pollution of stormwater runoff during project construction or industrial operation.

Please refer to Section 4.13, "Hazards and Hazardous Materials," for provisions pertaining to regulation and control of potential water quality impacts from new development that would require the use and storage of hazardous materials.

Chapter 31 of the County Code addresses erosion and sediment control under the County Grading and Erosion Control Ordinance (see Section 4.5.2, “Regulatory Framework,” above). In addition, the County’s SWMP has been prepared, as directed by the Central Valley RWQCB, to be consistent with the NPDES Phase II permit procedures and was designed to enable the County to meet the mandate of the federal CWA to reduce pollutants to the maximum extent practicable. There are six major sections to the plan:

- ▶ ~~**Section 1: Background.** This section provides a regulatory setting.~~
- ▶ ~~**Section 2: Administration, Planning, and Funding.** This section describes the structure, staff involvement, and funding mechanisms of the SWMP.~~
- ▶ ~~**Section 3: Geography and Land Use.** This section provides demography, maps, and other physical descriptions of Solano County.~~
- ▶ ~~**Section 4: Pollutants of Concern.** This section delineates known impaired water bodies and pollutants of concern [i.e., the Section 303(d) list], as well as actions the SWMP will take to address specific pollutants that are impairing water quality.~~
- ▶ ~~**Section 5: Minimum Control Measures.** This section describes elements of the County’s program for controlling stormwater quality.~~
- ▶ ~~**Section 6: Monitoring and Evaluation.** This section includes the County’s measurable goals to bring the program into compliance.~~

## **On-Site Wastewater Treatment Systems and Water Wells**

On-site wastewater treatment systems (OWTS), otherwise known as on-site septic tank and leach field systems, are commonly used in the rural areas of the county not served by municipal wastewater treatment systems. ~~In fact, m~~More than 90% of the properties in the unincorporated county that are not served by the City of Vallejo, the Suisun Fairfield Sewer District, or city municipalities are served by OWTS (Solano County 2006b). With development that would occur in conformance with the 2008 Draft General Plan, the potential exists for contamination of groundwater and surface water resources from several factors: overreliance on OWTS from increased density of OWTS, placement near domestic wells, improperly designed or constructed systems, seasonal or year-round high water tables, or placement in areas with insufficient soil depths or improper soil types.

Existing and new OWTS should conform to standards that protect the underlying groundwater and surface water. New statewide OWTS regulations are currently being promulgated by the state in accordance with AB 885 (Chapter 781, Statutes of 2000). These regulations address concerns about contamination by septic systems of groundwater, which is classified as municipal use (e.g., drinking water) statewide unless otherwise indicated. These regulations are planned to take effect in 2009. AB 885 will set performance standards that must be met by OWTS and supplemental systems, including types of systems permitted, distance between point of OWTS discharge and groundwater and minimum depth of earthen material, and surface application and percolation rates. Local regulatory requirements for OWTS performance standards will not be superseded if these requirements are at least as stringent as those in the proposed AB 885 regulations.

Chapter 6.4 of the County Code establishes a uniform set of standards for the review and approval of on-site sewage disposal systems for individual lots and subdivisions in Solano County. The primary purpose of these standards is to protect the public health of the citizens and visitors of Solano County and protect the environment from degradation by ensuring the proper treatment and disposal of liquid waste through the appropriate siting, design, installation, and maintenance of on-site sewage disposal systems. In

addition, these standards are intended to bring Solano County into compliance with applicable Basin Plan policies adopted by the San Francisco Bay and Central Valley RWQCBs, which have jurisdiction over Solano County.

Chapter 13.10 of the County Code establishes standards for the construction, reconstruction, destruction, and inactivation of water, cathodic protection, and monitoring wells. Although well permit applications may be submitted by homeowners, their agent, or a licensed well driller, only a person possessing a C-57 water well drilling contractor’s license can actually perform work on a well.

The County’s Environmental Health Services Division conducts or oversees evaluations of the site and soil to determine the best design for a septic system to assure proper disposal of sewage. Site evaluations, plan reviews, permits, and construction and destruction inspections are also conducted for on-site sewage disposal systems and wells pursuant to the California Well Standards and Chapters 13.10 and 6.4 of the County Code.

## **Relevant Goals, Policies, and Programs of the 2008 Draft General Plan**

### ***Water Quality Protection***

#### Land Use Chapter

The Land Use chapter of the 2008 Draft General Plan contains several policies designed to protect water quality in incorporated and unincorporated areas of the county:

- ▶ **Policy LU.P-2:** A cornerstone principle of this General Plan is the direction of new urban development and growth toward municipal areas. In furtherance of this central goal, the people of Solano County, by initiative measure, have adopted and affirmed the following provisions to assure the continued preservation of those lands designated “~~Intensive Agriculture,~~” “~~Extensive Agriculture,~~” Agriculture, Watershed, Marsh, Park & Recreation, or Water Bodies & Courses ~~Development Strategy Policy No. 17; Agricultural chapter Policies AG.P-31, AG.P-32, AG.P-33, AG.P-34, AG.P-35, and AG.P-36. Agricultural Lands Policies Nos. 9, 10, 11, 12 and 13; and Watershed Lands Policy No. 2.~~ The General Plan may be reorganized, and individual goals and policies may be renumbered or reordered in the course of ongoing updates of the General Plan in accord with the requirements of state law, but the provisions enumerated in this paragraph shall continue to be included in the General Plan until December 31, 2010, unless earlier repealed or amended by the voters of the County. *[Note to the reader: Policy LU.P-2 was established as part of the Orderly Growth Initiative. Proposed changes to these policies are subject to voter approval and thus are indicated in strikethrough and underline format.]*
- ▶ **Policy LU.P-14:** Establish rural residential development in a manner that preserves rural character and scenic qualities and protects sensitive resources including agricultural lands, creeks, native trees, open spaces, and views.
- ▶ **Policy LU.P-26:** Locate and develop industrial uses in a manner that does not conflict with adjacent and surrounding agricultural activities and protects water quality and marshland and wetland habitats.
- ▶ **Policy LU.P-32:** ~~Promote patterns of development that encourage physical activity to reduce obesity, cardiovascular disease, asthma, diabetes, or injury; and that contribute to a “sense of place” and emotional well being.~~

## Agriculture Chapter

The Agriculture chapter of the 2008 Draft General Plan contains the following policies and programs that would protect water quality as a result of addressing agricultural goals:

- ▶ **Policy AG.P-8:** Maintain water resource quality and quantity for the irrigation of productive farmland so as to prevent the loss of agriculture related to competition from urban water consumption internal or external to the county.
- ▶ **Policy AG.P-9:** Promote efficient management and use of agricultural water resources.
- ▶ **Program AG.I-21:** Promote and assist farmer and rancher participation in federal and state voluntary incentive programs aimed at improving wildlife habitat, wetlands, and environmental quality (e.g., Natural Resources Conservation Service Wildlife Habitat Incentives Program, Wetlands Reserve Program, Environmental Quality Incentives Program). Concentrate efforts in areas where the Agricultural Reserve Overlay and Resource Conservation Overlay coincide.
- ▶ **Program AG.I-22:** Promote sustainable agricultural activities and practices that support and enhance the natural environment. These activities should minimize impacts on soil quality and erosion potential, water quantity and quality, energy use, air quality, and natural habitats. Sustainable agricultural practices should be addressed in the County's proposed Climate Action Plan to address climate change effects.

## Resources Chapter

The Resources chapter of the 2008 Draft General Plan contains the following goals, policies, and programs designed to protect water quality and hydrology in the county:

- ▶ **Goal RS.G-9:** Protect, monitor, restore and enhance the quality of surface and groundwater resources to meet the needs of all beneficial uses.
- ▶ **Goal RS.G-10:** Foster sound management of the land and water resources in Solano County's watersheds to minimize erosion and protect water quality using best management practices and protect downstream waterways and wetlands.
- ▶ **Policy RS.P-1:** Protect and enhance the County's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections.
- ▶ **Policy RS.P-63:** Identify, promote, and seek funding for the evaluation and remediation of water resource or water quality problems through a watershed management approach. Work with the regional water quality control board, watershed-focused groups, and stakeholders in the collection, evaluation and use of watershed-specific water resource information.
- ▶ **Policy RS.P-64:** Require the protection of natural water courses.
- ▶ **Policy RS.P-65:** Together with the Solano County Water Agency, monitor and manage the County's groundwater supplies.
- ▶ **Policy RS.P-66:** Encourage new groundwater recharge opportunities.
- ▶ **Policy RS.P-67:** Protect existing open spaces, natural habitat, floodplains, and wetland areas that serve as groundwater recharge areas.

- ▶ **Policy RS.P-68:** Preserve and maintain watershed areas characterized by slope instability, undevelopable steep slopes, high soil erosion potential, and extreme fire hazards in agricultural use. Watershed areas lacking water and public services should also be kept in agricultural use.
- ▶ **Policy RS.P-69:** Protect land surrounding valuable water sources, evaluate watersheds, and preserve open space lands to protect and improve groundwater quality, reduce polluted surface runoff, and minimize erosion.
- ▶ **Policy RS.P-71:** Preserve riparian vegetation along County waterways to maintain water quality.
- ▶ **Policy RS.P-72:** Use watershed planning approaches to resolve water quality problems. Use a comprehensive stormwater management program to limit the quantity and increase the water quality of runoff flowing to the county's streams and rivers.
- ▶ **Policy RS.P-73:** Identify naturally occurring and human-caused contaminants in groundwater in new development projects and develop methods to limit and control contaminants. Work with RWQCB to educate the public on evaluating the quality of groundwater.
- ▶ **Policy RS.P-74:** Require and provide incentives for site plan elements (such as permeable pavement, swales, and filter strips) that limit runoff and increase infiltration and groundwater recharge.
- ▶ **Program RS.I-61:** Establish development standards that maximize retention of runoff and regulate development to avoid pollution of storm water, water bodies, and groundwater.
- ▶ **Program RS.I-62:** Develop an ordinance that establishes a riparian buffer to protect water quality and ecosystem function. The minimum buffer width shall be determined according to existing parcel size. For parcels more than 2 acres in size, a minimum 150-foot development setback shall be provided. For parcels of 0.5–2.0 acres, a minimum 50-foot setback shall be provided. For parcels less than 0.5 acre a minimum 20-foot setback shall be provided. Exceptions to these development setbacks apply to parcels where a parcel is entirely within the riparian buffer setback or development on the parcel entirely outside of the setback is infeasible or would have greater impacts on water quality and wildlife habitat.
- ▶ **Program RS.I-63:** Seek funding opportunities for collaborative watershed planning approaches to water quantity and quality enhancement and protection, where such an approach is the desired method of accomplishing the program objectives.
- ▶ **Program RS.I-64:** Protect natural watercourses through acquisition or dedication of adjacent land in fee or less than fee title during the process of reviewing and approving land development proposals.
- ▶ **Program RS.I-65:** Require site plan elements to limit runoff from new development. These measures might include reduced pavement or site coverage, permeable pavement, vegetation that retains and filters stormwater, and/or drainage features. Limit the construction of extensive impermeable surfaces and promote the use of permeable materials for surfaces such as driveways, streets, parking lots, and sidewalks.
- ▶ **Program RS.I-66:** Require proposed projects located within the Putah Creek and Ulatis Creek watersheds to minimize project-related stormwater runoff and pollution. Stormwater runoff and pollution loads resulting after development of projects shall not exceed predevelopment conditions.
- ▶ **Program RS.I-67:** Seek and secure funding sources for development of countywide water quality assessment, monitoring, remedial and corrective action, awareness/education programs. Provide

technical assistance to minimize stormwater pollution, support RWQCB requirements, and manage related County programs. Consider future use of desalinization to supplement water supplies.

- ▶ **Program RS.I-68:** Develop a public education and technical assistance program that provides property owners, applicants, and the general public with information regarding stormwater pollution, efficient water use, public water supplies, water conservation and reuse, and groundwater.
- ▶ **Program RS.I-69:** Continue to require best management land use practices in the Barker Slough watershed.
- ▶ **Program RS.I-71:** Inform the public about practices and programs to minimize water pollution and provide educational and technical assistance to farmers and landowners to reduce sedimentation and increase on-site retention and recharge of storm water.
- ▶ **Program RS.I-72:** Coordinate with federal and state agencies to monitor the extent of endocrine disruptor pollutants (synthetic compounds that mimic certain hormones and effect body functions such as immune and reproductive system) in the County’s water supply and water bodies. Create an action plan to reduce such pollutants, if pollutants are found to exist at unacceptable levels.
- ▶ **Program RS.I-73:** Explore a cooperative city/county program to compensate farmers and/or landowners to preserve farmland for watershed preservation and maintenance.

## Public Facilities and Services Chapter

The Public Facilities and Services chapter of the 2008 Draft General Plan contains the following policies and programs that aim to protect the county’s water quality standards:

- ▶ **Policy PF.P-9:** Actively support efforts of the Solano County Water Agency, water districts, and regional water suppliers and distributors, to ensure that adequate high-quality water supplies are available to support current and future development projects in Solano County.
- ▶ **Policy PF.P-10:** Maintain an adequate water supply by promoting water conservation and development of additional cost-effective water sources that do not result in environmental damage.
- ▶ **Policy PF.P-11:** Promote and model practices to improve the efficiency of water use, including the use of water-efficient landscaping, beneficial reuse of treated wastewater, rainwater harvesting, and water-conserving appliances and plumbing fixtures.
- ~~▶ **Policy PF.P-21:** Sewer services for development within the unincorporated area may be provided through private individual on-site sewage disposal systems, or centralized sewage treatment systems permitted and managed by a public agency utilizing the best systems available that meet tertiary treatment or higher standards.~~
- ▶ **Policy PF.P-22:** Ensure that new and existing septic systems and sewage treatment systems do not negatively affect groundwater quality.
- ▶ **Policy PF.P-32:** Require development projects to minimize pollution of stormwater, water bodies that receive runoff, and groundwater, and to maximize groundwater recharge potential by:
  - implementing planning and engineering design standards that use low-impact development techniques and approaches to maintain and mimic the natural hydrologic regime;
  - using “infiltration” style low-impact development technologies; and

- following stormwater BMPs during and after construction, in accordance with relevant state-required stormwater permits.
- ▶ **Program PF.I-19:** Cooperate with the Solano County Water Agency in the implementation of its Integrated Regional Water Management Plan and support the efforts of the Solano County Water Agency to maintain adequate water supply and high water quality. Help the Solano County Water Agency to improve water demand projections and planning. This could include updating the Urban Water Management Plan with population projections as found in the updated general plans of cities and the County.
- ▶ **Program PF.I-20:** Review and revise the County Code to ensure it incorporates current best practices to minimize the impacts of on-site septic systems and sewage treatment systems. This revision should address standards within chapters 6.4, 12.2, 13.10, 26, 28, and 31 of the County code.
- ▶ **Program PF.I-21:** When reviewing development proposals:
  - require septic systems to be located outside of primary groundwater recharge areas, or where that is not possible, require shallow leaching systems for disposal of septic effluent;
  - require new septic systems or leach fields to be installed at least 100 feet away from natural waterways, including perennial or intermittent streams, seasonal water channels, and natural bodies of standing water, but make an exception for the repair of existing systems if the buffer cannot be maintained and if adequate provisions are made for protecting water quality;
  - require the use of alternative wastewater treatment techniques to respond to site characteristics, as determined by the California Department of Public Health (formerly California Department of Health Services) and the RWQCBs; and
  - require new development with septic systems to be designed to prevent nitrates and other pollutants of concern from septic disposal systems from impairing groundwater quality.
- ~~▶ **Program PF.I-22:** On-site sewage disposal systems for individual lots and subdivisions may be operated by private property owners. A public agency shall permit and manage centralized community sewage disposal systems. If lands proposed for community sewage disposal systems are not within the boundaries of an existing public sewage treatment agency, the Board of Supervisors shall, as a condition of development, designate a public agency to provide and manage the sewer service, which may be contracted to a private entity with oversight by the public entity. Sewer treatment facilities shall be designed to provide sewer service to developed areas and areas designated for future development within the General Plan.~~
- ▶ **Program PF.I-23:** Continue to enforce the abatement of ailing septic systems that have been demonstrated as causing a health and safety hazard.
- ▶ **Program PF.I-24:** Continue inspection of individual sewage facilities to ensure they are not adversely affecting water quality.
- ▶ **Program PF.I-29:** Design, construct, and maintain County buildings, roads, bridges, drainage, and other facilities to minimize sediment and other pollutants in stormwater flows. Develop and implement best management practices for ongoing maintenance and operation.
- ▶ Prepare and implement a BMP manual for minimizing stormwater pollutants associated with construction and maintenance of County buildings, roads, and other facilities.

## Public Health and Safety Chapter

The Public Health and Safety chapter of the 2008 Draft General Plan contains the following policies that address water quality as part or all of their focus:

- ▶ **Policy HS.P-2:** Restore and maintain the natural functions of riparian corridors and water channels throughout the county to reduce flooding, convey stormwater flows, and improve water quality.
- ▶ **Policy HS.P-10:** Ensure that flood management policies that minimize loss of life and property also balance environmental health considerations of the floodplain and therefore do not cause further erosion, sedimentation, or water quality problems in the floodplain area.
- ▶ **Policy HS.P-16:** Require minimum setbacks for construction along creeks between the creek bank and structure, except for farm structures that are not dwellings or places of work, based on the susceptibility of the bank to lurching caused by seismic shaking.

### ***Protection and Enhancement of Water Resources***

The Resources chapter of the 2008 Draft General Plan contains the following policies and programs to protect and enhance the county's water resources, which would in turn enhance hydrology and water quality:

- ▶ **Policy RS.P-8:** Protect marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands because they are critical habitats for marsh-related wildlife and are essential to the integrity of the marshes.
- ▶ **Policy RS.P-27:** Protect long-term water quality in the Delta in coordination with water agencies at local, state, and federal levels for designated beneficial uses, including agriculture, municipal, water-dependent industrial, water-contact recreation, boating and fish and wildlife habitat.
- ▶ **Program RS.I-35:** Monitor levels of use in the Suisun Marsh to ensure that use intensity is compatible with other recreation activities and with protection of the Suisun Marsh environment.

### **Conclusion**

The above-referenced regulatory requirements and proposed goals, policies, and programs in the 2008 Draft General Plan and provisions presented within Section 4.13, "Hazards and Hazardous Materials," provide adequate provisions to control, reduce, or eliminate potential impacts on water quality from stormwater pollution, illicit discharges, or improperly constructed or maintained water supply wells or septic systems. In addition, provisions are in place that would also regulate and control specific point-source stormwater or wastewater discharges from potential new industries proposed within the unincorporated areas of the county. With adoption and implementation of the proposed goals, policies, and programs in the 2008 Draft General Plan, combined with compliance with the County's MS4 NPDES Permit Program, current land use, stormwater, grading, and erosion control regulations, this impact would be less than significant.

Please also note that, as shown in Chapter 5 of this FEIR, the Planning Commission has recommended the following changes to Policy PF.P-21 and Program PF.I-22, shown in strikeout above. These changes have been accepted by the Planning Commission and will be provided to the County Board of Supervisors for further consideration.

- ▶ **PF.P-21:** Sewer services for development within the unincorporated area may be provided through private individual on-site sewage disposal systems, or ~~central~~ centralized community treatment

systems ~~permitted and~~ managed by a public agency or public utility utilizing the best systems available that meet tertiary treatment or higher standards. Use of such centralized sewage treatment systems shall be limited to: (1) existing developed areas to address health and safety hazards, (2) areas designated for commercial or industrial uses, or (3) areas designated for rural residential development when part of a specific plan, policy plan overlay, or planned unit development.

- ▶ **PF.I-22:** On-site sewage disposal systems for individual lots and subdivisions may be operated by private property owners. A public agency or public utility shall ~~permit and~~ manage a centralized community sewage disposal systems. If lands proposed ~~to be served by a~~ for community sewage disposal systems are not within the boundaries or service area of an existing public sewage treatment agency or utility, the Board of Supervisors shall, as a condition of development, designate a public agency or utility to provide and manage the public sewer service, ~~which may be contracted to a private entity with oversight by the public agency.~~ Sewer treatment facilities shall be designated to provide sewer service to existing developed areas to address health and safety hazards, areas designated for commercial or industrial uses, or areas designated for rural residential development when part of a specific plan, policy plan overlay, or planned unit development and areas designated for future development within the General Plan. An analysis of the financial viability to construct, operate, and maintain a proposed community sewage disposal system shall be required.

With the above-referenced modifications and response to comment discussion, the water quality impact analysis within the DEIR and response to comments are considered to be complete.

## 2.16 MASTER RESPONSE P: INSUFFICIENT WASTEWATER ANALYSIS

Several commenters were concerned that the DEIR fails to quantify the potential wastewater demands created by the 2008 Draft General Plan. The comments assert that the 2008 Draft General Plan does not account for nonresidential flows and therefore does not provide an accurate assessment of potential demands from plan buildout.

Similar to the water supply and demand analysis, existing wastewater generation rates are not available for commercial, industrial, and agricultural land uses within unincorporated areas. Furthermore, unincorporated areas of the county currently rely largely on individual septic systems, for which the amount of wastewater generated is not quantified.

Because of the lack of existing quantitative data regarding wastewater in unincorporated areas, it is not possible to estimate with complete accuracy the amount of wastewater generated and the available wastewater capacity in unincorporated Solano County through buildout of the 2008 Draft General Plan. Nonetheless, rough estimates were calculated for wastewater generation and capacity resulting from buildout of the 2008 Draft General Plan for both residential and nonresidential uses. For residential land use, the rate of wastewater generation has been estimated to be approximately 75 gallons per day (gpd) per person, based on the amount of projected residential population growth in unincorporated areas, as proposed in the 2008 Draft General Plan.

For commercial, industrial, and agricultural land uses a rate of 500 gpd per acre was provided by the City of Vacaville in its municipal service review (City of Vacaville 2004). Agricultural uses do not generate substantial wastewater flows, as field workers generally utilize outhouses or existing residential facilities; therefore, associated wastewater generation is determined based on population estimates within agricultural lands. Commercial and industrial wastewater flows can be much greater or much less than typical residential demands, depending on the type of use. For instance, food processing, laundromats, and other “water dependent” industries generate much more wastewater than uses such as warehousing or farming activities.

The implementation of reuse and water recycling programs would reduce wastewater generation. Additionally, annexation by cities would be encouraged as subsequent developments occur within MSAs, which would further

lessen the severity of wastewater impacts in unincorporated areas of the county. It is therefore probable that actual wastewater generation rates resulting from future developments pursuant to the 2008 Draft General Plan would vary considerably, and the wastewater generation and capacities estimated in this FEIR constitute a rough estimation. As a result, the analysis in this document should be considered largely qualitative.

As shown in Chapter 4 of this FEIR, the “Wastewater Services” section in the discussion of methodology on page 4.9-30 of the DEIR is therefore revised as follows (please note that all subsequent tables in Section 4.9, and text references to these tables, are renumbered to reflect the insertion of the new table below):

### Wastewater Services

The 2008 Draft General Plan would result in increased residential, commercial, and industrial land uses, and a decrease in agricultural land uses, as a result of increasing population growth. This analysis is based on the following wastewater demand assumptions shown in Table 4.9-13. The table shows wastewater demand projections for the Preferred Plan and the Maximum Development Scenario in unincorporated areas of the county outside of MSAs that would be annexed and served by the associated city, based on projected population growth for residential, agriculture, and special-purpose areas. Wastewater projections are made based on the projected population growth associated with each development scenario. This analysis quantifies generation of wastewater on a per-capita basis only. Commercial and industrial uses would vary substantially in the amount of wastewater treatment requirements, and ~~based on~~ based on current background information, an average generation value is not available for projecting commercial and industrial wastewater generation numbers with complete accuracy. However, to provide a rough estimate of wastewater generation from commercial, industrial, and agricultural land uses associated with the 2008 Draft General Plan, the analysis used an estimated-generation multiplier rate of 500 gpd per acre, provided by the City of Vacaville in its municipal service review (City of Vacaville 2004). For residential land uses, the County has estimated that approximately 75 gallons per day (gpd) of wastewater per person would be generated with implementation of the 2008 Draft General Plan.

Land Use	Wastewater Demand (mgd)				
	Baseline— Existing Population	Preferred Plan		Maximum Development Scenario	
		Population	Change	Population	Change
Residential	17,719	<del>27,435</del> <u>11,163</u>	<del>9,716</del> <u>6,556</u>	<del>42,953</del> <u>17,805</u>	<del>25,234</del> <u>86</u>
Agriculture	2,269	4,940	2,671	9,879	7,610
Special Purpose Areas	0	<del>7,081</del> <u>1,051</u>	<del>7,081</del> <u>1,051</u>	<del>7,081</del> <u>1,051</u>	<del>7,081</del> <u>1,051</u>
Total Population	19,988	<del>39,455</del> <u>17,154</u>	<del>19,467</del> <u>2,834</u>	<del>62,105</del> <u>28,735</u>	<del>42,117</del> <u>8,747</u>
<b>Projected Wastewater Demand*</b>	<b>1.5</b>	<b><del>2.51</del> <u>1.3</u></b>	<b><del>1.01</del> <u>0.21</u></b>	<b><del>4.04</del> <u>2.1</u></b>	<b><del>2.70</del> <u>0.65</u></b>
Notes:					
mgd = million gallons per <del>year</del> <u>day</u>					
* Projection assumes 75 gallons per day (gpd) per person (Bell, pers. comm., 2006)					
Source: Data provided by Solano County in 2008					

Table 4.9-14 projects nonresidential generation of wastewater in unincorporated areas of Solano County.

<b>Table 4.9-14</b>					
<b>Projected Wastewater Demand based on Commercial and Industrial Acreage in the Unincorporated Areas of Solano County</b>					
<u>Land Use</u>	<u>Wastewater Demand (mgd)</u>				
	<u>Baseline— Existing Acreage</u>	<u>Preferred Plan</u>		<u>Maximum Development Scenario</u>	
		<u>Acreage</u>	<u>Change</u>	<u>Acreage</u>	<u>Change</u>
<u>Commercial</u>	<u>567</u>	<u>449</u>	<u>-118**</u>	<u>449</u>	<u>-118**</u>
<u>Industrial</u>	<u>1,921</u>	<u>7,743</u>	<u>5,822</u>	<u>7,743</u>	<u>5,822</u>
<u>Total Acreage</u>	<u>2,488</u>	<u>8,192</u>	<u>5,822</u>	<u>8,192</u>	<u>5,822</u>
<b><u>Projected Water Demand*</u></b>	<b><u>1.24</u></b>	<b><u>4.09</u></b>	<b><u>2.90</u></b>	<b><u>4.09</u></b>	<b><u>2.90</u></b>
<u>Notes:</u> mgd = million gallons per day <u>Development within municipal service areas (MSAs) would be facilitated through annexation into the appropriate cities, which would place the responsibility for the provision of services within the MSAs to the city where the annexation takes place. Therefore, this table accounts only for changes of land use in unincorporated areas.</u> <u>* Projection assumes 500 gallons per day (gpd) per acre of new commercial and industrial development (City of Vacaville 2004).</u> <u>Source: Data provided by Solano County in 2008</u>					

As shown in Chapter 4 of this FEIR, the portion of the impact analysis for Impact 4.9-3a, “Increased Wastewater Treatment Demand – Preferred Plan,” included in the first two paragraphs of page 4.9-44 of the DEIR is revised as follows:

Buildout of the 2008 Draft General Plan under the Preferred Plan would result in increased urban development in unincorporated areas that would generate additional wastewater. Portions of new development would occur within MSAs, which would be provided wastewater services by those municipalities. The majority of new development approved by the County would occur outside MSAs and would be served by individual septic systems and a small number of centralized treatment systems. Development occurring within MSAs would be approved by cities through annexation, and the cities would be responsible for providing wastewater services.

According to the Preferred Plan buildout scenario, development requiring municipal services would be encouraged near existing developed and urbanized areas within MSAs, where existing infrastructure is currently available. Such development would be approved by cities through annexation. The County anticipates additional residential development and some agricultural industrial development occurring in rural portions of the county. Population projections used in this analysis to estimate wastewater generated as a result of anticipated future growth include only areas outside of existing MSAs, which would rely on individual on-site wastewater systems; larger developments that would generate the equivalent wastewater to 200 or more units may be served by centralized systems. As shown in Table 4.9-12 above, the Preferred Plan would generate an additional 1.46 mgd of wastewater related to residential developments. As shown in Table 4.9-13 above, the Preferred Plan would result in 0.21 mgd of generated wastewater related to residential developments in unincorporated areas outside MSAs, while the Maximum Development Scenario would result in the generation of 0.65 mgd of residential wastewater. As shown in Table 4.9-14, nonresidential land uses would result in a generation of 2.9 mgd of wastewater under the Preferred Plan and the Maximum Development Scenario.

As shown in Chapter 4 of this FEIR, the list of policies and programs of the 2008 Draft General Plan relevant to Impact 4.9-3a (and Impact 4.9-3b) on pages 4.9-44 and 4.9-45 of the DEIR is revised as follows:

### **Relevant Policies and Programs of the 2008 Draft General Plan**

The following policies and programs in the 2008 Draft General Plan address wastewater and provide a framework to ensure that sufficient wastewater capacity is provided:

- ▶ **Policy PF.P-2:** Require new development and redevelopment to pay its fair share of infrastructure and public service costs.
- ▶ **Policy PF.P-4:** Ensure that adequate land is set aside within the unincorporated county for public facilities to support future needs.
- ▶ **Policy PF.P-5:** Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.
- ▶ **Policy PF.P-6:** Guide development requiring urban services to locations within and adjacent to cities.
- ▶ **Policy PF.P-7:** Coordinate with the cities to strongly encourage compact urban development within city urban growth areas to avoid unnecessary extension or reconstruction of roads, water mains, and services and to reduce the need for increased school, police, fire, and other public facilities and services.
- ▶ **Policy PF.P-18:** The minimum lot size for properties to be served by individual on site wells and individual on site sewage disposal systems shall be 5 acres. Where cluster development is proposed with on-site wells and sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Policy PF.P-19:** The minimum size for properties to be served by public water service with individual on-site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 2.5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Program PF.I-1:** Use the County's Capital Improvement Program to identify, plan, and provide for future public facilities and improvements. Capital Improvement Program projects shall be reviewed annually for consistency with General Plan policies and coordinated with current and future development.
- ▶ **Program PF.I-4:** Coordinate with the cities and the Solano County Local Agency Formation Commission to ensure that urban development in areas included within the cities' municipal service areas are served by a full range of urban services (e.g., public water and sewer, public transit, safety and emergency response services, parks, trails, open spaces) through city annexation.
- ▶ **Program PF.I-5:** Maintain the zoning ordinance to specify minimum lot sizes for properties with on-site sewage and on-site wells.
- ▶ **Program PF.I-21:** When reviewing development proposals,
  - Require septic systems to be located outside of primary groundwater recharge areas, or where that is not possible, require shallow leaching systems for disposal of septic effluent.

- Require new septic systems or leach fields to be installed at least 100 feet away from natural waterways, including perennial or intermittent streams, seasonal water channels, and natural bodies of standing water. Make an exception for the repair of existing systems if the 100-foot setback area cannot be maintained and if adequate provisions are made for protecting water quality.
  - Require the use of alternative wastewater treatment techniques to respond to site characteristics, as determined by the California Department of Health Services and regional water quality control boards.
  - Require new development with septic systems to be designed so as to prevent nitrates and other pollutants of concern from septic disposal systems from impairing groundwater quality.
- ▶ ~~**Program PF.I-22:** On-site sewage disposal systems for individual lots and subdivisions may be operated by private property owners. A public agency shall permit and manage centralized community sewage disposal systems. If lands proposed for community sewage disposal systems are not within the boundaries of an existing public sewage treatment agency, the Board of Supervisors shall, as a condition of development, designate a public agency to provide and manage the sewer service, which may be contracted to a private entity with oversight by the public entity. Sewer treatment facilities shall be designed to provide sewer service to developed areas and areas designated for future development within the General Plan.~~

In addition, as shown in Chapter 5 of this FEIR, County staff have recommended the following changes to the proposed sewer service policy, Policy PF.P-21, and implementation program, Program PF.I-22. The changes have been accepted by the Planning Commission and will be provided to the County Board of Supervisors for consideration. Like the policies and programs listed above, Policy PF.P-21 and Program PF.I-22 would be part of the framework of policies and programs in the 2008 Draft General Plan that would ensure that sufficient wastewater capacity is provided.

- ▶ **Policy PF.P-21:** Sewer service for development within the unincorporated area may be provided through private individual on-site sewage disposal systems, or ~~central~~ centralized community treatment systems ~~permitted and~~ managed by a public agency or public utility utilizing the best systems available that meet tertiary treatment or higher standards. Use of such centralized sewage treatment systems shall be limited to: (1) existing developed areas to address health and safety hazards, (2) areas designated for commercial or industrial uses, or (3) areas designated for rural residential development when part of a specific plan, policy plan overlay, or planned unit development.
- ▶ **Program PF.I-22:** On-site sewage disposal systems for individual lots and subdivisions may be operated by private property owners. A public agency or public utility shall ~~permit and~~ manage a centralized community sewage disposal systems. If lands proposed to be served by a community sewage disposal systems are not within the boundaries or service area of an existing public sewage treatment agency or utility, the Board of Supervisors shall, as a condition of development, designate a public agency or utility to provide and manage the public sewer service, ~~which may be contracted to a private entity with oversight by the public agency.~~ Sewer treatment facilities shall be designated to provide sewer service to existing developed areas to address health and safety hazards, areas designated for commercial or industrial uses, or areas designated for rural residential development when part of a specific plan, policy plan overlay, or planned unit development ~~and areas designated for future development within the General Plan.~~ An analysis of the financial viability to construct, operate, and maintain a proposed community sewage disposal system shall be required.

Lastly, as shown in Chapter 4 of this FEIR, Mitigation Measures 4.9-3a and 4.9-3b on pages 4.9-45 and 4.9-46 of the DEIR are revised as follows. Please note that although only Mitigation Measure 4.9-3a is shown here, the changes apply to Mitigation Measure 4.9-3b as well.

#### Mitigation Measure 4.9-3a: Implement Measures to Ensure Sufficient Wastewater Collection and Removal Systems for Development Projects.

The County shall implement the following measures to ensure the availability of adequate wastewater collection, treatment, and removal systems for land development projects in the unincorporated county under the 2008 Draft General Plan:

- ▶ Before approval of any tentative subdivision map for a proposed residential project, the County shall formally consult with the wastewater system provider that would serve the proposed subdivision to make a factual showing or impose conditions to ensure the availability of an adequate wastewater removal system for the proposed development, including provisions for collection, treatment, and disposal of septage.
- ▶ Before recordation of any final small-lot subdivision map, or before County approval of any project-specific discretionary approval or entitlement for nonresidential land uses, the County or the project applicant shall demonstrate, based on substantial evidence, the availability of a long-term, reliable wastewater collection system for the amount of development that would be authorized by the final subdivision map or project-specific discretionary nonresidential approval or entitlement. Such a demonstration shall consist of a written verification that existing treatment capacity is or will be available and that needed physical improvements for treating wastewater from the project site will be in place before occupancy and permitted under applicable regulatory programs.

Although implementation of Mitigation Measure 4.9-3a would assist the County in ensuring that sufficient service capacity is available to serve future growth projected in the 2008 Draft General Plan it would not reduce this impact to a less-than-significant level. For this reason, the impact would remain **significant and unavoidable.**

## 2.17 MASTER RESPONSE Q: INADEQUATE ANALYSIS OF ENERGY DEMANDS

Several commenters were concerned that the DEIR fails to quantify the potential energy demands created by the 2008 Draft General Plan and fails to properly estimate energy demand created by new businesses and residences (i.e., electricity, heating, and other nontransportation purposes), beyond assuming an increase in per-capita energy demand from population growth. Several comments further assert that the 2008 Draft General Plan does not promote a compact development pattern that would reduce energy use and that increases in vehicle trips associated with the 2008 Draft General Plan would result in a significant increase in energy use.

As described in Impact 4.12-2a, “Increased Energy Demand and Need for Additional Energy Infrastructure,” on page 4.12-13 of the DEIR, increased demand for energy would be a byproduct of all future land uses and development pursuant to the 2008 Draft General Plan. Increased energy consumption would require additional sources of energy to supply the demand. As described in the DEIR, Pacific Gas and Electric Company (PG&E) provides electricity and natural gas service to Solano County.

As a public utility, PG&E is obligated to provide public utility services as demand requires (Gardner, pers. comm., 2008). PG&E determines energy needs on a project-by-project basis and would determine future energy needs for specific projects based on subsequent review and analysis (Lee, pers. comm., 2008). If additional capacity is required, then additional capacity projects must be implemented (Gardner, pers. comm., 2008).

The anticipated increase in demand for electric energy may be satisfied by a variety of electric generation facilities, such as fossil-fueled power plants, wind facilities, solar facilities, dams and hydroelectric facilities, fossil fuels, and natural gas resources. Construction of new and expanded electricity generation facilities by private operators at undetermined locations could be required to meet future growth in the county. Typical environmental impacts associated with electricity generation facilities differ by type of facility. Examples of the construction and operational impacts associated with gas-fueled power plants and other electricity and natural gas-generating facilities are as follows:

- ▶ Conversion of agricultural land
- ▶ Conversion of timberland
- ▶ Change in visual character
- ▶ Night glare
- ▶ Increase in traffic congestion
- ▶ Decrease in water supply
- ▶ Degradation of surface-water quality
- ▶ Degradation of groundwater quality
- ▶ Increase of surface-water temperature
- ▶ Accidental release of hazardous materials
- ▶ Operational noise
- ▶ Exposure of construction workers to on-site contamination
- ▶ Emissions of construction air pollutants and dust
- ▶ Emissions of operational air pollutants
- ▶ Exposure to seismic events
- ▶ Conversion of critical habitats
- ▶ Disturbance of wildlife
- ▶ Disturbance or destruction of known and unknown cultural resources
- ▶ Growth-inducing impacts

Additional natural-gas distribution pipelines could also be expected in Solano County. Among the environmental impacts that could result from the development of natural-gas pipelines are the following:

- ▶ Temporary habitat disturbance
- ▶ Temporary traffic disturbance
- ▶ Accidental releases of hazardous materials
- ▶ Risk of explosion from buried pipelines
- ▶ Structural damage from seismic events
- ▶ Construction noise
- ▶ Disturbance of cultural resources
- ▶ Emissions of construction air pollutants and dust
- ▶ Growth-inducing impacts

Consistent with the programmatic nature of this EIR, site-specific environmental impacts associated with new energy infrastructure would be addressed in the environmental documentation for individual facility development projects. Licensing applications for the California Energy Commission, California Public Utilities Commission, and Federal Energy Regulatory Commission include an evaluation of environmental impacts similar to the analysis required under CEQA. In addition, CEQA and/or National Environmental Policy Act (NEPA) documentation, such as an environmental impact report/environmental impact statement, may also be required for new energy facilities.

Although the County is able to identify, very generally, the potential scope of impacts that could result from the development of new energy infrastructure within the county or that would serve the county, it is not possible to predict with any certainty exactly what types of facilities would be necessary, where they would be located, what

their significant impacts would be, and what sort of mitigation could be applied to such projects. In light of this uncertainty, further analysis of this impact would be too speculative; therefore, consistent with Section 15145 of the State CEQA Guidelines, no significance conclusion can be reached and further discussion of this impact is not required.

Regarding increases in vehicle trips related to implementation of the 2008 Draft General Plan, the DEIR projects that the 2008 Draft General Plan would result in an additional 917,786 vehicle trips per day under the Preferred Plan and 974,786 new trips under the Maximum Buildout Scenario. The proposed increase in vehicle trips would result in an associated increase in energy use. Comments on the DEIR propose that increased rural residential development in unincorporated areas of the county would further add to vehicle trips and VMT, which would lead to significant increases in energy use. Solano County is obligated to provide a fair share of new housing to meet the objectives of its housing element. The 2008 Draft General Plan directs much new development to planned MSAs, which would be developed through annexation into the associated city limits, which would proceed according to the city’s general plans. Although the County has historically relied on agreements with the cities to accommodate the County’s share of the regional housing needs assessment, there is no guarantee that such agreements will be present in the future, and therefore it would be imprudent of the County not to also provide for residential land uses in unincorporated areas. Energy use related to VMT would be reduced by policies of the 2008 Draft General Plan described below, and clustered development in unincorporated areas that provide mixed uses and additional job opportunities would help to reduce vehicle trips; however, residents would continue to commute to work in incorporated urban centers where more highly skilled jobs and higher paying jobs are available.

In response to comments received on this issue, the following revisions have been made to the DEIR.

As shown in Chapter 4 of this FEIR, the following text and table are added after the paragraph under “Electricity” on page 4.12-1 of the DEIR :

Table 4.12-1 shows the amount of current energy usage in Solano County in 2006–2007 as calculated by PG&E.

<b>Table 4.12-1 Solano County Electricity and Natural Gas Usage, 2006–2007</b>		
<u>Sector</u>	<u>Electricity Usage (1,000 kWh)</u>	<u>Natural Gas Usage (1,000 Therms)</u>
Residential	696,547	36,460
Nonresidential*	1,199,581	51,600
Total	1,896,128	88,061
Notes: kWh = kilowatt-hours		
<u>This information excludes Benicia and Vallejo, which are located in a separate service area. Information from Benicia and Vallejo was not available in time for inclusion in this document.</u>		
<u>*Information provided by Pacific Gas and Electric Company groups Commercial, Industrial, and Agricultural use together.</u>		
<u>Source: Bond, pers. comm., 2008</u>		

As shown in Chapter 4 of this FEIR, the following text and table are added following the third paragraph of discussion under Impact 4.12-1a on page 4.12-12 of the DEIR (please note that all subsequent tables in Section 4.12, and text references to these tables, are renumbered to reflect the insertion of the new tables below):

Table 4.12-2 shows the projected electricity and natural gas demand based on population growth and nonresidential acreage in the unincorporated areas of Solano County pursuant to implementation of the 2008 Draft General Plan. Assumptions are made based on energy use per capita for residential areas and energy use per square foot for nonresidential land uses. According to energy generation rates provided by PG&E, the preferred plan would potentially generate a demand for up to 117,317 kW of electricity and 25,592 Therms of natural gas per year.

<b>Table 4.12-2</b>			
<b>Projected Electricity and Natural Gas Demand based on Population Growth and Nonresidential Acreage in the Unincorporated Areas of Solano County</b>			
<b>Preferred Plan</b>			
<u>Land Use</u>	<u>Proposed Buildout</u>	<u>Electricity (1,000 kW)</u>	<u>Natural Gas (1,000 Therms)</u>
<u>Residential</u>	<u>4,942 Units*</u>	<u>32,840<sup>2</sup></u>	<u>9,019<sup>1</sup></u>
<u>Nonresidential</u>	<u>10,559,731 Square Feet*</u>	<u>84,477<sup>4</sup></u>	<u>16,573<sup>3</sup></u>
<b><u>Total</u></b>		<b><u>117,317</u></b>	<b><u>25,592</u></b>
<b>Maximum Development Scenario</b>			
<u>Land Use</u>	<u>Proposed Buildout</u>	<u>Electricity (1,000 kW)</u>	<u>Natural Gas (1,000 Therms)</u>
<u>Residential</u>	<u>12,729 Units*</u>	<u>32,840<sup>2</sup></u>	<u>23,230<sup>1</sup></u>
<u>Nonresidential</u>	<u>21,727,070 Square Feet*</u>	<u>173,816<sup>4</sup></u>	<u>34,100<sup>3</sup></u>
<b><u>Total</u></b>		<b><u>206,656</u></b>	<b><u>57,330</u></b>
<p><u>Notes:</u>            kW = kilowatts            Nonresidential electricity and natural gas generation varies greatly by type of development and actual use, and the rates used are considered a rough estimation.  <sup>1</sup> Residential natural gas projections are calculated based on a per unit estimate assuming 1.825 Therms per unit per year (Lee, pers. comm., 2008).  <sup>2</sup> Residential electricity projections are calculated based on 5 kW per unit (Gardner, pers. comm., 2008).  <sup>3</sup> Nonresidential projections are estimated assuming 430 British thermal units (Btu) per square foot per day (1 Btu = 100,000 Therms) of natural gas (Lee, pers. comm., 2008).  <sup>4</sup> Nonresidential electricity projections are calculated based on 8 kW per square foot (Gardner, pers. comm., 2008).            *Buildout estimates are generated based on land uses proposed in the 2008 Draft General Plan.            Source: Data provided by EDAW in 2008</p>			

As shown in Chapter 4 of this FEIR, the discussion of Impact 4.12-1b on page 4.12-13 of the DEIR is modified as follows:

**IMPACT 4.12-1b** Effects on Energy Consumption from Land Use Locations and Patterns – Maximum Development Scenario. *Buildout of the 2008 Draft General Plan under the Maximum Development Scenario could affect energy usage through inefficient land use patterns that increase dependency on single-occupant vehicles; however, the proposed land use patterns and goals and policies would promote compact, cluster developments in the vicinity of existing infrastructure and developed areas, which would reduce transportation-related energy usage and the need for expanded infrastructure. This impact would be less than significant.*

This impact is similar to Impact 4.12-1a above, although the increased density of development under the Maximum Development Scenario would potentially generate a demand for up to 206,656 kW of electricity and 57,330 Therms of natural gas per year result in a higher overall level of demand for energy. Implementation of policies and a program in the 2008 Draft General Plan would support increasing energy efficiency and would assure that implementation of the plan under the Maximum Development Scenario would not result in increased energy demands from wasteful land use planning. For the same reasons as described above for the Preferred Plan, under the Maximum Development Scenario this impact would be less than significant.

As shown in Chapter 4 of this FEIR, the following policy is added to the bulleted list of policies beginning on page 4.12-12:

- ▶ **Policy LU.P-1: Collaborate with cities to guide development to the county's urban centers and promote compact development.**

Based on information provided from PG&E regarding its ability and obligation to serve future growth in Solano County, and through implementation of the expanded list of policies describing the County's land use planning process included in the DEIR, Impacts 4.12-1a and 4.12-1b would remain less than significant.

## **2.18 MASTER RESPONSE R: INSUFFICIENT WATER SUPPLY ASSESSMENT**

### **2.18.1 INTRODUCTION**

Some commenters stated that the water supply analysis included in the DEIR is insufficient and fails to identify and accurately assess water sources and supplies that would be available to unincorporated areas of Solano County. Further, comments state that the DEIR does not attempt to quantify the potential nonresidential water demands, and that the assumptions used to determine per-capita water demand related to buildout of the 2008 Draft General Plan do not accurately represent the hydrologic conditions and actual per-capita water demands that currently exist in Solano County.

The established significance threshold used to determine water impacts under CEQA is to assess whether sufficient water supplies are available to serve the project from existing entitlements and resources or whether new or expanded entitlements are necessary, and whether the construction of new water treatment facilities or expansion of existing facilities would be required (see Appendix G of the State CEQA Guidelines).

In a recent California Supreme Court case, *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412 (*Vineyard*), the California Supreme Court spelled out arguably new principles regarding how agencies should evaluate water supply impacts for land development projects. Specifically, the court ruled that the agency's evaluation of short-term water supply for a large land development project was adequate, but that the evaluation of long-term water supply was inadequate. The court also found that new information about the effects of groundwater withdrawals on steelhead trout and chinook salmon in a nearby river warranted recirculation of the EIR. After the *Vineyard* decision was issued, several papers were published attempting to outline an approach for evaluated water supply impacts in accordance with recent court rulings and the State CEQA Guidelines.

The Association of Environmental Professionals has established the following 10-step approach to water supply analysis:

1. Determine short-term and long-term reasonably foreseeable project buildout.
2. Determine the water demands necessary to serve both *short-term* and *long-term* buildout.
3. Identify likely (reasonably foreseeable) short-term and long-term water supply sources, or alternative sources.
4. Identify the likely (reasonably foreseeable) yields of future water from the sources in step 3.
5. Consult with water supply agencies to determine their actual ability to serve the project.
6. Determine cumulative demands on the water supply system.

7. Compare both short-term and long-term demand with short-term and long-term supply options and disclose any shortcomings.
8. Evaluate the environmental impacts of using existing sources and developing future sources of water, including the impacts related to alternative-source development.
9. Identify mitigation measures for any significant environmental effects of future water supply alternatives.
10. Prepare a statement of overriding considerations.

In response to comments on the DEIR claiming an insufficient water supply and demand analysis in the DEIR, information within the DEIR has been revised as shown below to support the impact analysis. The following analysis does not include or identify “significant new information” (e.g., new significant impacts or substantial increases in the severity of previously identified significant impacts) that would trigger the need to recirculate some or all of the DEIR. (See Section 21092.1 of the Public Resources Code and Section 15088.5 of the State CEQA Guidelines.) Please also refer to Master Response F, “CEQA Requirements Regarding Recirculation.”

## 2.18.2 REVISIONS AND ADDITIONS TO THE DEIR ANALYSIS IN RESPONSE TO COMMENTS

### REGULATORY FRAMEWORK

As shown in Chapter 4 of this FEIR, the text between the “Groundwater Management Plans” and “State Drinking Water Quality Regulations” headings on page 4.9-24 of the DEIR is expanded as follows:

#### ***Groundwater Management Plans***

The 1993 Groundwater Management Act (California Water Code Section 10750), commonly referred to as AB 3030, was designed to provide local public agencies in California with increased management authority over groundwater resources. AB 3030 was developed in response to EPA Comprehensive State Groundwater Protection Programs (Lanferman 2002). Development of a groundwater management plan is voluntary, not mandatory, and may be developed for certain defined local agencies located within DWR-defined groundwater basins (DWR 2008). Cities and counties may cooperate with these providers. The plan can cover groundwater supply quantity-management, groundwater quality management, or both. Once the plan has been adopted, rules and regulations must also be developed to implement the groundwater management program called for in the plan. A groundwater management plan was updated for SID in 2006. The regulatory setting for groundwater management is discussed in greater detail in Section 4.5, “Hydrology and Water Resources.” Within Solano County, the City of Vacaville, SID, MPWD, and RD 2068 have prepared groundwater management plans. In an effort to assist these agencies, SCWA prepared a technical memorandum *Assessment of AB 3030 Plans for SB 1938 Compliance* (SCWA 2006). In addition to these agencies, other stakeholders in the groundwater basin include the County, RNVWD, the City of Dixon, Dixon-Solano Municipal Water Service (DSMWS), and California Water Service Company (Cal Water). These stakeholders do not have their own groundwater management plans. The City of Davis and UC Davis are jointly developing a groundwater management plan that will be applied within their service areas. These service areas are mostly in the Yolo Groundwater Subbasin (Subbasin 5.21-67 [DWR 2004]), but part of the UC Davis service area is in the Solano Subbasin. Coordination of the City of Davis/UC Davis and RD 2068 planning efforts will be accomplished through SWA. These agencies are seeking to manage the groundwater resources to the benefit of all stakeholders within the county.

## **SB 1938**

SB 1938 (Chapter 603, Statutes of 2002) establishes a revised framework for groundwater management plans with the intent of encouraging local agencies to work cooperatively to manage groundwater resources. SB 1938 became effective on January 1, 2003, through amendments to Section 10750 et seq. of the California Water Code. SB 1938 requires local agencies to do all of the following to be eligible for funding administered by DWR:

1. Make available to the public a written statement describing the manner in which interested parties may participate in development of the plan, which may include appointing a technical advisory committee.
2. Prepare and implement a groundwater management plan that includes basin management objectives (BMOs) for the groundwater basin that is subject to the plan.
3. Include components relating to the monitoring and management of groundwater levels within the groundwater basin, groundwater quality degradation, inelastic land subsidence, and changes in surface-water flow and quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin. Consider additional components listed in Sections 10753.8(a) through 10753.8(l) of the California Water Code.
4. Prepare a plan that involves other agencies and enables the local agency to work cooperatively with other public entities whose service areas or boundaries overlie the groundwater basin.
5. Adopt monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, inelastic subsidence in basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin. The monitoring protocols should be designed to generate information that promotes efficient and effective groundwater management and supports attainment of the BMOs.
6. Prepare a map that details the areas of the groundwater basin as defined in DWR Bulletin 118, the area that will be subject to the plan, and the boundaries of the local agencies overlying the basin.

A seventh component requires agencies not overlying groundwater basins to prepare plans incorporating items 1 through 6 using geologic and hydrologic principles appropriate to those areas. The 2003 update of DWR Bulletin 118 (DWR 2003) contains the complete list of required and recommended components of local groundwater management plans.

The listed requirements apply to DWR-administered funding authorized or appropriated after September 1, 2002, and do not apply to grants from the Local Groundwater Assistance Fund (AB 303).

## **AVAILABLE WATER SUPPLY**

To address comments alleging a misrepresentation in the DEIR of available water supply for the 2008 Draft General Plan, the DEIR's water supply narrative has been revised. In addition, water supply information within Section 4.5, "Hydrology and Water Resources," of the DEIR has been removed and consolidated within Section 4.9 as shown below.

As shown in Chapter 4 of this FEIR, the text from "Water Supply Services" on page 4.9-1 through the end of the "Groundwater Use" section on page 4.9-6 of the DEIR is revised as follows:

## **WATER SUPPLY SERVICES**

Incorporated areas of the county within municipal service areas (MSAs) obtain water from the Solano County Water Agency (SCWA). SCWA also provides water to unincorporated areas for agriculture and some domestic water use. SCWA relies on two primary water sources, the U.S. Bureau of Reclamation's (Reclamation's) Solano Project, which provides surface water through Monticello Dam, and the California Department of Water Resources' (DWR's) State Water Project (SWP), which supplies surface water to Solano County through the North Bay Aqueduct. Unincorporated areas of Solano County rely on water from myriad sources. Portions of unincorporated areas are located within MSAs and are served by existing water districts. Unincorporated areas outside of MSAs demand water for agricultural and domestic purposes, with agriculture being the largest water user. The discussion below describes the water sources and supply in Solano County, including surface water supplied through SCWA, groundwater sources, local supplies of surface water provisions through existing water districts, and public and private water wells. Section 4.5, "Hydrology and Water Resources," provides additional background on water quality and supplies in Solano County.

### ***Solano County Water Agency Water Supplies***

#### ***Solano Project***

The Solano Project was sized to meet only the projected water needs of Solano County. The physical facilities of the Solano Project are Monticello Dam, Putah Diversion Dam, and the Putah South Canal (Exhibit 4.5-1 in Section 4.5, "Hydrology and Water Resources"). 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.

#### ***Water Supply Contracts***

SCWA has entered into agreements with cities, water districts, and state agencies to provide water from the Solano Project. The contracts with the Solano Project's member agencies are for the full supply available from the project. The Solano Project's contracting agencies are the Cities of Fairfield, Suisun City, Vacaville, and Vallejo; Solano Irrigation District (SID); Maine Prairie Water District (MPWD); the University of California, Davis; and California State Prison, Solano.

Contract entitlements for each agency are listed in Table 4.9-1. Reclamation is contractually committed to deliver the full contract amount of water from the Solano Project unless the supply does not physically exist (e.g., the reservoir is empty). All Solano Project contractors, municipal or agricultural, are on an equal basis for Solano Project water supply.

<b>Agency</b>	<b>Annual Entitlement (acre-feet)</b>
City of Fairfield	9,200
City of Suisun City	1,600
City of Vacaville	5,750
City of Vallejo	14,600
Solano Irrigation District	141,000

<b>Table 4.9-1 Solano Project Water Contracts</b>	
<b>Agency</b>	<b>Annual Entitlement (acre-feet)</b>
Maine Prairie Water District	15,000
University of California, Davis	4,000
California State Prison, Solano	1,200
<b>Project Operating Loss (average estimated)</b>	<b>15,000</b>
<b>Total Project</b>	<b>207,350</b>
Source: SCWA 2005a	

SID and the Rural North Vacaville Water District (RNVWD) provide municipal, industrial, and/or agricultural water distribution and treatment services to portions of the unincorporated areas of Solano County. MPWD serves unincorporated areas south of Dixon between service areas of the SID and the reclamation districts. Reclamation Districts (RDs) 2068 and 2098 serve eastern portions of the county and approximately 14 other reclamation districts provide water services throughout unincorporated areas of the county, largely for agricultural purposes (Hardesty, pers. comm., 2008). Other portions of the county not served by water districts dependent on private and community groundwater wells, as well as surface water obtained from localized tributaries to the Sacramento River. Exhibit 4.5-1 in Section 4.5, "Hydrology and Water Resources," shows water service areas and facilities in Solano County, and Table 4.9-2 shows the existing water purveyors' projected available water supply for unincorporated portions of the county.

<b>Table 4.9-2 Water Availability for Unincorporated Areas of Solano County</b>	
<b>Source</b>	<b>Available Water Supply (Acre-Foot per Year)</b>
Rural North Vacaville Water District	545
Solano Irrigation District	161,000
Maine Prairie Water District	25,000
Reclamation District 2068	75,000
Vallejo Lakes System (Suisun Valley and Green Valley)	400
City of Suisun City	1,600
City of Vacaville	5,750
Reclamation District 2098 and Other Reclamation Districts	Unknown <sup>1</sup>
Diversion from Local Waterways	Unknown <sup>1</sup>
Independent Groundwater Wells	Unknown <sup>2</sup>
<b>Total</b>	<b>269,295<sup>3</sup></b>

<b>Table 4.9-2 Water Availability for Unincorporated Areas of Solano County</b>	
Source	Available Water Supply (Acre Feet per Year)
Notes: <sup>1</sup> Water is obtained from local waterways and is utilized almost exclusively for agricultural purposes. <sup>2</sup> Independent groundwater wells include small systems and private wells. These systems have no restrictions on amount of water used. <sup>3</sup> The available water supply for the unincorporated areas of Solano County would include other sources, such as groundwater and local surface water, that have not currently been quantified. Source: SCWA 2005b	

## **Agricultural Water**

### ***Solano Irrigation District***

SID provides water to agricultural areas as well as urbanized areas in the county. Most of the growers within the SID use surface water from the Solano Project supplied by SID (Table 4.9-3), but SID also operates wells to supplement its surface water supply from the Solano Project. Growers outside of districts that provide surface water rely entirely on groundwater unless they have individual rights to surface water supplies. However, reclaimed water is also used in certain applications.

<b>Table 4.9-3 Solano Irrigation District's Available Water Supply</b>	
Source	Available Water Supply (Acre Feet per Year)
Solano Irrigation District	141,000
Maine Prairie Water District exchange	10,000
Groundwater	10,000
<b>Total</b>	<b>161,000</b>
Source: SCWA 2005b	

### ***Maine Prairie Water District***

MPWD has annual contract rights to 15,000 acre feet (af) of Solano Project water. MPWD can purchase additional Solano Project water from SID as needed. On occasion MPWD has sold small amounts of Solano Project water to California State Prison, Solano. MPWD has an irrigation tailwater exchange agreement (1984) with SID that allows MPWD to exchange 10,000 af of its Solano Project water for SID's irrigation tailwater. Under the terms of the agreement, MPWD can receive 2 af of irrigation tailwater for each acre foot of Solano Project water exchanged to SID. The agreement has officially expired, but the terms have been extended by a letter agreement until further notice. MPWD has surface water rights to local streams that supplement its water supply from the Solano Project and SID. The contribution to MPWD's water supply from local surface water sources is currently not quantified. MPWD's available water supply is shown in Table 4.9-4.

<b>Table 4.9-4 Maine Prairie Water District's Available Water Supply</b>	
<b>Source</b>	<b>Available Water Supply (Acre-Foot per Year)</b>
Solano Project	5,000
Solano Irrigation District Exchange	20,000 (irrigation tailwater)
Local Surface Water Rights	Variable
<b>Total</b>	<b>25,000</b>
Source: SCWA 2005b	

### **Reclamation District 2068**

RD 2068 has riparian and appropriative water rights to surface water from the Sacramento-San Joaquin River Delta (Delta). The riparian right is currently exercised but not adjudicated. The appropriative rights consist of two licenses and one permit pending licensing with the oldest dating back to the early 1920s. The licenses are unquantified. The permit stipulates a water right amount of 75,000 af annually as long as the permit is in effect. However, on average RD 2068 provides between 50,000 and 55,000 afy (this figure varies depending on water availability). RD 2068 water is used primarily for agricultural purposes.

### **Other Reclamation Districts**

As mentioned, unincorporated areas of the county are served by several other reclamation districts. RD 2098, while primarily responsible for levee maintenance provisions, provides water for irrigation purposes obtained from local surface water. RD 2060 serves areas near Hastings Island, providing irrigation and pasture water from local surface water sources. RD 2104 provides local surface water to several individual landowners, which is used primarily for agricultural purposes. The aggregate of the four reclamation districts, including RD 2068, provides water for approximately 30,000 acres of irrigated agricultural land. In total, Solano County contains approximately 14 different reclamation districts that provide largely levee, flood, and stormwater services, but also provide local surface water supplies for agricultural activities in their respective regions. However, because the water is obtained from local surface water sources, primarily the Sacramento River tributary system, the amount of water utilized is largely not quantified and varies yearly depending on availability. RD 2068's available water supply is shown in Table 4.9-5.

<b>Table 4.9-5 Reclamation District 2068's Available Water Supply</b>	
<b>Source</b>	<b>Available Water Supply (Acre-Foot per Year)</b>
Local Surface Water	75,000
<b>Total</b>	<b>75,000</b>
Source: Solano County 2005b	

### **Surface Water Supplies**

In the eastern Delta part of Solano County, many growers divert water directly from local waterways. Growers hold riparian rights (water rights that derive from land ownership) or appropriative rights.

Records do not exist to quantify the amount of this water that is used. MPWD and several reclamation districts provide surface water obtained from tributaries to the Sacramento River to their growers in the eastern portion of the county and do not currently use groundwater underlying their districts (Hardesty, pers. comm., 2008). These supplies are very reliable because water is always available in this part of the Delta (SCWA 2005b).

**Domestic Water Service**

***Solano Irrigation District***

SID provides domestic water service to several areas of the county and the cities of Dixon, Suisun City, and Vacaville. The primary domestic water service areas are the Gibson Canyon area (treated water), Pleasant Valley area (point of entry systems), Tolenas area (treated water), Peabody Road (treated water for commercial and industrial uses), and Blue Ridge Oaks (treated water). Most of the SID water is derived from surface water from the Solano Project supplied by SID (Table 4.9-3), but SID also operates wells to supplement its surface water supply from the Solano Project.

***City of Vallejo Lakes System***

Currently the City of Vallejo Lakes System provides treated water to the unincorporated communities in Suisun Valley, Old Town Cordelia, Green Valley, and unincorporated islands in Vallejo. As part of the development of the City of Vallejo Lakes System, Vallejo agreed to serve some residents in the area. The largest lake, Lake Curry, has a storage capacity of 10,700 af; the lake’s yield is about 3,750 afy (Table 4.9-6). Vallejo is attempting to get permission from Reclamation to transport water from Lake Curry via the Putah South Canal to its water treatment plant in Vallejo. This would more fully utilize the yield from Lake Curry.

<b>Table 4.9-6 City of Vallejo Lakes System’s Available Water Supply</b>	
<b>Source</b>	<b>Available Water Supply (Acre-Feet per Year)</b>
Lakes Frey and Madigan	400
Lake Curry	3,750 (currently not available)
Source: Solano County 2005b	

***Suisun City and the City of Vacaville***

Suisun City provides domestic water to portions of the Suisun Valley in unincorporated Solano County. The City of Vacaville provides domestic water to the Vine Street area, located just outside of the Vacaville city limits in the unincorporated county.

***Rural North Vacaville Water District***

RNVWD provides groundwater to domestic water users from two wells that draw from the aquifer found in the Tehama Formation (see Section 4.5, “Hydrology and Water Resources”). This supply is limited to a total capacity of approximately 522 connections and includes two deep wells (1,500 feet). The two pumps are rated to provide approximately 800 af (500 gallons per minute [gpm]). Over the last 3 years the Tehama Formation water table has dropped approximately 30 feet. Because of this drop, under current conditions (2008), the pumps are only allowed to pump approximately 545 af (338 gpm) (Table 4.9-7). In 2007, RNVWD provided approximately 237 af of water. Currently the aquifer where RNVWD obtains its

water is being tapped by private entities in rural areas, and by the City of Vacaville, which is installing a deep well pump upstream of the RNVWD facility (Bellem, pers. comm., 2008).

<b>Table 4.9-7 Rural North Vacaville Water District's Available Water Supply</b>	
Source	Available Water Supply (Acre-Feet per Year)
Groundwater	545
<b>Total</b>	<b>545</b>
Source: SCWA 2005b	

**Groundwater Use**

Most rural residential landowners have individual shallow groundwater wells that serve their domestic needs. Some small rural residential water systems also distribute groundwater to their customers. The cities of Rio Vista and Dixon are served exclusively by groundwater from basins underlying the cities. Vacaville obtains approximately one-third of its municipal water supply from groundwater underlying the city.

Public agencies that overlie the Solano Subbasin (see Section 4.5, “Hydrology and Water Resources”) have developed groundwater management plans as specified in Assembly Bill (AB) 3030 (Chapter 947, Statutes of 1992), a state law that authorizes local agencies to prepare groundwater management plans. 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 2005a). However, according to the County’s Department of Resource Management, and as noted above, the Tehama Formation, which is the county’s largest notable water aquifer, has experienced a 30-foot drop in recent years, which suggests that overdraft conditions have occurred (Bellem, pers. comm., 2008).

**WATER SUPPLY**

The discussion below describes the water sources, supply, and demand in Solano County; including surface water supplied through the Solano County Water Agency (SCWA), groundwater sources, and local supplies. The majority of the reported water delivery and consumption information was obtained from the *Integrated Regional Water Management Plan and Strategic Plan* (SCWA 2005a) for the 2002 reporting year. As of July 2008, this information represents the most recent compiled and published data available for surface-water sources in Solano County. It is acknowledged that the overall water consumption rates have likely increased commensurately with new growth within the county since 2002. In addition, because there is no explicit indication that groundwater supplies within the county are in a state of overdraft or that available groundwater supplies could not meet projected future demands, it has been assumed that the short-term and long-term available groundwater supplies are directly proportionate to the short-term and long-term water demand.

**Solano Water Authority**

The Solano Water Authority (SWA) is a joint powers authority (JPA). As a JPA, SWA has broad authorities under California law. Through joint projects of interest or “project agreements,” SWA can finance and own facilities; acquire water; and construct, maintain, and operate water projects. SWA was established in 1987. At that time only the Solano Irrigation District (SID) and the Cities of Fairfield and Vacaville were members of SWA. In 1988, the Cities of Vallejo, Benicia, Suisun City, Dixon, and Rio

Vista; the Maine Prairie Water District (MPWD), Reclamation District (RD) 2068, and the County became members of SWA. Four project agreements have been implemented:

- ▶ the transfer of ownership of the Solano Project from federal ownership to local control,
- ▶ a feasibility evaluation of a new Noonan Reservoir impoundment,
- ▶ a new water supply project to evaluate new permanent water supplies for the participants, and
- ▶ a coordinated groundwater analysis project.

The new water-supply project resulted in a settlement agreement with the California Department of Water Resources (DWR) that gave the cities an equivalent water supply. The Cities of Fairfield, Vacaville, and Benicia established a subagreement to participate in an application to the State Water Resources Control Board (SWRCB) for additional water appropriations under the watershed-of-origin provisions in state law. The only active project is ongoing, coordinated groundwater monitoring. This project agreement is to study and monitor the Putah Fan/Tehama Formation Groundwater Basin. The County, SCWA, SID, MPWD, RD 2068, and the Cities of Vacaville and Dixon are the participants in this agreement. SWA prepares monitoring reports on the groundwater basin levels that can be used to determine whether future steps need to be taken.

### **Solano County Water Agency**

SCWA is primarily responsible for providing wholesale, untreated water to cities, districts, and state agencies from the U.S. Bureau of Reclamation's (Reclamation's) Solano Project and DWR's State Water Project (SWP). The SCWA governing board includes the five members of the County Board of Supervisors, the mayors of all seven cities in Solano County, and a board member from each of the three agricultural irrigation districts (SID, MPWD, and RD 2068). Water conservation is an integral part of water management in Solano County. Under the auspices of SCWA, both urban and agricultural water conservation committees deal with countywide water conservation issues.

### **Solano Project**

Contracts with Solano Project member agencies account for the entire available supply from the Solano Project (Table 4.9-1). Solano Project contracting agencies are the Cities of Fairfield, Suisun City, Vacaville, and Vallejo; SID; MPWD; the University of California, Davis (UC Davis); and California State Prison, Solano. The Solano Project was sized to meet only the projected water needs of Solano County. The physical facilities of the Solano Project are Monticello Dam, Putah Diversion Dam, and the Putah South Canal. The Solano Project is a high-quality water source and provides a very reliable water supply in both wet and dry years. Environmental issues have been addressed in a legal settlement regarding downstream flows from the Solano Project and the settlement has been ratified by the SWRCB. Limits on upstream depletions have been established through a settlement agreement administered by a court appointed water master. The main factor affecting Solano Project reliability is the frequency of long droughts, which could result in major drawdown of Lake Berryessa. In normal water years, the reliability is estimated to be 99%. During multiple dry years (3 or more consecutive dry years), the annual reliability is estimated to be 91% (SCWA 2005b). Contract entitlements and water consumption for each agency are listed in Table 4.9-1. Exchanges and transfers of Solano Project entitlements have also taken place. For example, MPWD has agreed to provide 10,000 afy of its Solano Project entitlement to SID in exchange for receiving a larger amount of SID's agricultural return flows.

**Table 4.9-1  
Solano Project Water Deliveries and Entitlements**

Agency	Water Deliveries (2002) (af)	Annual Entitlements (af)	
		Short-Term	Long-Term
City of Fairfield	9,200	9,200	9,200
City of Suisun City	1,584	1,600	1,600
City of Vacaville	4,012	5,750	5,750
City of Vallejo	13,714	14,600	14,600
Solano Irrigation District	129,527	141,000	141,000
Maine Prairie Water District	4,909	15,000	15,000
University of California, Davis	3,098	4,000	4,000
California State Prison, Solano	1,241	1,200	1,200
<b>Project Operating Loss (average estimated)</b>	<b>15,000</b>	<b>15,000</b>	<b>15,000</b>
<b>Totals</b>	<b>182,285</b>	<b>207,350</b>	<b>207,350</b>
Notes: af = acre-feet Source: SCWA 2005b			

**Solano Project Drought Measures Agreement**

As part of the renewal of the water supply contract for the Solano Project, the contracting cities (Fairfield, Vacaville, Vallejo, and Suisun City) entered into an agreement with the two agricultural Solano Project contracting districts (SID and MPWD) for Solano Project water supplies during drought periods in the event one or more of the cities comes up short on actual deliveries to meet its needs. The “Drought Measures Agreement” was executed concurrently with the renewed Solano Project water supply agreements in 1999. The agreement is based on Solano Project storage levels, which trigger specific actions as follows:

- ▶ When Solano Project storage is less than 800,000 acre-feet (af) on December 1, a drought contingency plan is developed. If storage is greater than 1.1 million acre-feet (MAF) by the following April 1, the plan is suspended.
- ▶ When Solano Project storage is between 550,000 and 800,000 af on April 1, each of the parties to the agreement will forgo at least 5% of their contract amount that year. If storage is between 450,000 and 550,000 af on April 1, the parties will forgo at least 10%. These forgone amounts are called “restricted carryover” and are credited to the party forgoing the water. This restricted carryover cannot be withdrawn from storage until Solano Project storage exceeds 800,000 af or is less than 450,000 af on a subsequent April 1. The concept is that the restricted carryover should not be used until conditions improve (storage in excess of 800,000 af) or worsen (storage less than 450,000 af). There is a further restriction for SID and MPWD.
- ▶ If storage is less than 450,000 af, the restricted carryover can be used or sold only for municipal purposes. When April 1 storage is less than 450,000 af, no restricted carryover is accumulated and full contract amounts are available. Restricted carryover cannot exceed 50% of any party’s annual contract amount. Restricted carryover is in addition to any voluntary carryover that is allowed under the Solano Project contracts.

- ▶ If Solano Project storage is less than 400,000 af on April 1, a drought emergency is declared. This will trigger SID's Drought Impact Reduction Program. Under this program, SID growers will fallow land and provide up to 20,000 afy for voluntary sale to cities (not restricted to those with Solano Project contracts). Such a drought fallowing program was implemented in 1991, creating 15,000 af of SID water that was sold to cities and SCWA.

**Putah Creek Accord**

The Putah Creek Accord, negotiated in 2000, provides instream flow needs for Putah Creek downstream of the Putah Diversion Dam. The Putah Creek Accord provides flows that benefit anadromous fish (e.g., salmon and steelhead) and calls for SCWA to request assurances from the federal government that improvements to steelhead habitat and the additional flows will not result in a demand for more water releases from the Solano Project. The Condition 12 Settlement Agreement capped future water development in the watershed of Lake Berryessa. Before the settlement, approximately 21,000 afy was released to Putah Creek to meet instream flow needs. The settlement provides for increased flows to Putah Creek, but provides for reduced flows when Lake Berryessa is low in storage and includes a process for addressing illegal diversion of surface water in Putah Creek. In normal hydrologic conditions the additional flows from the settlement amount to about an additional 1,000 afy, for a total of 22,000 afy. In drier years the amount of additional flows increases. The Putah Creek Accord is taken into account in calculating the firm yield described above (SCWA 2005a).

**State Water Project**

SCWA also provides a wholesale raw-water supply from the North Bay Aqueduct (NBA) of the SWP. The Cities of Vallejo, Benicia, Suisun City, Dixon, Rio Vista, Vacaville, and Fairfield contract with SCWA for NBA water. Contract entitlements and water consumption for each agency are listed in Table 4.9-2. All the water from the SWP supply is currently used for municipal and industrial purposes.

<b>Table 4.9-2 State Water Project Deliveries and Entitlements</b>			
<u>Agency</u>	<u>Water Deliveries (2002) (af)</u>	<u>Annual Entitlements (af)</u>	
		<u>Short-Term</u>	<u>Long-Term</u>
<u>City of Benicia</u>	<u>11,110</u>	<u>17,200</u>	<u>17,200</u>
<u>City of Dixon</u>	<u>0</u>	<u>0</u>	<u>1,500</u>
<u>City of Fairfield</u>	<u>8,555</u>	<u>14,678</u>	<u>14,678</u>
<u>City of Rio Vista</u>	<u>0</u>	<u>0</u>	<u>1,500</u>
<u>City of Suisun City</u>	<u>0</u>	<u>750</u>	<u>1,300</u>
<u>City of Vacaville</u>	<u>6,296</u>	<u>8,978</u>	<u>8,978</u>
<u>City of Vallejo</u>	<u>5,961</u>	<u>5,600</u>	<u>5,600</u>
<b><u>Totals</u></b>	<b><u>31,922</u></b>	<b><u>47,206</u></b>	<b><u>47,756<sup>a</sup></u></b>

Notes:  
af = acre-feet  
<sup>a</sup> Ultimate amounts for Dixon and Rio Vista are not included in the total. If Dixon and/or Rio Vista decide to use the NBA water supply, supplies to Benicia, Fairfield, and Vallejo are reduced commensurately  
Source: SCWA 2005a

The issue of greatest concern regarding the SWP's water supply is its reliability. Several variables affect SWP deliveries: regulatory standards, operating rules, reservoir carryover supplies, demand in service areas, and most importantly, precipitation (SCWA 2005a). In 1991 and 1992, water allocations for SWP urban contractors were reduced to 30% and 45% of contracted supply, respectively, and in 2001 SWP supplies were curtailed to 39% of contracted supply. Because of the poor reliability of the SWP water supply, present water demand exceeds the available water supplies in many normal years. The estimated reliability in normal years is only 86% of the contracted supply. This lack of available supply is amplified in dry years. The long-term average SWP delivery projected by DWR is about 63% of 47,756 afy (as reported in the state's draft 2007 SWP delivery reliability report [DWR 2007]).

The NBA has also been subject to pumping restrictions because of the Delta smelt, a species listed as threatened under the federal Endangered Species Act. This fish resides in sloughs and channels of the Sacramento-San Joaquin Delta (Delta). Delta smelt spawn in the slough where the NBA intake is located. In several years since Delta smelt monitoring started in 1993, a temporary pumping restriction of 65 cubic feet per second (cfs) was placed on the NBA to protect young Delta smelt from being entrained (sucked up) by the NBA pumping plants. In 2005, the U.S. Fish and Wildlife Service discontinued Delta smelt monitoring at the NBA intake. Through grant funding, SCWA has also investigated the feasibility of an alternate intake to the NBA located away from Delta smelt habitat and on or near the Sacramento River, which has better water quality. Such a project is feasible from an engineering perspective, but would be very expensive. There are currently no pumping restrictions; however, restrictions could be established in the future. Pumping restrictions would further reduce the reliability of the SWP water supply.

### **Mojave Exchange Agreement**

SCWA has an agreement with the Mojave Water Agency (Mojave), another SWP contractor, to exchange wet-weather SWP water for dry-year SWP water. In years when SCWA has extra SWP supplies, SCWA can exchange two units of SWP water for a future return of one unit of water to be provided (at the Delta) by Mojave, most likely in a dry year when there are SWP shortages. SCWA also pays some SWP transportation charges to Mojave when water is delivered to Mojave. So far, only the City of Benicia has taken advantage of this exchange program and currently (as of 2004) has the right to 5,500 af of return water from Mojave. Up to 10,000 af of SCWA SWP supply can be exchanged with Mojave in any given year (resulting in a return obligation of 5,000 af in a future year), with a cumulative limit return obligation of Mojave of 20,000 af at any one time. Mojave stores its excess water supply in its groundwater basin. Mojave and SCWA enter into agreements with DWR to transport the exchange water through SWP facilities. DWR currently requires that the water supply exchanged be returned within 10 years of the initial exchange, but this policy may be changed.

### **Local Water Districts**

#### **Solano Irrigation District**

SID, which serves primarily agriculture and some residential, municipal, and industrial customers, uses groundwater conjunctively with surface-water supplies. SID provides domestic water service to several areas of the county and the cities of Dixon, Suisun City, and Vacaville. The primary domestic-water service areas are the Gibson Canyon area (treated water), Pleasant Valley area (point-of-entry systems), Tolenas area (treated water), Peabody Road (treated water for commercial and industrial uses), and Blue Ridge Oaks (treated water). Most of the SID water is derived from surface water from the Solano Project supplied by SID, but SID also operates wells to supplement its surface water supply from the Solano Project (Table 4.9-3). SID's network of groundwater wells consists of 29 wells ranging from 400 to 1,000 feet below ground, located within the Solano and Suisun-Fairfield groundwater subbasins.

<b>Table 4.9-3 Solano Irrigation District's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Solano Project<sup>a</sup></u>	<u>129,527</u>	<u>128,310</u>	<u>128,310</u>
<u>Maine Prairie Water District Exchange<sup>b</sup></u>	<u>4,012</u>	<u>9,100</u>	<u>9,100</u>
<u>Groundwater<sup>c</sup></u>	<u>6,638</u>	<u>10,000</u>	<u>10,000<sup>d</sup></u>
<b><u>Totals</u></b>	<b><u>140,177</u></b>	<b><u>147,410</u></b>	<b><u>147,410</u></b>
<u>Notes:</u> afy = acre-feet per year <sup>a</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information). <sup>b</sup> Solano Project is the water source for the exchange. Available water supply is based on 91% of the 10,000-afy Solano Project annual entitlement to MPWD. <sup>c</sup> Groundwater supply is assumed to be equal to long-term projected demand <sup>d</sup> With improvements to the existing system, yield would be up to 15,000 afy. Source: SCWA 2005a			

### **Rural North Vacaville Water District**

The Rural North Vacaville Water District (RNVWD) provides groundwater to domestic water users within the unincorporated portion of the county from one well that draws from the deep aquifer in the Tehama Formation found within the Solano Subbasin (Table 4.9-4). RNVWD also maintains a second backup well that is used when the main well is offline for maintenance; however, only one well is permitted to be operational at a time.

The water system is limited to a total capacity of approximately 533 connections with a pumping capacity of 500 gallons per minute [gpm]. One of two deep-water wells that are sources for the RNVWD water system has been taken offline because of elevated levels of arsenic. There are some uncertainties associated with the existing water distribution system and the reliability of groundwater quality within the deep aquifer underlying this region. One of the two deep-water wells that are sources for the RNVWD water system have been taken offline because of elevated levels of arsenic at concentrations of 14–17 parts per billion (ppb), which is slightly higher than the 10 ppb maximum contaminant level (MCL) for drinking-water supply (Bellem, pers. comm., 2008a). The remaining well yields water with relatively low concentrations of arsenic between 4 and 7 ppb (Bellem, pers. comm., 2008a).

<b>Table 4.9-4 Rural North Vacaville Water District's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Consumption (2007) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Groundwater<sup>a</sup></u>	<u>237</u>	<u>545</u>	<u>545<sup>b</sup></u>
<b><u>Total</u></b>	<b><u>237</u></b>	<b><u>545</u></b>	<b><u>545<sup>b</sup></u></b>
<u>Notes:</u> afy = acre-feet per year <sup>a</sup> Groundwater supply is assumed to be equal to long-term projected demand. <sup>b</sup> Long-term water supply depends on an expansion of existing system infrastructure beyond 533 connections. The existing system cannot be expanded until 2013. Source: Bellem, pers. comm., 2008b			

As of June 2008, the RNVWD system was servicing a total of 214 connections. The water system is experiencing difficulty meeting the demands of the existing customers because the water demands are far greater than what has been projected. RNVWD has recently implemented water conservation measures for the existing customers to reduce the demands of the water system. As a condition of service on the existing water system, it cannot be expanded until 2013. RNVWD could be able to provide additional water service before 2013 by establishing a new water system and developing a new water source, if necessary.

According to the fall 2007 groundwater elevation monitoring report, water levels within the shallow and deep aquifers in the RNVWD service area experience seasonal fluctuations. Overall groundwater levels in the shallow aquifer have experienced decreases of 18 feet in the shallow aquifer and 30 feet within the shallow aquifer and a 30-foot decrease in the deep aquifer (RNVWD 2008). The report stated that a longer period of data gathering would be required to determine the reason for the decline, whether below-normal rainfall or pumping by RNVWD and others within the region (RNVWD 2008).

**Maine Prairie Water District**

MPWD has annual contract rights to 15,000 af of Solano Project water. MPWD can purchase additional Solano Project water from SID as needed. On occasion MPWD has sold small amounts of Solano Project water to California State Prison, Solano. MPWD has an irrigation tailwater exchange agreement (1984) with SID that allows MPWD to exchange 10,000 af of its Solano Project water for SID’s irrigation tailwater. Under the terms of the agreement, MPWD can receive 2 af of irrigation tailwater for each acre-foot of Solano Project water exchanged to SID. The agreement has officially expired, but the terms have been extended by a letter agreement until further notice. On occasion, MPWD utilizes its full contract amount before irrigation demands end, and sufficient SID tailwater is not available. In such cases, MPWD will purchase supplemental contract water from SID. MPWD also has surface-water rights to local streams that supplement its water supply from the Solano Project and SID. The contribution to MPWD’s water supply from local surface-water sources is currently not quantified. MPWD’s available water supply is shown in Table 4.9-5. In addition, MPWD is currently exploring the potential use of groundwater to supplement surface-water supplies.

<u>Source</u>	<u>Water Demand (2007) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
Solano Project <sup>a</sup>	4,909	4,550 <sup>b</sup>	4,550 <sup>b</sup>
Solano Irrigation District Exchange <sup>c</sup>	18,985	20,000 (irrigation tailwater)	20,000 (irrigation tailwater)
Local Surface-Water Rights <sup>d</sup>	Variable	Variable	Variable
Groundwater <sup>e</sup>	0	<sup>f</sup>	<sup>f</sup>
<b>Totals</b>	<b>23,894</b>	<b>24,550</b>	<b>24,550</b>

Notes:  
 afy = acre-feet per year; MPWD = Maine Prairie Water District; SID = Solano Irrigation District  
<sup>a</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).  
<sup>b</sup> Total entitlement is 15,000 afy; however, MPWD exchanges 10,000 afy with SID for irrigation tailwater.  
<sup>c</sup> Assumes 100% reliability of irrigation tailwater  
<sup>d</sup> MPWD has surface-water rights to local streams that supplement its water supply; however, the contribution to MPWD’s water supply from local surface-water sources has not been not quantified.  
<sup>e</sup> Groundwater supply is assumed to be equal to long-term projected demand  
<sup>f</sup> Groundwater has been identified as a potential future water supply  
 Source: SCWA 2005a

**Reclamation District 2068**

RD 2068 has riparian and appropriative water rights to surface water from the Delta. The riparian right is currently exercised but not adjudicated. The appropriative rights consist of two licenses and one permit pending licensing, with the oldest dating back to the early 1920s. The two licenses are unquantified. The permit pending licensing stipulates a water right amount of 75,000 afy as long as the permit is in effect (Table 4.9-6). However, on average RD 2068 provides between 50,000 and 55,000 afy (this figure varies depending on water availability). RD 2068 water is used primarily for agricultural purposes. Like MPWD, RD 2068 is currently exploring the potential for using groundwater to supplement surface-water supplies.

<b>Table 4.9-6 Reclamation District 2068's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2007) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Local Surface Water Rights<sup>a</sup></u>	<u>53,956</u>	<u>75,000</u>	<u>75,000</u>
<u>Groundwater<sup>b</sup></u>	<u>=</u>	<u>=<sup>c</sup></u>	<u>=<sup>c</sup></u>
<b><u>Total</u></b>	<b><u>53,956</u></b>	<b><u>75,000</u></b>	<b><u>75,000</u></b>
<sup>a</sup> Assumes 100% reliability of local surface water. <sup>b</sup> Groundwater supply is assumed to be equal to long-term projected demand. <sup>c</sup> Groundwater has been identified as a potential future water supply. Source: SCWA 2005a			

**Other Reclamation Districts**

As mentioned, unincorporated areas of the county are served by several other reclamation districts. RD 2098, while primarily responsible for levee maintenance provisions, provides water for irrigation purposes obtained from local surface water. RD 2060 serves areas near Hastings Island, providing irrigation and pasture water from local surface-water sources. RD 2104 provides local surface water to several individual landowners, which they use primarily for agricultural purposes. The aggregate of the four reclamation districts, including RD 2068, provides water for approximately 30,000 acres of irrigated agricultural land. In total, Solano County contains approximately 14 different reclamation districts that provide primarily levee maintenance, flood control, and stormwater-related services, but that also provide local surface-water supplies for agricultural activities in their respective regions. However, because the water is obtained from local surface-water sources, primarily the Sacramento River tributary system, the amount of water used is largely not quantified and varies yearly depending on availability. RD 2068's available water supply is shown in Table 4.9-6.

**Cities**

**City of Benicia**

The City of Benicia's water supply contracts are an SWP contract, a 1962 agreement with the City of Vallejo, and a settlement agreement with the State of California as a result of an application for area-of-origin water rights. Benicia's water treatment plant (WTP) has a treatment capacity of 12 million gallons per day (mgd). The transmission system consists of two pump stations and approximately 18 miles of pipeline. The distribution system consists of three pump stations, eight pressure-reducing stations, and

approximately 150 miles of pipelines. The storage system consists of five treated-water reservoirs and Lake Herman, with a capacity of 1,800 af. The City of Benicia's Water Operations Division provides for the negotiation and management of Benicia's water supply contracts and for the operation, maintenance, repair, and capital improvements of the water treatment plant and transmission, distribution, and storage systems (City of Benicia 2008).

The City of Benicia currently has contract rights up to 17,200 afy for SWP water delivered via the NBA (Table 4.9-7). SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the Cordelia Forebay, from which Benicia then pumps the water to its treatment facility or Lake Herman for storage. The current SWP contract amount to Benicia could ultimately be reduced by 1,125 afy beginning in the year 2016, if Dixon and Rio Vista take their full NBA contract amount. The City of Benicia also has a water exchange and banking arrangement with Mojave, to exchange wet-year SWP water for dry-year SWP water. In years when SCWA has extra SWP supplies, it can exchange two units of SWP water for a future return of one unit of water to be provided (at the Delta) by Mojave, most likely in a dry year when there are SWP shortages. As of 2004, the City of Benicia had the right to 5,500 af of return water from Mojave, which stores its excess water supply in its groundwater basin (SCWA 2004).

The main restriction to settlement water is that it is not available when Standard Water Right Term 91 is in effect, which is in the summer of all but very wet years. Term 91 is declared by the SWRCB when it is determined that the SWP and CVP are releasing stored water in excess of natural flow (natural flow is the flow that would have been in existence if the dam was not there) to meet in-Delta demands and Delta water standards. According to the *Benicia Urban Water Management Plan*, the reliability of the water supply in normal and multiple dry years is approximately 72% and 70%, respectively (City of Benicia 2005).

**Table 4.9-7  
City of Benicia's Projected Water Supply and Demand**

Source	Water Demand (2002) (afy)	Water Supply (afy)	
		Short-Term (2010)	Long-Term (2030)
State Water Project <sup>a</sup>	11,110	10,836 <sup>b</sup>	10,836 <sup>b</sup>
SID Purchase	170	=	=
Water Rights Settlement <sup>c</sup>	0	7,350	7,350
Lake Herman	1,087	500 <sup>d</sup>	500 <sup>d</sup>
Vallejo Agreements <sup>e</sup>	170	5,500 <sup>f</sup>	1,100 <sup>f</sup>
Mojave Exchange <sup>g</sup>	0	5,500 <sup>h</sup>	5,500 <sup>h</sup>
<b>Totals</b>	<b>12,537</b>	<b>23,686<sup>i</sup></b>	<b>19,286<sup>i</sup></b>

**Notes:**

afy = acre-feet per year; SID = Solano Irrigation District

<sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (Refer to Table 4.9-2 for annual entitlement information).

<sup>b</sup> Entitlement could decrease by 1,125 afy beginning in the year 2016.

<sup>c</sup> Settlement water supply is based on 70% of annual settlement amount of 10,500 afy.

<sup>d</sup> No yield is available in dry years

<sup>e</sup> Assume 100% reliability of water supply

<sup>f</sup> The Vallejo Agreements for 4,400 afy expire in 2010; the second amendment, for 1,100 afy, expires in 2025.

<sup>g</sup> Source of Mojave Exchange Water is the State Water Project

<sup>h</sup> Total amount available (not annually); therefore, full entitlement is anticipated.

<sup>i</sup> Total supply is based on available annual supplies from SWP, Water Rights Settlement, and Vallejo Agreements

Source: SCWA 2005a

## City of Dixon

Water is supplied within the Dixon planning area by two water purveyors, the California Water Service Company (Cal Water) and the Dixon-Solano Municipal Water Service (DSMWS). The supply source is groundwater. Cal Water, a private company regulated by the California Public Utilities Commission, serves approximately 3,000 accounts in its service area, which consists primarily of the older portion of the Dixon geographic area. Cal Water supplies customer demand via a network of eight groundwater wells, averaging 500–600 feet below the ground surface, distributed around Dixon. The original supply system was purchased by Cal Water in 1927 from Pacific Gas and Electric Company (PG&E). CSWC was the sole water service provider in Dixon before 1984. In 1984 DSMWS was established through a joint exercise of powers agreement between Dixon and SID. DSMWS currently serves approximately 1,800 accounts outside of Cal Water’s service area, primarily new developments built since 1984. DSMWS serves the area from a well network of four wells ranging from 800 to 1,500 feet below the ground surface. The maximum annual yield of the groundwater system is approximately 2,000 af. The DSMWS service area is within SID’s service area; therefore, Dixon is eligible to use a share of SID’s surface water when necessary. The terms of the joint exercise of powers agreement expire in 2009. Dixon’s SWP contract will begin with 300 af in the year 2016 and gradually increase by 300 afy annually until the contract reaches its maximum amount of 1,500 af in 2020. After 2020, the annual contract amount will remain at 1,500 af by 2020 and will remain so each year thereafter (Table 4.9-8). Dixon currently has no transmission or treatment facilities to use water from the NBA but can initiate its SWP contract earlier with a 5-year notice.

**Table 4.9-8  
City of Dixon’s Projected Water Supply and Demand**

Source	Water Demand (2002) (afy)	Water Supply (afy)	
		Short-Term (2010)	Long-Term (2030)
State Water Project <sup>a</sup>	0	189 <sup>b</sup>	945 <sup>c</sup>
Groundwater <sup>d</sup>	3,545	11,635 <sup>e</sup>	11,635 <sup>e</sup>
<b>Totals</b>	<b>3,545</b>	<b>11,824</b>	<b>12,580</b>

**Notes:**  
 afy = acre-feet per year  
<sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information).  
<sup>b</sup> Entitlement available beginning in the year 2016 is 300 afy.  
<sup>c</sup> Entitlement available beginning in the year 2020 is 1,500 afy.  
<sup>d</sup> Groundwater supply is assumed to be equal to long-term projected demand.  
<sup>e</sup> Based on projected Dixon-Solano Municipal Water Service long-term demand (7,826 afy) (SID 2005) and California Water Service Company long-term demand estimate (3,809 afy) (City of Dixon 2005).  
 Sources: SCWA 2005a, City of Dixon 2005, SID 2005

## City of Fairfield

Water for the city of Fairfield is supplied by the SWP, the Solano Project, Vallejo Permit Water (VPW), settlement agreement water, SID agreements, and recycled water (Table 4.5-9). SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the North Bay Regional (NBR) WTP, which is jointly owned by the Cities of Fairfield and Vacaville. Solano Project water is diverted through the Putah South Canal to Fairfield’s Waterman and NBR treatment plants. The “area of origin” water rights settlement with DWR provides Fairfield with 11,800 afy of nonproject (i.e., not SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. Term 91 is declared by the SWRCB when it is determined that the SWP and Reclamation’s Central Valley Project (CVP) are releasing stored water in excess of natural flow (i.e., the

flow that would have been in existence if the dam were not there) to meet in-Delta demands and Delta water standards. Term 91 is declared in the summer of all but very wet years, and is essentially a permanent allocation of water supply. The water is conveyed through the NBA when capacity is available and delivered to Fairfield in the same manner as SWP water (SCWA 2005b). The reliability of the water supply from the water rights settlement has been estimated to be between 72% and 70% in normal and multiple dry years, respectively (City of Benicia 2005).

**Table 4.9-9  
City of Fairfield's Projected Water Supply and Demand**

Source	Water Demand (2002) (afy)	Water Supply (afy)	
		Short-Term (2010)	Long-Term (2030)
State Water Project <sup>a</sup>	8,555	9,247	9,247
Solano Project <sup>b</sup>	9,200	8,372	8,372
Settlement Agreement Water <sup>c</sup>	0	8,260 <sup>d</sup>	8,260 <sup>d</sup>
Vallejo Permit Water	0	variable	variable
SID Agreements <sup>e</sup>	6,838	14,576 <sup>d</sup>	14,576 <sup>d</sup>
Recycled Water	117	2,400 <sup>f</sup>	3,000
<b>Totals</b>	<b>24,710</b>	<b>42,856</b>	<b>43,456</b>

Notes:  
 afy = acre-feet per year; SID = Solano Irrigation District  
<sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information).  
<sup>b</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).  
<sup>c</sup> Settlement water supply is based on 70% of annual settlement amount of 11,800 afy.  
<sup>d</sup> Assume available supply is 91% of contracted amount.  
<sup>e</sup> Water supply source is Solano Project water.  
<sup>f</sup> Amount available in 2020.  
 Sources: SCWA 2005a, City of Fairfield 2001

**Fairfield-SID Agreement**

Originally executed in 1974, the Fairfield-SID agreement was amended in 2002. This is a complicated agreement that basically promised that Fairfield would not expand its city limits into Suisun Valley, in return for additional water supply from SID. The additional supplies provide a significant amount of Fairfield’s overall water supply. The amended 2002 agreement provides for up to 16,018 afy of water from SID.

A separate JPA agreement provides for SID water to serve lands within the common boundaries of the two agencies not covered under the 2002 agreement. Fairfield and SID entered into a JPA agreement in 1987 (now the second amended agreement) that established a basis for SID to provide the water to serve lands within the common boundaries of the two agencies not covered under the 1974 agreement. Water service under this JPA is typically supplied by dual systems, potable water from Fairfield, and nonpotable water from SID. All raw water is supplied by SID or reimbursed to Fairfield. Water supplies are provided under separate “water service subagreements” pursuant to the JPA. Since 1987 the two agencies have entered into three water service subagreements. The three subagreements provide a minimum of 1 afy of raw water per acre or actual-quantity reimbursement to Fairfield from SID for potable water served to specified lands. The current total acreage specified is approximately 450 acres.

In addition, SID provides direct irrigation-water service to a limited number of properties within the Fairfield city limits outside of any agreements between the two agencies. In addition, SID provides water directly to a small number of irrigation customers within the Fairfield city limits based on service that existed before the property was annexed into Fairfield (e.g., Vanden High School, Fairfield High School, Busch Properties) or under subsequent outside-district water service agreements (e.g., B. Gale Wilson

Elementary School, historic Waterman Ranch). The supplies provided under the 1987 JPA are technically to meet SID demands.

**Fairfield-Vallejo Agreements**

The Cities of Vallejo and Fairfield have an agreement in which, when circumstances warrant, Vallejo provides Fairfield with two units of VPW water and gets one unit of Solano Project water from Fairfield in return.

**Other Agreements**

Fairfield also has agreements with other neighboring water agencies to treat and deliver raw water provided by the other agency. These agreements do not yield a new supply to Fairfield because the raw water provided to Fairfield in reimbursement from the other agency matches the amount the other agency uses. Such agreements include the Vallejo “Lakes” system emergency water service agreement; the Suisun-Solano Water Authority (SSWA) seasonal water service agreement (under which SSWA may use water between the months of November through March, and other months with restrictions), and the SID Blue Ridge Oaks and Peabody Road water service agreements (continuous use; facilities not yet in place).

**City of Rio Vista**

Rio Vista currently uses groundwater to meets its water demands (SCWA 2005a). The supply system consists of six wells (four of which are currently producing) ranging in depth from 500 feet to 1,000 feet below ground surface. Rio Vista’s SWP surface-water contract will begin with 300 af in the year 2016 and will gradually increase by 300 afy annually until the contract reaches its maximum amount of 1,500 af in 2020. After 2020, the annual contract amount will remain at 1,500 af (Table 4.9-10). According to the City of Rio Vista, there is no indication of decreased groundwater elevations within Rio Vista’s water system (Sieffert, pers. comm., 2008).

<b>Table 4.9-10 City of Rio Vista’s Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Solano Project<sup>a</sup></u>	<u>0</u>	<u>273<sup>b</sup></u>	<u>1,365<sup>c</sup></u>
<u>Groundwater<sup>d</sup></u>	<u>1,799</u>	<u>7,666<sup>e</sup></u>	<u>7,666<sup>e</sup></u>
<b><u>Total</u></b>	<b><u>1,799</u></b>	<b><u>7,939</u></b>	<b><u>9,031</u></b>

Notes:  
<sup>a</sup> afy = acre-feet per year  
<sup>a</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).  
<sup>b</sup> Amount available beginning in the year 2016.  
<sup>c</sup> Amount available beginning in the year 2020.  
<sup>d</sup> Groundwater supply is assumed to be equal to long-term projected demand  
<sup>e</sup> Estimate from the City of Rio Vista’s *Riverwalk Project Environmental Impact Report* (City of Rio Vista 2006).  
 Sources: SCWA 2005a, City of Rio Vista 2006

**Suisun City**

Suisun City receives its water from the Solano Project and the SWP. Suisun’s SWP contract amount is 750 afy (as of 2004) and gradually increases by 150 afy to a maximum of 1,300 afy by 2015, and will remain at that level each year thereafter (Table 4.9-11). Suisun City currently has no transmission or

treatment facilities to use water from the NBA. Suisun City has contract rights to up to 1,600 afy of Solano Project water annually, which it receives via the Putah South Canal to the Cement Hill WTP. Suisun and SID entered into a JPA agreement in 1988. The full JPA, called the SSWA, was implemented in 1991. The JPA uses Suisun City's Solano Project contract supply and supplements it with SID's Solano Project supply to meet Suisun City's water demand along with the unincorporated Tolenas area. Under the JPA, SID operates the Cement Hill WTP to treat Suisun City's water and delivers it to the city's service area for distribution. SSWA provides any additional contract water as needed beyond 1,600 af from SID's Solano Project water supply (SCWA 2005b).

<b>Table 4.9-11 Suisun City's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>State Water Project<sup>a</sup></u>	<u>0</u>	<u>662</u>	<u>819</u>
<u>Solano Project<sup>b</sup></u>	<u>1,584</u>	<u>1,456</u>	<u>1,456</u>
<u>SSWA<sup>c</sup></u>	<u>3,236</u>	<u>Varies</u>	<u>Varies</u>
<b><u>Totals</u></b>	<b><u>4,820</u></b>	<b><u>2,118</u></b>	<b><u>2,275</u></b>
<p><b>Notes:</b>            afy = acre-feet per year; SSWA = Suisun-Solano Water Authority  <sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information).  <sup>b</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).  <sup>c</sup> Source of water supply is the Solano Project            Source: SCWA 2005a</p>			

### **City of Vacaville**

Water is supplied to Vacaville from the SWP, Solano Project, DWR water rights settlement, an agreement with SID, groundwater, and recycled water. The SWP water is delivered via the NBA. SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the NBR WTP, which as mentioned previously is jointly owned by the Cities of Vacaville and Fairfield. Solano Project water is diverted through the Putah South Canal to Vacaville's diatomaceous earth plant and the NBR WTP. The "area of origin" water rights settlement with DWR provides Vacaville with nonproject (i.e., non-SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. The water is conveyed through the NBA when capacity is available and delivered to Vacaville in the same manner as SWP water. The water supply reliability has been estimated in normal and multiple dry years at approximately 72% and 70%, respectively (City of Benicia 2005). Vacaville has a system of 10 deep aquifer wells, most of which are located in the Elmira well field. Currently, approximately 6,000 afy is withdrawn. The estimated safe yield of Vacaville's groundwater system is 8,000 afy (Table 4.9-12). The supply in wet years could be increased to 10,000 afy (SCWA 2005a). The City of Vacaville is considering expanding the current well field and installing deep wells only within the city's sphere of influence. The wells currently planned by the City of Vacaville are near Interstate 505 (I-505) and Midway Road.

<b>Table 4.9-12</b>			
<b>City of Vacaville's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>State Water Project<sup>a</sup></u>	<u>6,296</u>	<u>5,656</u>	<u>5,656</u>
<u>Solano Project<sup>b</sup></u>	<u>4,012</u>	<u>5,233</u>	<u>5,233</u>
<u>Water Rights Settlement<sup>c</sup></u>	<u>0</u>	<u>6,524</u>	<u>6,524</u>
<u>SID Agreement<sup>d</sup></u>	<u>1,000</u>	<u>7,280<sup>e,f</sup></u>	<u>9,550<sup>e,g</sup></u>
<u>Groundwater<sup>h</sup></u>	<u>6,638</u>	<u>8,000</u>	<u>8,000</u>
<u>Recycled Water</u>	<u>=</u>	<u>880<sup>d</sup></u>	<u>880</u>
<b><u>Totals</u></b>	<b><u>17,946</u></b>	<b><u>33,573</u></b>	<b><u>35,848</u></b>

**Notes:**  
 afy = acre-feet per year; SID = Solano Irrigation District  
<sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information).  
<sup>b</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).  
<sup>c</sup> Settlement water supply is based on 70% of annual settlement amount of 9,320 afy.  
<sup>d</sup> Water supply source is Solano Project water.  
<sup>e</sup> Groundwater supply is assumed to be equal to long-term projected demand.  
<sup>f</sup> Assume available supply is 91% of contracted amount.  
<sup>g</sup> Amount available at 2010.  
<sup>h</sup> Amount available after 2016.  
<sup>i</sup> Amount available after 2015.  
 Source: SCWA 2005a

The 1995 master water agreement between SID and Vacaville provides Solano Project water to Vacaville from SID. The delivery schedule started at 1,000 afy in 1995 and increases incrementally to a maximum of 10,050 afy in 2016. The amount available under the agreement for 2004 was 2,500 af. The agreement expires in 2045.

### **City of Vallejo**

SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to Cordelia Forebay, from which Vallejo then pumps the water to its Fleming Hill Treatment Plant. The current SWP contract amount to Vallejo could ultimately be reduced by 1,125 af beginning in the year 2016 if Dixon and Rio Vista take their full NBA contract amounts (SCWA 2005a). Solano Project water is conveyed to the Terminal Reservoir in Cordelia, from which it is pumped by Vallejo to the Fleming Hill Treatment Plant.

<b>Table 4.9-13</b>			
<b>City of Vallejo Available Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Lakes Frey and Madigana</u>	<u>157</u>	<u>300<sup>b</sup></u>	<u>300<sup>b</sup></u>
<u>Lake Curry<sup>a</sup></u>	<u>1,500<sup>c</sup></u>	<u>2,813<sup>d</sup></u>	<u>2,813<sup>d</sup></u>
<u>State Water Project<sup>e</sup></u>	<u>5,961</u>	<u>3,528</u>	<u>3,528</u>
<u>Solano Project<sup>f</sup></u>	<u>13,714</u>	<u>9,198</u>	<u>13,286</u>

<b>Table 4.9-13 City of Vallejo Available Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Vallejo Permit Water and Transfers<sup>a</sup></u>	<u>12,971</u>	<u>17,100<sup>g</sup></u>	<u>17,100<sup>g</sup></u>
<b><u>Totals</u></b>	<b><u>34,303</u></b>	<b><u>39,579</u></b>	<b><u>43,667</u></b>
<u>Notes:</u> afy = acre-feet per year <sup>a</sup> Available water supply is based on 75% water supply reliability <sup>b</sup> Normal year water supply yields are 400 afy <sup>c</sup> Water demand to meet instream flow requirements only. Available beginning in 2010; normal year water supply yields are 3,750 afy. <sup>d</sup> Normal year water supply <sup>e</sup> Available State Water Project water supply is based on 63% of annual entitlement (Refer to Table 4.9-2 for annual entitlement information) <sup>f</sup> Available Solano Water Project water supply is based on 91% of annual entitlement (Refer to Table 4.9-1 for annual entitlement information) <sup>g</sup> Normal year water supply are 22,800 afy Sources: SCWA 2005a, City of Vallejo 2005			

Vallejo holds Appropriative Water Rights License No. 7848 with the SWRCB, issued August 1966, commonly referred to as VPW. The license prescribes a maximum diversion of 31.52 cfs throughout each year, the equivalent of 22,780 afy, from the Sacramento River. VPW is conveyed to Vallejo through the NBA project facilities governed by Amendment No. 10 to the Water Supply Contract between DWR and the Solano County Water Agency. Conveyance of VPW is limited by contract to a maximum of 17,287 af per year. Because the limitation is not based on a physical capacity constraint of the NBA, an additional 5,493 af could be available upon execution of an amendment to the existing agreement between DWR and SCWA. In addition, the Vallejo Permit Water Power Agreement between SCWA and the City of Vallejo, entered into March 2000, stipulates that Vallejo will not incur any charges for VPW used by public agencies within Solano County, including Vallejo itself, to make up deficiencies in SWP contract deliveries in a calendar year. However, Vallejo will pay transportation power costs at the SWP rate for any amount of VPW used above and beyond the collective Solano County SWP contract rights. The Vallejo Permit Water Power Agreement expires December 31, 2035. In normal years, the Vallejo Permit water supply reliability is estimated to be 100%; however, in multiple dry years, the reliability is 75% (City of Vallejo 2005).

Vallejo also holds various appropriative rights to store water in three small local reservoirs: Lakes Frey, Madigan, and Curry, commonly known as the Lakes System. The annual safe yield of Lakes Frey and Madigan is 400 af and Lake Curry's is 3,750 af, although Lake Curry water is currently not available because of conveyance issues (Table 4.9-13). Currently the City of Vallejo's Lakes System provides treated water to the unincorporated communities in Suisun Valley, Old Town Cordelia, Green Valley, and unincorporated islands in Vallejo. As part of the development of the City of Vallejo's Lakes System, Vallejo agreed to serve some residents in the area. The largest lake, Lake Curry, has a storage capacity of 10,700 af; the lake's yield is about 3,750 afy (Table 4.9-13). Vallejo is developing a conveyance system to transport water from Lake Curry via the Putah South Canal to its water treatment plant in Vallejo. This would more fully utilize the yield from Lake Curry. In normal years, the Lakes System's water supply reliability is estimated to be 100%; however, in multiple dry years, the reliability is 75% (City of Vallejo 2005).

Vallejo often has water supplies in excess of its current needs. Vallejo has entered into agreements with Benicia, Napa County, and Fairfield for sales and exchanges.

## **Unincorporated County**

Most rural residential landowners located outside of municipal or local water district service areas have individual shallow groundwater wells that serve their domestic needs. However, there are some larger agricultural operations in unincorporated areas that have wells installed within the deeper aquifer. Some small rural residential water systems also distribute groundwater to their customers. Because the wells are privately owned, groundwater use is unrestricted and the quantification of groundwater consumption is difficult to estimate.

In the eastern Delta part of Solano County, many growers divert water directly from local waterways. Growers hold riparian rights (water rights that derive from land ownership) or appropriative rights. Records do not exist to quantify the amount of this water that is used. These supplies are very reliable because water is always available in this part of the Delta (SCWA 2005b).

As shown in Chapter 4 of this FEIR, the “Groundwater Resources” section on pages 4.5-10 and 4.5-11 of the DEIR is revised as follows:

### **GROUNDWATER RESOURCES**

There are four groundwater basins within Solano County as defined by DWR (2006): the Napa-Sonoma Lowlands subbasin within the Napa–Sonoma Valley basin, the Suisun–Fairfield Valley basin, and the Solano and Yolo Valley subbasins within the Sacramento Valley Basin. Other groundwater areas are not well defined (Exhibit 4.5-2). For additional information regarding groundwater subbasins within Solano County, please refer to “Groundwater Management Plans” in the “State Plans, Policies, Regulations, and Laws” section in Section 4.9, “Public Services and Utilities.”

The cities of Rio Vista and Dixon are served exclusively by groundwater from the Solano Subbasin underlying the cities. Vacaville gets approximately one-third of its municipal water supply from this basin, which underlies the eastern portion of the city. Most of the growers within the Solano Irrigation District (SID) use surface water supplied by SID, but SID also has its own wells to supplement its surface-water supply from the Solano Project. Maine Prairie Water District (MPWD) and Reclamation District (RD) 2068 provide surface water to their growers and do not currently use groundwater underlying their districts; however, they are considering utilizing groundwater to supplement surface-water supplies to meet future needs. Growers outside of districts that provide surface water rely entirely on groundwater unless they have an individual right to a surface-water supply. SID also provides domestic-water service to several areas of the unincorporated county along with the cities of Vallejo, Suisun City, and Vacaville.

Most rural residential landowners have individual shallow groundwater wells that serve their domestic needs. Some small rural residential water systems also distribute groundwater to their customers. The Solano Subbasin, which underlies the northeastern portion of the county, is the largest groundwater basin in the county. This basin starts from the foothills above Vacaville and extends to the Sacramento River and from Putah Creek to the north to the boundaries of Fairfield to the south. 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 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. Vacaville’s wells draw from the Tehama Formation for groundwater supply. The Suisun–Fairfield Valley Basin is the second largest groundwater basin in Solano County. It lies southwest of English Hills beneath the cities of Fairfield and Suisun City. This basin is not used in a significant capacity because of low yields and poor water quality (SCWA 2005b).

Groundwater levels drop in dry years, but rebound in wet years. Before development of the Solano Project, groundwater was used extensively in Solano County, both for municipal supplies and for agriculture. One of the main reasons the Solano Project (see below Section 4.9, "Public Services and Utilities," for further description) was developed was to rectify groundwater overdraft in some agricultural areas. Once the Solano Project started making agricultural water deliveries, groundwater levels rebounded.

Public agencies that overlie the Solano Subbasin have developed groundwater management plans as specified in Assembly Bill (AB) 3030 (Chapter 947, Statutes of 1992), a state law that authorizes local agencies to prepare groundwater management plans. Solano County Water Agency (SCWA) prepares ~~biannual~~ annual monitoring reports on groundwater levels for the groundwater basin. Groundwater level data come from DWR and local public agencies that utilize the groundwater basin. According to the most recent SWA/SCWA monitoring report for 1999–2002, spring groundwater elevations throughout the Solano Subbasin decreased slightly on average between 0.9 feet and 5.6 feet. Within the Southwest Putah Plain area, groundwater elevations slightly increased, on an average of 0.04 foot (SWA 2004). No determination of the potential cause for the slight decrease in groundwater elevations was reported (SWA 2004). An updated SCWA groundwater monitoring report is anticipated to be available in early 2009 (Okita, pers. comm., 2008a). According to the fall 2007 groundwater elevation monitoring report, water levels within the shallow and deep aquifers in the Rural North Vacaville Water District (RNVWD) service area experience seasonal fluctuations. Overall groundwater levels have experienced a decrease of approximately 18 feet within the shallow aquifer and 30 feet in the deep aquifer (RNVWD 2008). The Cities of Vacaville, Dixon, and Rio Vista have not reported any significant reduction in groundwater levels. The reason for the decreased groundwater elevations within these portions of the county is not presently understood. The fall 2007 groundwater elevation monitoring report recommended that a longer period of data gathering be required to determine the reason for the decline, whether below-normal rainfall or pumping by RNVWD and others within the region (RNVWD 2008). In addition, SCWA has recently implemented a program to monitor groundwater conditions within the deep aquifer of the Tehama Formation. SCWA had installed three of the four deep wells that will be used for monitoring as of July 2008 (Okita, pers. comm., 2008b). SCWA's monitoring program will collect supplemental data that will assist the agency in understanding groundwater processes within the deep aquifer.

~~The Rural North Vacaville Water District (RNVWD)~~ was formed in 1996 to address groundwater problems in the rural north Vacaville area, which included a drop in groundwater levels and failing wells. The Tehama Formation is the thickest water-bearing unit underlying the Solano Subbasin, ranging in thickness from 1,500 feet to 2,500 feet (DWR 2004). Two wells that draw from the deep aquifer within the Tehama Formation provide the source of RNVWD's water supply. This supply is limited to a total capacity of approximately ~~522-33~~ connections, and includes ~~drilling~~ two deep wells (1,500 feet) with pumps that pump 500 gallons per minute. Only one well is currently in operation. To date there have been no groundwater storage calculations for the Solano Subbasin in the vicinity of Pleasants Valley/Vaca Valley, and the area to the west of this basin is not defined (DWR 2004).

Groundwater within the Solano Subbasin is considered to be of generally good quality. Total dissolved solids (TDS) 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. In general, most of the water within the subbasin is classified as hard to very hard. 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 will affect sensitive tree crops). Arsenic concentrations are typically between 0.02 ppm and 0.05 ppm; however, isolated areas with elevated arsenic concentrations of up to 0.17 ppm or 17 parts per billion (ppb) have been reported, with the highest concentrations found along the southeastern margin of the basin. The current primary MCL for arsenic is ~~10 ppb-0.05 ppm~~. One of two deep-water wells that are sources for the RNVWD water system have been taken offline because of elevated levels of arsenic at concentrations of

14–17 ppb, which is slightly higher than the 10-ppb MCL for drinking-water supply (Bellem, pers. comm., 2008a). The remaining well yields water with relatively low concentrations of arsenic, between 4 and 7 ppb (Bellem, pers. comm., 2008a). The City of Rio Vista has also reported elevated concentrations of arsenic and is currently blending water from several wells within a storage reservoir to meet MCL requirements (Sieffert, pers. comm., 2008). Elevated concentrations of arsenic have been reported in wells installed in the deeper aquifer of the Tehama Formation. Also, manganese is found at concentrations above the secondary MCL of 0.05 ppm along the Sacramento River along the eastern portion of the subbasin (DWR 2004).

As shown in Chapter 4 of this FEIR, the entire “Water Supply” section on pages 4.5-11 through 4.5-19 of the DEIR has been removed as follows. Please note that this text is replaced by the text inserted into Section 4.9, “Public Services and Utilities,” shown above.

**~~WATER SUPPLY~~**

~~This subsection describes the water supply projects in Solano County and provides a summary of existing water supply and water demand within the county. This subsection also describes projected water demands in the county. This description focuses on water supply projects and supplies of SCWA and the demands of member agencies who receive water supply from SCWA, as well as areas within the county outside of the service area of SCWA (SCWA 2005b, 2005c). Please also refer to the discussion of water supply in Section 4.9, “Public Services and Utilities.”~~

**~~Solano County Water Agency Water Supplies~~**

**~~Solano Project~~**

~~The Solano Project was conceived in the 1940s and 1950s to meet the water demands of agriculture, municipalities, and military facilities in Solano County. As agriculture developed throughout the county, groundwater use increased substantially. Groundwater overdraft persisted in several parts of the county, providing an impetus for a surface water supply to offset the overdraft. The population of Solano County in the 1940s and 1950s was also expected to grow; however, planners at that time had no way of knowing that the urban population growth in Solano County would increase as dramatically as it has in recent decades. During the planning of the Solano Project, Napa County and Yolo County chose not to participate in a larger Solano Project. The Solano Project was sized to meet only the projected water needs of Solano County.~~

~~Congressional authorization was granted for the construction of the Solano Project and the first water was delivered in 1959. The total construction cost for the Solano Project was \$38 million.~~

~~The physical facilities of the Solano Project are Monticello Dam, Putah Diversion Dam, and the Putah South Canal (Exhibit 4.5-1). SCWA is responsible for operations and maintenance of 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.~~

<b>Table 4.5-1 Solano Project Facilities</b>			
	<b>Monticello Dam— Lake Berryessa</b>	<b>Putah Diversion Dam— Lake Solano</b>	<b>Putah South Canal</b>
<b>Storage Capacity (af)</b>	1,602,000	750	956 cfs (maximum)
<b>Dam Height (feet)</b>	304	29	NA

<b>Table 4.5-1 Solano Project Facilities</b>			
	<b>Monticello Dam— Lake Berryessa</b>	<b>Putah Diversion Dam— Lake Solano</b>	<b>Putah South Canal</b>
<b>Dam Crest</b>	1,023	910	NA
<b>Length (miles)</b>	NA	NA	33
Note: af = acre-feet; cfs = cubic feet per second; NA = not applicable Sources: SCWA 2004, 2005b			

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.

### **Water Supply Contracts**

SCWA uses property taxes to pay for the operations and maintenance of the Solano Project. SCWA has entered into agreements with cities, water districts, and state agencies 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's contracting agencies are the Cities of Fairfield, Suisun City, Vacaville, and Vallejo; SID; MPWD; the University of California, Davis; and California State Prison, Solano.

Contract entitlements for each agency are listed in Table 4.5-2. Reclamation is contractually committed to deliver the full contract amount of water from the Solano Project unless the supply does not physically exist (e.g., the reservoir is empty). All Solano Project contractors, municipal or agricultural, are on an equal basis for Solano Project water supply.

<b>Table 4.5-2 Solano Project Water Contracts</b>	
<b>Agency</b>	<b>Annual Entitlement (acre-feet)</b>
City of Fairfield	9,200
City of Suisun City	1,600
City of Vacaville	5,750
City of Vallejo	14,600
Solano Irrigation District	141,000
Maine Prairie Water District	15,000
University of California, Davis	4,000
California State Prison, Solano	1,200
<b>Project Operating Loss (average estimated)</b>	<b>15,000</b>
<b>Total Project</b>	<b>207,350</b>
Source: SCWA 2005b	

## **Solano Project Water Quality**

Water quality from the Solano Project is excellent for both municipal and agricultural uses.

The watershed of the Lake Berryessa reservoir spans 576 square miles in Lake and Napa Counties. Much of this area is in a natural state, but urban and agricultural development is also located within the watershed. In the Lake County portion of the watershed, the communities of Middletown, Anderson Springs, and Hidden Valley have a collective population of about 13,000. Several small subdivisions and the town of Pope Valley are located near Lake Berryessa in Napa County, with an estimated population of less than 5,000. Recreational visitors seasonally increase the number of people temporarily in the watershed. An estimated 2 million recreational visitors come to the Lake Berryessa area each year.

The primary agricultural land use in the watershed is vineyard production of wine grapes. Cattle graze along the eastern shore of Lake Berryessa. SCWA works with groups in the Lake Berryessa watershed to promote activities that protect water quality. For example, SCWA leads the Lake Berryessa Watershed Partnership, which consists of organizations and public agencies that monitor and improve water quality in the reservoir. The partnership supports projects such as household hazardous waste collection sites, signage to prevent water pollution, and sharing of water quality data.

The large volume of Lake Berryessa provides dilution for any contaminants that may reach the reservoir. Additionally, the Solano Project draws its water supply from the bottom of the reservoir, providing additional decomposition and dilution of contaminants before Solano Project water is released to Putah Creek for delivery to the Putah South Canal.

In compliance with state law, a sanitary survey has been prepared for the Solano Project that analyzes all potential contamination sources and recommends measures to protect water quality. The sanitary survey covers Putah Creek (between Monticello Dam and the Putah Diversion Dam) and the Putah South Canal, in addition to the Lake Berryessa watershed. City water treatment plants (WTPs) regularly test Solano Project water and find it to be of high quality.

## **North Bay Aqueduct**

The North Bay Aqueduct (NBA) is part of the SWP. The SWP exports water from Northern California to parts of the San Francisco Bay Area, San Joaquin Valley, and Southern California. Along with the CVP, the SWP is a major water supplier in the state of California. The SWP contracts with 29 public agencies, including SCWA, for water supplies.

SWP water comes from Lake Oroville and water rights to flows in the Sacramento and San Joaquin River systems. Major facilities of the SWP include the Banks Pumping Plant in the south Delta, the California Aqueduct, Lake Oroville on the Feather River, and San Luis Reservoir located south of the Delta. The NBA is an underground pipeline that runs from Barker Slough in the Delta to Cordelia Forebay, located near Fairfield. From Cordelia Forebay, water is pumped to Napa County, Vallejo, and Benicia. Travis Air Force Base is also served by the NBA. The size of the underground pipeline varies from 72 inches at Barker Slough to 54 inches at Cordelia Forebay.

NBA facilities are shown in Exhibit 4.5-1. The NBA is operated remotely by DWR at the Delta Field Division office near Tracy. DWR has recently found that the NBA cannot deliver 154 cubic feet per second (cfs), the flow for which it was designed. An additional pump, not presently installed, is required to reach the full contract amount of 175 cfs. Pumping tests have shown that the NBA can deliver a maximum of 142 cfs. DWR, SCWA, and Napa County are investigating methods to increase the capacity of the NBA to design levels, and are considering increasing the capacity to as much as 248 cfs.

## North Bay Aqueduct Water Supply Contracts

SCWA has a contract with DWR for water supply from the SWP. All the water from the NBA supply is currently used for municipal and industrial purposes. The SWP contract runs to the year 2035 and is renewable. SCWA has contracted for 47,756 afy of water from the SWP. The amount of contract water increases each year until it reaches this ultimate entitlement.

Table 4.5-3 shows the annual increases in supply from 2004 to 2015. From 2015 through 2030, the annual supply remains 47,756 afy.

<b>Table 4.5-3 SCWA North Bay Aqueduct Water Supply</b>	
Year	Total Annual Amount (Acre-Foot per Year)
2004	47,206
2005	47,256
2006	47,306
2007	47,356
2008	47,406
2009	47,456
2010	47,506
2011	47,556
2012	47,606
2013	47,656
2014	47,706
2015 and each succeeding year thereafter	47,756

Source: SCWA 2005b

## State Water Project Reliability

The issue of greatest concern regarding the NBA's water supply is its reliability. When the SWP was first envisioned, water supply was assumed to be very reliable. Additional dams and reservoirs were planned to meet the ultimate contractual demands of SWP contractors of 4.2 million acre feet (maf) per year. Under current conditions, in dry years and even many normal years, the SWP will not be able to deliver its full contractual amount. Future SWP facilities are not expected to raise the yield of the SWP to 4.2 maf. SWP export pumping is limited by fishery and water quality constraints in the Delta.

The NBA was subject to pumping restrictions because of the Delta smelt, a threatened species listed under the federal Endangered Species Act. This fish resides in sloughs and channels of the Delta. Delta smelt spawn in the slough where the NBA intake is located. In several years since Delta smelt monitoring started in 1993, a temporary pumping restriction of 65 cfs was placed on the NBA to protect young Delta smelt from being entrained (sucked up) by the NBA pumping plants. In 2005, the U.S. Fish and Wildlife Service discontinued Delta smelt monitoring at the NBA intake. Through grant funding, SCWA has also investigated the feasibility of an alternate intake to the NBA located away from Delta smelt habitat and on or near the Sacramento River, which has better water quality. Such a project is feasible from an engineering perspective, but is very expensive.

## **Non-State Water Project Water**

Two other important water sources use the NBA: Vallejo permit water (VPW) and settlement agreement water.

VPW is derived from a water rights license held by the City of Vallejo. The license allows pumping of 31.52 cfs from the Delta. The service area allowed to use VPW comprises the cities of Vallejo and Benicia, parts of the city of Fairfield, and the American Canyon area of Napa County. In 1990 the three cities filed for SWRCB water rights permits for an appropriation of water under the state's watershed of origin statutes. The permit application was withdrawn after a settlement was reached with DWR that provided an essentially equivalent water supply from the SWP. A settlement agreement and a conveyance agreement with DWR specify the details of the settlement water supply.

Settlement agreement water is available up to the following amounts: Benicia, 10,500 afy; Fairfield, 11,800 afy; Vacaville, 9,320 afy. Settlement agreement water is a major new water source to meet these cities' long term needs. The amount of water requested was based on projected water needs to meet each city's general plan demands. The settlement agreement allows the three cities to apply in the future to the SWRCB for watershed of origin appropriations above settlement agreement amounts, if their demands exceed those upon which the settlement agreement was based. The settlement agreement runs through 2035 and is renewable under the same terms as the DWR/SCWA SWP contract. Settlement agreement water can be considered a permanent supply.

## **NBA Water Quality**

Another major NBA issue is water quality. Delta water from the NBA is generally of poorer quality and requires more treatment than water from the Solano Project. Statewide water quality studies show that the NBA has the poorest water quality of all SWP contractors for some constituents such as turbidity and organic carbon. City WTPs have been designed to take into consideration the poorer quality and are able to meet current drinking water standards. However, as drinking water standards become more stringent, it will be both more difficult and more expensive to treat water from the NBA. Some city WTPs will switch from NBA water to other sources of water when NBA water quality is poor, but this may be less of an available option as the cities build out. Poor NBA water quality occurs particularly in the winter when runoff from the Barker Slough watershed is pumped into the NBA.

SCWA conducted studies to determine the source of contaminants to the NBA water supply. Studies have shown that winter runoff from the local watershed is the primary source of elevated levels of turbidity and total organic carbon. No point sources were identified. The local watershed is used mostly for livestock grazing.

The organic carbon in NBA water is coming from natural sources, such as soil and decaying plant matter. Studies have shown that it is not possible to effectively control organic carbon in the NBA watershed. Turbidity comes from soil particles that are not settling. Soil types in the Barker Slough watershed do not settle well, and remain in suspension for very long periods. Traditional best management practices (BMPs), such as vegetative buffers and settling ponds, do not reduce turbidity for these types of soils. Studies have determined that eliminating livestock from areas near channels and controlling erosion are the BMPs to reduce turbidity. SCWA has installed fencing and alternate water supplies to prohibit livestock access to many of the waterways in the watershed. Ongoing water quality testing and monitoring is testing the effectiveness of these source control measures. Through grant funding, SCWA is evaluating water treatment technologies to reduce organic carbon in the NBA water.

## **Other Water Purveyors**

SID has entitlements for 141,000 afy of Solano Project water for service to areas in Solano County, including the Dixon Solano Municipal Water Service and Suisun Solano Water Authority (SSWA). SID

is also the operator of the Solano Project, which delivers Lake Berryessa water to four cities, and MPWD as well as SID customers. RD 2068 is an agricultural water supplier in Solano and Yolo Counties. California Water Service Company delivers 1 million gallons per day (mgd) of local groundwater to 2,900 customer connections in the city of Dixon, and has a contract to operate the RNVWD water system as well. In addition, an exchange agreement with the Maine Prairie Water District allows SID to exchange irrigation tailwater for 10,000 af of Solano Project water.

## **Cities**

### **City of Benicia**

The City of Benicia's water supply contracts are an SWP contract, a 1962 agreement with the City of Vallejo, and a settlement agreement with the State of California as a result of an application for area of origin water rights. Benicia's WTP has a treatment capacity of 12 mgd. The transmission system consists of two pump stations and approximately 18 miles of pipeline. The distribution system consists of three pump stations, eight pressure reducing stations, and approximately 150 miles of pipelines. The storage system consists of five treated water reservoirs and Lake Herman, with a capacity of 1,800 af. The City of Benicia's Water Operations Division provides for the negotiation and management of Benicia's water supply contracts and for the operation, maintenance, repair, and capital improvements of the water treatment plant and transmission, distribution, and storage systems (City of Benicia 2008).

The City of Benicia also has a water exchange and banking arrangement with the Mojave Water Agency (Mojave), another SWP contractor, to exchange wet year SWP water for dry year SWP water. In years when SCWA has extra SWP supplies, it can exchange two units of SWP water for a future return of one unit of water to be provided (at the Delta) by Mojave, most likely in a dry year when there are SWP shortages. As of 2004, the City of Benicia had the right to 5,500 af of return water from Mojave, which stores its excess water supply in its groundwater basin (SCWA 2004).

### **City of Dixon**

Water is supplied within the Dixon planning area by two water purveyors. A joint agreement between the City of Dixon and SID created the Dixon Solano Municipal Water Service, which currently supplies water within the Dixon planning area. It will eventually supply water to all newly annexing and developing portions of the Dixon planning area. California Water Service Company serves the older central, developed land within the core of the city, including its downtown area. Future water service by this company is limited to current service boundaries. Irrigation water in the Dixon planning area is supplied by SID. Both suppliers deliver groundwater from naturally occurring aquifers; therefore, neither supplier needs to contract with other water agencies for entitlements. Groundwater quality in the area is very good (City of Dixon 2005).

### **City of Fairfield**

Water for the city of Fairfield is supplied by the SWP, the Solano Project, VPW, settlement agreement water, SID agreements, and recycled water (Table 4.5-4). SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the North Bay Regional (NBR) WTP, which is jointly owned by the Cities of Fairfield and Vacaville. Solano Project water is diverted through the Putah South Canal to Fairfield's Waterman and NBR treatment plants. The "area of origin" water rights settlement with DWR provides Fairfield with 11,800 afy of nonproject (i.e., not SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. Term 91 is declared by the SWRCB when it is determined that the SWP and the CVP are releasing stored water in excess of natural flow (natural flow is the flow that would have been in existence if the dam were not there) to meet in-Delta demands and Delta water standards. Term 91 is declared in the summer of all but very wet years, and is essentially a permanent allocation of water supply. The water is

conveyed through the NBA when capacity is available and delivered to Fairfield in the same manner as SWP water (SCWA 2005b).

<b>Table 4.5-4 Water Supply and Sources by City</b>		
<b>City</b>	<b>Water Source</b>	<b>Amount (acre-feet per year)</b>
<b>Benicia</b>	State Water Project	17,200
	Settlement Agreement Water	10,500
	Lake Herman	500
	Vallejo Permit Water	5,500
	Mojave Exchange	5,500 <sup>1</sup>
<b>Dixon</b>	State Water Project	1,500
	Groundwater	variable
<b>Fairfield</b>	State Water Project	14,678
	Solano Project	9,200
	Settlement Agreement Water	11,800
	Vallejo Permit Water	variable
	SID Agreements	16,018
	Recycled Water	3,000
<b>Rio Vista</b>	State Water Project <sup>2</sup>	1,500
	Groundwater	variable
<b>Suisun City</b>	State Water Project	1,300
	Solano Project	1,600
	Suisun Solano Water Authority <sup>3</sup>	variable
<b>Vacaville</b>	State Water Project	8,978
	Solano Project	5,750
	Settlement Agreement Water	9,320
	SID Agreement	3,000
	Groundwater	8,000
	Recycled Water	880
<b>Vallejo</b>	State Water Project	5,600
	Solano Project	14,600
	Vallejo Permit Water	17,287
	Lakes System	400
<b>Notes:</b>		
SID – Solano Irrigation District		
<sup>1</sup> — Amount currently available, not annually.		
<sup>2</sup> — State Water Project contract will begin with 300 acre feet in 2016 and increase by 300 acre feet annually, reaching a maximum of 1,500 acre feet by 2020.		
<sup>3</sup> — Suisun Solano Water Authority fulfills total demand as needed.		
Source: SCWA 2005c		

Fairfield has an ongoing water exchange agreement with Vallejo that stipulates that the parties can exchange portions of VPW for Fairfield Solano Project water on a 2:1 basis, respectively, with mutual

willingness. The agreement also allows Fairfield to purchase Vallejo's VPW at a mutually agreeable rate. The agreement can be terminated by either party with a 30-day written notice. Several agreements between SID and the City of Fairfield since 1974 have provided "common boundary" Solano Project water to Fairfield. Amendment No. 2 (2002) to a 1974 agreement between SID and Fairfield adds Fairfield-Suisun Sewer District (FSSD) as a party and retitles the agreement the "second amended agreement." The total amount of Solano Project water available to Fairfield from the second amended agreement is 16,018 afy. Under the second amended agreement, SID and FSSD agree to provide Fairfield with the first 12 mgd (or 13,447 afy) of recycled water from the FSSD Wastewater Treatment Plant (WWTP). If Fairfield is not using the recycled water, the SID may use or sell it (SCWA 2005b).

### **City of Rio Vista**

Rio Vista currently uses groundwater to meet its water demands (SCWA 2005b). The supply system consists of six wells (four of which are currently producing) ranging in depth from 500 feet to 1,000 feet below ground surface. Rio Vista's SWP surface water contract will begin with 300 af in the year 2016 and gradually increase by 300 af annually, reaching a maximum of 1,500 af by 2020 and remaining at that amount thereafter.

### **Suisun City**

Suisun City receives its water from the Solano Project and the SWP. Suisun's SWP contract amount is 750 afy as of 2004 and gradually increases by 150 afy to a maximum of 1,300 afy by 2015, and remains at that level each year thereafter (SCWA 2005b). Suisun City currently has no transmission or treatment facilities to utilize water from the NBA. Suisun City has contract rights to up to 1,600 afy of Solano Project water annually, which it receives via the Putah South Canal to the Cement Hill WTP. Suisun and SID entered into a joint powers authority (JPA) agreement in 1988. The full JPA, called the SSWA, was implemented in 1991. Under the JPA, SID operates the Cement Hill WTP to treat Suisun City's water and delivers it to the city's service area for distribution. A small portion of Suisun Valley is historically part of the service area and still being served. SSWA provides any additional contract water as needed beyond 1,600 af from SID's Solano Project water supply (SCWA 2005b).

### **City of Vacaville**

Water is supplied to Vacaville from the SWP, Solano Project, DWR water rights settlement, an agreement with SID, groundwater, and recycled water. The SWP water is delivered via the NBA. SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the NBR Water Treatment Plant, which as mentioned previously is jointly owned by the Cities of Vacaville and Fairfield. Solano Project water is diverted through the Putah South Canal to Vacaville's diatomaceous earth plant and the NBR Water Treatment Plant. The "area of origin" water rights settlement with DWR provides Vacaville with nonproject (i.e., non-SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. The water is conveyed through the NBA when capacity is available and delivered to Vacaville in the same manner as SWP water. Vacaville has a system of 10 deep aquifer wells, most of which are located in the Elmira well field. Currently, approximately 6,000 afy is withdrawn. The estimated safe yield of Vacaville's groundwater system is 8,000 afy. The supply in dry years could be increased to 10,000 afy (SCWA 2005b).

### **City of Vallejo**

SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to Cordelia Forebay, where Vallejo then pumps the water to its Fleming Hill Treatment Plant. The current SWP contract amount to Vallejo could ultimately be reduced by 1,125 af beginning in the year 2016 if Dixon and Rio Vista take their full NBA contract amount (SCWA 2005b). Solano Project water is conveyed to the Terminal Reservoir in Cordelia, where it is pumped by Vallejo to the Fleming Hill Treatment Plant.

~~Vallejo holds Appropriative Water Rights License No. 7848 with the SWRCB, issued August 1966; this license is commonly referred to as VPW. VPW is conveyed to Vallejo through the NBA project facilities governed by Amendment No. 10 to the Water Supply Contract between DWR and SCWA.~~

~~Vallejo also holds various appropriative rights to store water in three small local reservoirs: Frey, Madigan, and Curry Lakes, commonly known as the Lakes System. The annual safe yield of Lakes Frey and Madigan is 400 af and Lake Curry's is 3,750 af, although Lake Curry water is currently not available because of conveyance issues (SCWA 2005b).~~

**PROJECTED WATER DEMAND**

To address comments alleging a misrepresentation of the necessary water demands for the 2008 Draft General Plan, as shown in Chapter 4 of this FEIR, the "Water Demand" section on pages 4.5-18 and 4.5-19 of the FEIR is deleted as shown below.

**~~WATER DEMAND~~**

~~This subsection describes water demands for Solano County. For further information, please also see the discussion of water demand in Section 4.9, "Public Services and Utilities."~~

~~Because the SCWA boundary includes all of Solano County, future water demand projections are based on Solano County population estimates provided by the California Department of Finance (SCWA 2005c). Current and projected water deliveries and demands within Solano County are listed in Table 4.5-5, based on data provided in the SCWA *Urban Water Management Plan (UWMP)* (SCWA 2005c). It should be noted that some cities within Solano County that purchase water from SCWA may have other water supplies they can use to meet their needs, such as groundwater. Any additional water demands beyond what is supplied by SCWA are not addressed in this report. These additional supplies would be addressed in each city's individual UWMP.~~

~~Table 4.5-5 shows that water supplies are expected to be roughly the same from 2015 to 2030, but population in Solano County is expected to continue to grow. The UWMP indicates that water demands for projected growth within Solano County will be met by individual cities that supplement their water supplies beyond those supplies provided by SCWA (SCWA 2005c). In addition, water conservation measures have the potential to reduce the per capita water demands (SCWA 2005c).~~

<b>Table 4.5-5 Past, Current, and Projected Water Deliveries and Demands, and Population Projections</b>							
	2000	2005	2010	2015	2020	2025	2030
<b>Water Use (Acre-feet per year [afy])</b>							
Deliveries	220,376	239,606	239,856	240,106	240,106	240,106	240,106
System Losses	24,472	15,000	15,000	15,000	15,000	15,000	15,000
Total Water Use	244,848	254,606	254,856	255,106	255,106	255,106	255,106
<b>Service Area Population Projections</b>							
Population		421,657	455,647	505,455	555,264	616,446	677,628
Source: SCWA 2005c							

In addition, as shown in Chapter 4 of this FEIR, the “Water Demand” section on page 4.9-6 of the DEIR is revised as follows. Please note that all tables that appear after “Water Demand” section in DEIR Section 4.9, “Public Services and Utilities,” are also renumbered.

**2008 Draft General Plan Water Demand**

The population under the Preferred Plan in 2030 is projected to be 39,555—22,312 in what are now unincorporated areas within MSAs and 17,143 in what are now unincorporated areas outside MSAs. Under the Maximum Development Scenario, the projected population is 62,105—33,393 within MSAs and 28,712 outside MSAs (see Table 4.9-14 below). Areas within MSAs are assumed to be annexed to and served by cities. The cities would then be responsible for assuring a sufficient water supply for both existing and future residents living within what are now unincorporated MSAs. Similarly, after MSAs in what is now the unincorporated county are annexed to cities, the cities would be responsible for providing water to meet the demands of commercial and industrial development in those areas.

<u>Land Use Categories</u>	<u>Projected Population under the 2008 Draft General Plan (2030)</u>				<u>ABAG Population Projections for Unincorporated Solano County (2030)</u>
	<u>Preferred Plan</u>		<u>Maximum Development Scenario</u>		
	<u>Areas within MSAs</u>	<u>Areas Outside of MSAs</u>	<u>Areas within MSAs</u>	<u>Areas Outside of MSAs</u>	
<u>Residential</u>	<u>16,272</u>	<u>11,163</u>	<u>25,148</u>	<u>17,805</u>	<u>=</u>
<u>Agriculture</u>	<u>11</u>	<u>4,929</u>	<u>23</u>	<u>9,856</u>	<u>=</u>
<u>Special-purpose Areas</u>	<u>6,029</u>	<u>1,051</u>	<u>8,222</u>	<u>1,051</u>	<u>=</u>
<u>Subtotal</u>	<u>22,312</u>	<u>17,143</u>	<u>33,393</u>	<u>28,712</u>	<u>=</u>
<b>Total</b>	<b>39,455</b>		<b>62,105</b>		<b>26,000</b>

Note: ABAG = Association of Bay Area Governments; MSA = municipal service area  
Sources: Solano County 2006, data provided by Solano County in 2008

New residential, commercial, or industrial development would not occur within the MSAs until after the land has been annexed to a city. According to Policy LU.P-7 in the 2008 Draft General Plan, temporary land uses and uses that are consistent with agricultural zoning on incorporated lands within MSAs, and that do not conflict with planned future land uses, would be permitted until the property is annexed to a city for purposes of urban development. Future demands associated with new development within the MSAs, and water supply to meet those demands, would be reflected within each city’s general plan and analyzed in each city’s general plan EIR and/or any environmental documents associated with annexation and specific development projects.

Tables 4.9-15 through 4.9-23 present water demand estimates through buildout of the 2008 Draft General Plan based on existing land use designations and land use changes proposed under the 2008 Draft General Plan, including those related to residential, commercial, industrial, and agricultural land uses.

**Residential Water Demand**

Table 4.9-15 compares the baseline population and estimated water demand in the current unincorporated area to projected population and estimated water demand in the future unincorporated area, excluding the city MSAs. The reason for using projected population outside MSAs for projected residential water demand is that areas within MSAs are assumed to be annexed by the cities and developed or reused

according to their general plans. Water demands associated with residential population growth within the unincorporated MSAs would be the responsibility of each city.

Population levels are compared by land use category in Table 4.9-15. Under the Preferred Plan, the population of the unincorporated area of the county is projected to decrease in the Residential land use categories but increase in the Agriculture and Special-Purpose Area categories. Most of the projected decrease in the future population of the unincorporated area for the Residential land use category is because of the assumed annexation of developed residential areas within city MSAs that are currently served by city water systems. There would be little decrease in future water demand within the future unincorporated area (outside MSAs) because of the annexation of these residential areas. For this reason, no reduction in water demand is assumed from the projected decrease in the population of the unincorporated area in the Residential land use category.

In addition, any reduction of water demand within the unincorporated area of the county as a result of annexation of developed residential areas within MSAs would result in an equivalent increase in water demand to those MSAs upon annexation (see Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan”).

It is assumed that existing water demand from residential land uses in the unincorporated area (including MSAs) would not increase in the future. It should be noted that projected population growth within the MSAs after city annexation has taken place would increase residential water demands cumulatively countywide. Please refer to Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan,” for further details regarding the cumulative water demands with Solano County.

<b>Table 4.9-15 Projected Water Demand Based on Population Increase in the Unincorporated Area of Solano County</b>					
<u>Land Use Categories</u>	<u>Baseline and Projected Population</u>				
	<u>Baseline— Existing Population</u>	<u>Preferred Plan (Outside MSAs)</u>		<u>Maximum Development Scenario (Outside MSAs)</u>	
		<u>Population</u>	<u>Change</u>	<u>Population</u>	<u>Change</u>
<u>Residential</u>	<u>17,719</u>	<u>11,163</u>	<u>-6,556</u>	<u>17,805</u>	<u>86</u>
<u>Agriculture</u>	<u>2,269</u>	<u>4,940</u>	<u>2,671</u>	<u>9,879</u>	<u>7,610</u>
<u>Special-Purpose Areas</u>	<u>0</u>	<u>1,051</u>	<u>1,051</u>	<u>1,051</u>	<u>1,051</u>
<u>Total population</u>	<u>19,988</u>	<u>17,154</u>	<u>-2,834</u>	<u>28,735</u>	<u>8,747</u>
<b><u>Projected Water Demand (afy)</u></b>					
<b><u>Projected water demand based on population increase</u></b>	<b><u>13,143</u></b>	<b><u>15,590<sup>a</sup></u></b>	<b><u>2,447<sup>b</sup></u></b>	<b><u>18,895</u></b>	<b><u>5,752</u></b>
<p><u>Note:</u>            MSA = municipal service area            Projection assumes 587 gallons per day per person.  <sup>a</sup> Projected water demand is based existing water demand and new population growth in agriculture and special-purpose areas and does not account for the potential decrease in population from incorporation of lands within MSAs.  <sup>b</sup> Change in water demand is based on increase in population in Agriculture and Special-Purpose Area land use categories and does not account for the potential decrease in population from incorporation of lands within MSAs.            Source: Rural North Vacaville Water District customer water consumption data for unincorporated Solano County from 2005 through 2008</p>					

Maximum water demand for Agriculture, Residential, and Special-Purpose Areas under the Preferred Plan would be an additional 2,447 acre-feet per year (afy), or an increase of 18.6% above existing water demand (Table 4.9-15).

Under the Maximum Development Scenario, projected water demand would increase by 5,752 afy. Residential water demand would increase by approximately 43% above existing water demands (Table 4.9-15). There would still be a reduction in water demand associated with incorporating some currently unincorporated areas of the county, but any reduction would be offset by an increase in demand associated with increased agricultural and residential development.

**Commercial Water Demand**

Commercial water demand under the 2008 Draft General Plan includes water demands associated with existing commercial land uses within the unincorporated county and projected commercial acreage in 2030 under the plan. Because Policy LU.P-7 establishes that new development would not occur within the MSAs until the land is annexed to a city, the cities would be responsible for any future water demands associated with new commercial land uses within the MSAs. It is assumed that existing water demand from commercial land uses in the unincorporated area (including within MSAs) would not increase in the future. However, new commercial land uses designations within these areas would cumulatively contribute to an increase in commercial water demands countywide. Please refer to Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan,” for further details regarding the cumulative water demands with Solano County.

Implementing the 2008 Draft General Plan under either development scenario would result in an approximately 21% net reduction in water demand associated with commercial land uses in the unincorporated portions of Solano County in 2030 (Table 4.9-16). The reduction in commercial land uses associated with this reduction in water demand would be a result of city annexation and changes in land use definitions to reflect actual land uses or to resolve inconsistencies as part of the 2008 Draft General Plan.

<b>Table 4.9-16 Projected Water Demand Based on Commercial Acreage in the Unincorporated Areas of Solano County</b>					
<b>Land Use Category</b>	<b>Water Demand (afy)</b>				
	<b>Baseline— Existing Acreage</b>	<b>Preferred Plan (Outside MSAs)</b>		<b>Maximum Development Scenario (Outside MSAs)</b>	
		<b>Acreage</b>	<b>Change</b>	<b>Acreage</b>	<b>Change</b>
<b>Commercial</b>	567 acres	449 acres	-118 acres	449 acres	-118 acres
<b>Projected water demand</b>	<b>1,302 afy</b>	<b>1,031 afy</b>	<b>=<sup>a</sup></b>	<b>1,031 afy</b>	<b>=<sup>a</sup></b>
<b>Note:</b> afy = acre-feet per year <sup>a</sup> Assumes that a decrease in existing water demand would not occur Projection assumes that commercial land use would generate 2,050 gallons per day per acre. This assumption is taken from City of Vacaville Senate Bill (SB) 610 water supply assessment. Source: City of Vacaville 2004					

Existing commercial water demands are not assumed to change significantly despite the changes in land use designations and MSA annexations. Water demand reduction is also highly uncertain given that the existing commercial water consumption in the unincorporated areas of the county outside MSAs is largely unknown and the variability of future water demands depends on the type of commercial use. For

example, a laundromat or car wash would have a higher water demand than a retail store. The water demand factor used to project future water demands is based on water demand factors used in the City of Vacaville’s SB 610 water supply assessment, which was the most current and reliable relevant source of information for commercial water use in Solano County at the time this FEIR was prepared (City of Vacaville 2004). For these reasons, any water reductions are not considered to be a firm water source for future development.

### Agricultural Water Demand

Agricultural water demand under the 2008 Draft General Plan includes water demands associated with existing agricultural land use and projected agricultural acreage at 2030 for the unincorporated area of the county (including the portion located within MSAs). Under Policy LU.P-7 of the 2008 Draft General Plan, agricultural land use is considered consistent with the current County zoning for unincorporated lands within MSAs and is not considered to conflict with planned land uses after city annexation. The estimated agricultural water demand in 2030 under the 2008 Draft General Plan would also account for agricultural water demands should proposed city annexation not occur by 2030. This assumption is being used to avoid underestimating future agricultural water demand. The water demand factor used to project future water demands is based on DWR’s Agricultural Water Use Program study on applied water per crop type within Solano County, which was the most comprehensive and reliable relevant source of information for agricultural water use in Solano County at the time this FEIR was prepared (DWR 2001).

Agricultural land conversion would result in a countywide reduction in irrigated cropland in the unincorporated portions of the county (Table 4.9-17). The potential reduction in water demand from the conversion of agricultural lands to developed uses could exceed 54,000 afy, or 6% of current estimated water demand under both the Preferred Plan and the Maximum Development Scenario. This estimate includes land in the unincorporated areas of the county and the MSAs because agricultural uses would continue in the MSAs until annexation. However, most of the lands proposed for agricultural conversion, 17,684 acres, are located outside of the MSAs.

<b>Table 4.9-17 Projected Water Demand Based on Agricultural Acreage in the Unincorporated Areas of Solano County</b>					
<u>Land Use Category</u>	<u>Water Demand (afy)</u>				
	<u>Baseline— Existing Acreage</u>	<u>Preferred Plan</u>		<u>Maximum Development Scenario</u>	
		<u>Acreage</u>	<u>Change</u>	<u>Acreage</u>	<u>Change</u>
<u>Agriculture</u>	<u>365,651 acres</u>	<u>343,680 acres</u>	<u>-21,971 acres</u>	<u>343,680 acres</u>	<u>-21,971 acres</u>
<b><u>Projected water demand</u></b>	<b><u>906,814 afy</u></b>	<b><u>852,326 afy</u></b>	<u>—<sup>a</sup></u>	<b><u>852,326 afy</u></b>	<u>—<sup>a</sup></u>
Notes: afy = acre-feet per year; MSA = municipal service area <sup>a</sup> Assumes that a decrease in existing water demand would not occur. Projection assumes that agricultural land use would require 2.48 afy. This assumption is based on an average estimated applied water demand from the California Department of Water Resources’ Agricultural Water Use Program, which is based on a study of applied water per crop type for Solano County in 2001. Source: DWR 2001					

Furthermore, the extent of water reductions resulting from agricultural conversion is uncertain because existing agricultural practices on lands proposed for conversion, such as dry farming, are unknown. In addition, future conversions of existing agricultural land from traditional row crop farming to orchards or

vineyards would increase water demand and would therefore reduce the extent of water reductions. In the California Water Plan (DWR 2005), agricultural water is identified as a potential water source to meet new and increasing water demand for water supply reliability and environmental resource protection. It is anticipated that conversion of agricultural land would create a firm yield of additional groundwater or surface water for unincorporated areas of the county; however, the extent of surplus water supplies is uncertain.

For these reasons, no reduction in projected water demand from conversion of agricultural land is assumed despite the theoretical potential for such a reduction as described above.

### Industrial Water Demand

Industrial water demand under the 2008 Draft General Plan includes water demands associated with existing industrial land use acreage within the unincorporated portions of the county and projected industrial acreage for the unincorporated county in 2030. As stated previously, Policy LU.P-7 in the 2008 Draft General Plan establishes that any new industrial development within the unincorporated portions of the MSAs would not occur until the land is annexed to the city; therefore, any future water demands associated within new industrial land uses within what is now an unincorporated MSA would be the responsibility of the respective city. It is assumed that existing water demand for industrial land use in the unincorporated area (including MSAs) would not increase in the future. Considerations related to cumulative industrial water demand are discussed further in Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan.”

Implementing the 2008 Draft General Plan would increase the extent of industrial land use in the unincorporated areas of the county by more than 400%. Most of the proposed industrial development in the unincorporated portions of the county under the 2008 Draft General Plan is designated as “water dependent” industrial reserve. This designation is specifically designed to accommodate water-dependent industrial development along the Sacramento River.

Industrial development with this designation may include waterfront storage facilities; waterfront manufacturing or processing facilities; and water-using facilities, such as power plants and desalinization plants requiring large quantities of water for intake and waste assimilation. Under both the Preferred Plan and the Maximum Development Scenario, total water demand in the unincorporated portions of the county for proposed industrial uses is approximately 21,251 afy (Table 4.9-18). Water demand for water-dependent industrial land uses would be highly variable depending on the type of industrial facility. For example, a food-processing facility or power plant would consume a substantially greater amount of water than an industrial warehouse or storage facility. Specific water-dependent industrial facilities for this land use designation have not yet been identified; therefore, actual water demand for industrial land uses is largely uncertain. The water demand factor used to project future water demands is based on water demand factors used in the City of Vacaville’s SB 610 water supply assessment, which was the most current and reliable relevant source of information for industrial water use in Solano County at the time this FEIR was prepared (City of Vacaville 2004).

**Table 4.9-18  
Projected Water Demand Based on Industrial Acreage  
in the Unincorporated Areas of Solano County**

<u>Land Use Category</u>	<u>Water Demand (afy)</u>				
	<u>Baseline— Existing Acreage<sup>a</sup></u>	<u>Preferred Plan<sup>b</sup></u>		<u>Maximum Development Scenario<sup>b</sup></u>	
		<u>Acreage (Outside MSAs)</u>	<u>Change</u>	<u>Acreage (Outside MSAs)</u>	<u>Change</u>
<u>Industrial</u>	<u>1,921 acres</u>	<u>7,743 acres</u>	<u>5,822 acres</u>	<u>7,743 acres</u>	<u>5,822 acres</u>
<b><u>Projected water demand<sup>c</sup></u></b>	<b><u>5,272 afy</u></b>	<b><u>21,251 afy</u></b>	<b><u>15,979 afy</u></b>	<b><u>21,251 afy</u></b>	<b><u>15,979 afy</u></b>

Notes:

afy = acre-feet per year; MSA = municipal service area

<sup>a</sup> Baseline includes acreage located within the unincorporated county.

<sup>b</sup> Water demands for the Preferred Plan and the Maximum Development Scenario include acreage projections for the unincorporated County under the 2008 Draft General Plan at 2030.

<sup>c</sup> Projection assumes that industrial land use would generate 2,450 gallons per day per acre. This assumption comes from the City of Vacaville's Senate Bill (SB) 610 water supply assessment.

Source: City of Vacaville 2004

### Public/Quasi-Public Water Demand

Under the 2008 Draft General Plan, approximately 1,405 acres in the unincorporated areas of the county have been designated as Public/Quasi-Public. The Public/Quasi-Public land use category includes sites that serve the community or public need and are owned or operated by government agencies, public utilities, or nonprofit organizations. The land use designation would include airports, schools, solid waste facilities, hazardous waste facilities, and other public and quasi-public facilities. Because no specific public or quasi-public development is planned and the land use designation includes uses that would not require water, a quantitative water demand estimate based on land acreage would be highly speculative and is not included in this FEIR. The water demand requirements would depend on the type of use or facility. For example, schools would require additional water over existing water demands. However, projected per-capita residential water demand would cover water demand needs by students and the school staff. Therefore, the additional water demands for a school would be minimal.

### Environmental Water Demand

Calculating current environmental demand and projecting future demands for protected species requires detailed knowledge of groundwater-surface water interactions, vegetation water consumption, existing habitat, demands by habitat type, and instream flow requirements. Some of this information is not yet available; therefore, rigorous demand calculations are not currently possible. Environmental enhancement, habitat protection, and water supply operating restrictions resulting from endangered or threatened species may result in decreases in the total amount of water supplies available. Limitations to water supply can affect reliability of the water supply, which in turn would affect the ability to support future water demands as part of the 2008 Draft General Plan. For example, the endangered species Delta smelt spawns in Barker Slough pumping plant intake to the NBA. To protect larval Delta smelt, the U.S. Fish and Wildlife Service had imposed pumping restrictions on the NBA when larval Delta smelt are present. Although the restriction did not significantly affect NBA water supplies (shortages were made up later in the year), as NBA water use increases, a pumping restriction could have a major impact on NBA supplies. This restriction was discontinued in 2005, but could be reinstated in the future. This results in some uncertainty as to the availability of the NBA to be fully utilized in the future. A future restriction on the NBA water supplies could increase the reliance on groundwater use to supplement surface-water supplies.

## Water Demand Summary

Projected water demand is anticipated to increase by 18,428 afy under the Preferred Plan and 21,731 afy under the Maximum Development Scenario. These estimates are conservative because they do not include the theoretical potential for some water demand reductions for the reasons described above.

<b>Table 4.9-19</b> <b>Total Projected Water Demand based on Land Use</b> <b>in the Unincorporated Areas in Solano County at 2030</b>					
Land Use Category	Water Demand (afy)				
	Existing Demand	Preferred Plan		Maximum Development Scenario	
		Projected Demand	Change	Projected Demand	Change
Residential	13,143	15,590 <sup>a</sup>	2,447 <sup>a</sup>	18,895	5,752
Commercial	1,302	1,302 <sup>b</sup>	— <sup>b</sup>	1,302 <sup>b</sup>	— <sup>b</sup>
Agriculture	906,814	906,814 <sup>b</sup>	— <sup>b</sup>	906,814 <sup>b</sup>	— <sup>b</sup>
Industrial	5,272	21,251	15,979 <sup>c</sup>	21,251	15,979 <sup>c</sup>
<b>Total</b>	<b>926,531</b>	<b>944,957</b>	<b>18,426</b>	<b>948,262</b>	<b>21,731</b>

Notes:  
 afy = acre-feet per year  
<sup>a</sup> Change in water demand is based on increase in agriculture and special-purpose area populations and does not account for the potential decrease in population from incorporation of lands within municipal service areas.  
<sup>b</sup> Increased demand is not anticipated due to a decrease in existing land uses proposed under the 2008 Draft General Plan at 2030.  
<sup>c</sup> Change in water demand estimate accounts for an increase in industrial land use acreage within the unincorporated area under the 2008 Draft General Plan at 2030.  
 Source: Data compiled by EDAW in 2008

Table 4.9-20 shows the estimated increase in residential and industrial water demands in 5-year increments, assuming a constant rate of development and water demand increase. These two categories of water demand are highlighted in Table 4.9-20 because they represent the primary land use sectors anticipated to generate significant increases in water demand. Water demand in these two categories of land use is projected to increase by 100% through 2030.

<b>Table 4.9-20</b> <b>Projected Short-Term and Long-Term Water Demand Based on Increase in Population and</b> <b>Industrial Land Use in the Unincorporated Areas of Solano County</b> <b>under the Preferred Plan</b>						
Land Use Category	Water Demand (afy)					
	Current	2010	2015	2020	2025	2030
Residential	13,143	13,669	14,215	14,784	15,375	15,590
Industrial	5,272	7,381	10,333	14,466	20,253	21,251
<b>Totals</b>	<b>18,415</b>	<b>21,050</b>	<b>24,549</b>	<b>29,250</b>	<b>35,628</b>	<b>36,841</b>
<b>Percentage increase over existing demand</b>	:	<b>14.3%</b>	<b>33.3%</b>	<b>58.8%</b>	<b>93.5%</b>	<b>100.1%</b>

Notes:  
 afy = acre-feet per year  
 Assumptions:  
 - 1.5% residential water demand increase every 5 years to 2025.  
 - 400% industrial water demand increase every 5 years to 2025.  
 Source: Data compiled by EDAW in 2008

Table 4.9-21 shows the estimated increase in total water demand in 5-year increments, assuming a constant rate of development and water demand increase. The projected increase is 18,426 afy, 2% greater than the estimated current demand.

<b>Table 4.9-21 Projected Short-Term and Long-Term Total Water Demand for the Unincorporated Areas of Solano County at 2030 under the Preferred Plan</b>						
<u>Category</u>	<u>Water Demand (afy)</u>					
	<u>Current</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Existing Water Demand</u>	<u>926,531</u>	<u>926,531</u>	<u>926,531</u>	<u>926,531</u>	<u>926,531</u>	<u>926,531</u>
<u>2008 General Plan Increased Demand</u>	<u>0</u>	<u>3,685</u>	<u>7,370</u>	<u>11,055</u>	<u>14,740</u>	<u>18,426</u>
<b><u>Totals</u></b>	<b><u>926,531</u></b>	<b><u>930,216</u></b>	<b><u>933,901</u></b>	<b><u>937,586</u></b>	<b><u>941,271</u></b>	<b><u>944,957</u></b>
<b><u>Percentage increase over existing demand</u></b>	<b><u>=</u></b>	<b><u>0.4%</u></b>	<b><u>0.8%</u></b>	<b><u>1.2%</u></b>	<b><u>1.6%</u></b>	<b><u>2%</u></b>
Notes: afy = acre-feet per year Source: Data compiled by EDAW in 2008						

Under the Maximum Development Scenario, total water demand by residential and industrial users would increase by 40,146 afy (118%) relative to existing water demand (Table 4.9-22). Considering existing water demands and projected long-term demand under the Preferred Plan, total water demand in the unincorporated county would be 966,678 afy under the 2008 Draft General Plan at 2030, an increase of 4.3% from existing water demand (Table 4.9-23). Tables 4.9-22 and 4.9-23 show projected increases in water demand in 5-year increments, assuming a constant rate of development and corresponding increase in water demand.

<b>Table 4.9-22 Projected Short-Term and Long-Term Water Demand Based on Increase in Population and Industrial Land Use in the Unincorporated Areas of Solano County at 2030 under the Maximum Development Scenario</b>						
<u>Land Use Category</u>	<u>Water Demand (afy)</u>					
	<u>Current</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Residential</u>	<u>13,143</u>	<u>14,392</u>	<u>15,759</u>	<u>17,256</u>	<u>18,895</u>	<u>18,895</u>
<u>Industrial</u>	<u>5,272</u>	<u>7,381</u>	<u>10,333</u>	<u>14,466</u>	<u>20,253</u>	<u>21,251</u>
<b><u>Totals</u></b>	<b><u>18,415</u></b>	<b><u>21,772</u></b>	<b><u>26,092</u></b>	<b><u>31,722</u></b>	<b><u>39,148</u></b>	<b><u>40,146</u></b>
<b><u>Percentage increase over existing demand</u></b>	<b><u>=</u></b>	<b><u>18.2%</u></b>	<b><u>41.7%</u></b>	<b><u>72.3%</u></b>	<b><u>112.6%</u></b>	<b><u>118%</u></b>
Notes: afy = acre-feet per year Assumptions: - 9.5% residential water demand increase every 5 years to 2025. - 400% industrial water demand increase every 5 years to 2025. Source: Data compiled by EDAW in 2008						

<b>Table 4.9-23</b>						
<b>Projected Short-Term and Long-Term Total Water Demand for the Unincorporated Areas of Solano County at 2030 under the Maximum Development Scenario</b>						
<u>Land Use</u>	<u>Water Demand (afy)</u>					
	<u>Current</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Existing Water Demand</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>
<u>2008 General Plan Increased Demand</u>	<u>0</u>	<u>21,772</u>	<u>26,092</u>	<u>31,722</u>	<u>39,148</u>	<u>40,146</u>
<b><u>Totals</u></b>	<b><u>926,532</u></b>	<b><u>948,304</u></b>	<b><u>952,624</u></b>	<b><u>958,254</u></b>	<b><u>965,680</u></b>	<b><u>966,678</u></b>
<b><u>Percentage increase over existing demand</u></b>	<b><u>=</u></b>	<b><u>2.3%</u></b>	<b><u>2.8%</u></b>	<b><u>3.4%</u></b>	<b><u>4.2%</u></b>	<b><u>4.3%</u></b>
Notes: afy = acre-feet per year Source: Data compiled by EDAW in 2008						

## METHODOLOGY FOR WATER SUPPLY IMPACT ANALYSIS

To clarify the approach to the water supply impact analysis, the “Methodology” section in Section 4.9.3 on pages 4.9-29 and 4.9-30 of the DEIR is revised as follows:

### METHODOLOGY

#### Water Supply Services

To determine whether sufficient water supply is available, the environmental analysis for water supply was based largely on information in SCWA’s *Phase I Integrated Regional Water Resources Plan* (SCWA 2004), *Integrated Regional Water Management Plan and Strategic Plan* (SCWA 2005b), and *Urban Water Management Plan* (SCWA 2005c). The Water Resources, Public Facilities and Services, and Health and Safety background reports prepared for the 2008 Draft General Plan (Solano County 2006a, 2006b, 2006c) were also consulted, along with the local and regional agency information sources listed in Chapter 8, “References,” of this DEIR and described more fully in preceding portions of this section. The effects of the 2008 Draft General Plan were compared to environmental baseline conditions (i.e., existing conditions) to determine impacts. There is overlap of some 2008 Draft General Plan policies, regulations, and programs as they pertain to water supply and hydrology in Section 4.5, “Hydrology and Water Resources.” Where policies, regulations, or programs are utilized for mitigation in more than one impact, their first instance will be described and referred to in subsequent references. The water supply and demand impact analysis focuses on proposed development and land use changes under the 2008 Draft General Plan for the unincorporated areas of the county at 2030, relative to existing conditions. The cities would be responsible for determining potential impacts of proposed development or land use changes within the MSAs. Future demands and water supply to meet those demands associated with new development within the unincorporated areas of MSAs would be reflected within each city’s general plan and analyzed in each city’s general plan EIR and/or any environmental documents associated with annexation and specific development projects. As presented in Policy LU.P-7 of the 2008 Draft General Plan, temporary land uses and uses that are consistent with the current zoning on incorporated lands within MSAs, and that do not conflict with planned land uses, would be permitted until the property is annexed to a city for urban development. At present, until property located within an MSA is annexed by a city, the only approved land use designation for such a property is agricultural use. Therefore, existing and future uses of agricultural land is evaluated for portions of the unincorporated county within and outside of the MSAs.

The 2008 Draft General Plan would result in increased residential, commercial, and industrial land uses, and a decrease in agricultural land uses, as a result of increasing population growth. This analysis is based on the following water demand assumptions shown in Table 4.9-11 and Table 4.9-12. The two tables show water demand projections for the Preferred Plan and the Maximum Development Scenario. Water projections are made based on the projected population and amount of commercial land acreage proposed under each development scenario. Projected industrial water use is not projected in this analysis because of the variability of water needs for each individual industrial use, and the net change in water demand by converting agricultural lands to rural residential use is not estimated in Table 4.9-11 because of the variability of agricultural water needs (for example, dryland versus irrigated farming and differences in water needs for different crops). As noted in the analysis following Table 4.9-15 (Impact 4.9-1a), a change in land use from irrigated agriculture to a developed use would decrease water demand; therefore, the analysis below likely overestimates the net additional water demand and resulting impacts.

<b>Table 4.9-11 Projected Water Demand based on Population Increase in the Unincorporated Areas of Solano County</b>					
Land Use	Water Demand (afy)				
	Baseline— Existing Population	Preferred Plan		Maximum Development Scenario	
		Population	Change	Population	Change
Residential	17,719	27,435	9,716	42,953	25,234
Agriculture	2,269	4,940	2,671	9,879	7,610
Special-Purpose Areas	0	7,081	7,081	9,273	9,273
Total Population	19,988	39,455	19,467	62,105	42,117
<b>Projected Water Demand*</b>	<b>2,240</b>	<b>4,424</b>	<b>2,184</b>	<b>6,955</b>	<b>4,715</b>
Notes: afy – acre feet per year * Projection assumes 100 gallons per day (gpd) per person (Marin County 2007). Source: Data provided by Solano County in 2008					

<b>Table 4.9-12 Projected Water Demand based on Commercial Acreage in the Unincorporated Areas of Solano County</b>					
Land Use	Water Demand (afy)				
	Baseline— Existing Acreage	Preferred Plan		Maximum Development Scenario	
		Acreage	Change	Acreage	Change
Commercial	640	1,036	396	1,036	396
<b>Projected Water Demand*</b>	<b>851</b>	<b>1,378</b>	<b>526</b>	<b>1,378</b>	<b>526</b>

Table 4.9-12 Projected Water Demand based on Commercial Acreage in the Unincorporated Areas of Solano County		
	Water Demand (afy)	
	Preferred Plan	Maximum Development Scenario
<p>Notes:</p> <p>afy = acre feet per year</p> <p>* Projection assumes that commercial land use would generate 1,185.5 gallons per day per acre. This assumption comes from Marin County based on a study of historical North Marin water use conducted for North Marin Water District (NMWD) and summarized in the Marin CWP Update Draft EIR (Marin County 2007).</p> <p>Source: Solano County 2008</p>		

## IMPACTS RELATED TO WATER DEMAND

To address comments alleging an inadequate impact analysis in the DEIR of insufficient water demands for the 2008 Draft General Plan, as shown in Chapter 4 of this FEIR, the analysis of Impacts 4.9-1a and 4.9-1b on pages 4.9-32 through 4.9-41 of the DEIR is revised as follows:

- IMPACT 4.9-1a** **Insufficient Water Supplies to Meet the Future Water Demand in Unincorporated Areas Served by the County – Preferred Plan.** *Land uses and development consistent with the Preferred Plan would increase the demand for water. Available water sources would be insufficient to serve some of the unincorporated areas of the county with the buildout of the Preferred Plan. In areas with insufficient water supplies, ~~A~~new methods to obtain water and additional sources of water supply would be required. This impact would be significant.*

Estimates of future short-term and long-term water demand in the unincorporated areas of Solano County indicate that there would be increased water demand for new development under the 2008 Draft General Plan. An increase in water demand for agricultural or commercial land use within the unincorporated areas of the county is not anticipated as a result of the 2008 Draft General Plan because of agricultural conversion and city annexation. This assumes that water demand for existing land uses within the unincorporated areas of the county would not increase. In addition, it is anticipated that overall water demand would decline as a result of the 2008 Draft General Plan as a result of city annexations of existing residential and commercial properties, and agriculture land use conversion; however, the Preferred Plan could require up to an additional 35,085 afy to support new growth that may not be offset by anticipated water reductions. Total water demand would increase by approximately 38% over existing water demand.

The primary water source to serve the increase in residential water demand would be groundwater. This water would be provided by the installation of additional private wells or new service connections that are available within existing local water districts in some portions of the unincorporated county. The majority of new rural residential land designations are located north of Vacaville in the Pleasant Valley area, overlying the Solano Subbasin, and west of the city of Fairfield near Green Valley, overlying the Napa-Sonoma Volcanic Highlands and the Suisun-Fairfield Valley Subbasins. SID and RVNWD are the main water purveyors within these areas (Exhibit 4.5-1).

New population growth is also anticipated to occur within a special-purpose area located within the unincorporated county associated with the Middle Green Valley Project. This area lies west of the city of Fairfield (Exhibit 3-2). The special-purpose area overlies the Napa-Sonoma Volcanic Highlands and the Suisun-Fairfield Valley Subbasins; portions of this area are also located within the SID service area.

New industrial land uses within the unincorporated areas of the county are proposed east of Dixon, northeast of Vacaville, and in the area surrounding the community of Collinsville. The new industrial land use areas overlie the Solano Subbasin, and the proposed industrial area northeast of Vacaville is also located within the existing SID service area. The remaining new industrial land use areas are located outside of the existing service areas of local districts.

Within the unincorporated portions of the county, groundwater is supplied to some residents by private wells for residential and agricultural purposes. The majority of these private wells are installed within the shallow aquifer of the Solano Subbasin. Levels of groundwater consumption by private residences are largely unknown because there are no restrictions on groundwater use. The uncertainty of existing water demands within the unincorporated county is the factor causing the greatest difficulty in determining whether adequate groundwater supplies are available for new development proposed under the 2008 Draft General Plan.

### **Use of Solano Subbasin Groundwater**

RNVWD obtains its water supply from deep-aquifer groundwater wells installed within the Solano Subbasin. The RNVWD water distribution system has a capacity of 533 service connections. As of June 2008, the RNVWD system was servicing 214 connections. Assuming one connection per three-person household, RNVWD could serve an additional population of 957 persons without an expansion of existing water supplies. Because RNVWD serves areas exclusively within the incorporated portions of the county, this available water supply is considered to be reasonably foreseeable for new development; however, there are some uncertainties associated with the existing water distribution system and the reliability of groundwater quality within the deep aquifer underlying this region. One of two deep-water wells that are sources for the RNVWD water system have been taken offline because of elevated levels of arsenic. Groundwater monitoring within the RNVWD service area has indicated that groundwater levels in the shallow aquifer have experienced decreases of 18 feet within the shallow aquifer and 30 feet in the deep aquifer. The cause for the groundwater level decrease is not fully understood and additional monitoring is required.

SID serves primarily agriculture and some residential, municipal, and industrial customers and uses groundwater conjunctively with surface-water supplies. SID has a groundwater well network consisting of 29 wells ranging from 400 to 1,000 feet below the ground located within the Solano and Suisun-Fairfield Subbasins. Groundwater is used primarily to supplement irrigation demands in an area constrained by conveyance capacity for surface-water deliveries. The historical yield of the groundwater system is 15,000 afy. The current annual system yield is approximately 10,000 afy; however, the failures of a few wells have rendered them inoperative pending repair or replacement. SID has also reported an overall regional drop in groundwater elevations of 20–30 feet that is indicative of drought-like conditions (Markinson, pers. comm., 2008).

The Cities of Vacaville, Rio Vista, and Dixon also rely on groundwater from the Solano Subbasin for water supplies. The City of Vacaville has 12 wells, 11 of which withdraw water from the deep aquifer. Vacaville is proposing to expand the existing well field within the deep aquifer. The City of Vacaville did not report problems with elevated arsenic concentrations above applicable standards (City of Vacaville 2005). Vacaville could require up to 10,000 afy for long-term water demand (SCWA 2005a).

The city of Dixon has very high groundwater quality with low levels of arsenic (Cal Water 2008). Water is supplied within the Dixon planning area by DSMWS and Cal Water. DSMWS currently operates four wells with four additional wells reported to be planned for construction in 2005, while Cal Water operates eight wells with a ninth well reported to be under construction in 2005 (City of Dixon 2005). DSMWS estimates that its long-term water demand would be approximately 7,826 afy (SID 2005). Cal Water estimates that up to 3,809 afy would be required for long-term supplies (City of Dixon 2005).

The City of Rio Vista has a water supply system consisting of six wells at depths ranging between 500 and 1,000 feet, four of which are currently producing water supply. In 2002, annual groundwater consumption for Rio Vista was 1,799 afy (SCWA 2005a). A significant increase in pumping to meet long-term water demands is anticipated for Rio Vista. Groundwater elevation monitoring by the City of Rio Vista has not indicated a decrease in water elevation. There is some uncertainty about groundwater quality. Elevated concentrations of arsenic have been detected within some of the supply wells. The city is currently blending water from several groundwater sources in a storage reservoir to achieve drinking-water standards.

Other water purveyors in the county are likely to rely more on groundwater supplies in the future because of decreasing reliability of SWP water supplies. Groundwater demands also increase during dry years because surface-water supplies are less available. RD 2068 and MPWD prepared groundwater management plans and are considering the feasibility of implementing a conjunctive-use program that could include the future use of groundwater (RD2068 2005, MPWD 1995).

Substantial groundwater supplies are located within the Solano Subbasin within both the shallow and deep aquifers. According to the *North Solano Groundwater Resources Report* (Solano Water Authority 1995), the volume of water within the deep aquifer of the Solano Subbasin in Solano County northerly and easterly of the city of Vacaville (approximately 143 square miles) is estimated to be more than 2.7 MAF. The report also indicated that current pumping within the aquifer in 1995 was less than 10,000 afy. Assuming similar pumping today combined with the estimated long-term water demand associated with the 2008 Draft General Plan, estimated annual long-term water demand would be approximately 1.7% of the total estimated 2.7-MAF capacity of the underlying deep aquifer. The total long-term estimated pumping within this aquifer from other agencies, combined with estimated long-term annual demands as part of the 2008 Draft General Plan, would be well under 100,000 afy, or approximately 3.7% of the total estimated 2.7-MAF capacity of the underlying deep aquifer. The estimated storage capacity of the shallow aquifer was not identified in available reports.

An important consideration in identifying adequate water supply is considering the safe yield of the groundwater aquifer, which is usually defined as the annual draft of water that can be withdrawn without producing some detrimental results. Specific yields within portions of the Solano Subbasin have been calculated and reported (Solano Water Authority 1995). Within the Putah Creek fan region of the Solano Subbasin near Dixon, the safe average yield was determined to be 40,000 afy in 1955, based on assumptions and conditions present at that time, which was before the construction of the Solano Project and during times of heavy groundwater use for irrigation (Solano Water Authority 1995). Based on available reports, an aquifer-wide specific yield for the shallow or deep aquifers has not been calculated. For this reason, it is difficult to predict whether underlying groundwater would yield sufficient supplies to meet long-term water demands for new development proposed within the Solano Subbasin. Because there is no indication that groundwater within the county is in a permanent state of overdraft, short-term groundwater supplies to serve the new development within the unincorporated county are reasonably foreseeable; however, it is unknown whether there would be sufficient aquifer-wide yields to serve long-term water demands.

There are concerns that increased groundwater pumping would result in permanent overdraft of the underlying Tehama Formation aquifer. The aquifer was once subject to overdraft from heavy pumping from agriculture irrigation before the Solano Project was established. Overdraft of an entire aquifer could occur as a result of pumping exceeding the recharge of the aquifer, or in isolated areas of the aquifer where wells are placed too close together. Sustained depletion of groundwater storage can diminish the productivity of wells altogether, induce or inhibit migration of water from one area of the subbasin to another, or redistribute supply. Overdraft could also contribute to land subsidence or loss of valuable Delta and riparian habitat. Because the main source of water supply for the 2008 Draft General Plan would be groundwater, there is also concern that overpumping of shallow-water wells could contribute to

surface-water depletions, lead to habitat degradation, and potentially affect sensitive species located within the Delta and the creek systems within the county.

Extreme overdraft could occur when wells pump from aquifers that have no present source of recharge and are considered to be a nonrenewable resource. The source of groundwater recharge of the deep aquifer is largely unknown, and there are concerns that the deep aquifer receives very little recharge. As groundwater pumping increases within the deep aquifer, groundwater will need to be monitored more closely. Existing groundwater levels have been generally stable with typical seasonal and wet year–dry year fluctuations as a result of usage. One unconfirmed source of future recharge to the deep aquifer was reported from percolation of precipitation and stream seepage from foothill areas in the Sierra Nevada (Solano Water Authority 1995).

According to the *North Solano Groundwater Resources Report* and the groundwater management plans of SID and the City of Vacaville, the Solano Subbasin is in a current state of equilibrium, where groundwater levels are stable and at levels that preceded overdraft of the basin from the intense agricultural use of groundwater in the 1930s, before the establishment of the Solano Project. Decreases in groundwater levels within the shallow and deep aquifers have been reported within the RNVWD and SID service areas; however, the reason for the decreased water elevations is not fully understood and additional monitoring is required. SCWA has recently implemented a groundwater monitoring program to gather additional data on the deep aquifer. Three of the four deep-aquifer wells have been installed as part of the monitoring program. Monitoring data will provide better understanding of groundwater conditions within the deep aquifer.

### **Uses of Groundwater from the Napa-Sonoma Volcanic Highlands and the Suisun–Fairfield Valley Subbasins**

Surface water is the main water supply within areas overlying the Napa-Sonoma Volcanic Highlands and the Suisun–Fairfield Valley Subbasins. The City of Vallejo currently provides water service to unincorporated communities in the Green Valley/Suisun Valley areas.

A groundwater supply assessment of the Fairfield–Suisun Valley aquifer, conducted as part of the Rockville Trails Estates Residential Subdivision Project, identified studies indicating that 3,500–4,500 af of groundwater could be pumped annually from the Suisun-Fairfield area without overdraft (Creegan + D’Angelo 2005). The study was conducted before the Solano Project, and irrigation of the valley was provided by wells at that time. Since the Solano Project, those wells have been abandoned and irrigation water is now supplied from Lake Berryessa, through the Putah South Canal distribution system; therefore, estimated yields are considered to be conservative (Creegan + D’Angelo 2005). The assessment also reported that SID had estimated that current pumping in 2005 was approximately 400–1,000 afy, almost entirely from domestic wells. Based on the SID estimated consumption rates and the 185-afy annual demand from the Rockville Trails Estates Residential Subdivision (Creegan + D’Angelo 2005), up to approximately 2,316 afy of groundwater is considered to be a reasonably foreseeable water supply to serve the proposed new development within the Green Valley area. Based on these estimates, sufficient water supplies are reasonably foreseeable and would be able to meet the projected water demand for the additional 1,051 residents of the Middle Green Valley Special Project Area. However, there are some uncertainties about the groundwater within this subbasin, including poor water yield and elevated concentrations of boron and chloride (SID 1995).

The Napa-Sonoma Volcanic Highlands is a groundwater-bearing volcanic area. The southeast extent of the main formation surrounds the community of Green Valley in the northwest corner of Solano County. A small, isolated pocket of the Napa-Sonoma Volcanic Highlands formation is also located along I-680 west of Grizzly Bay. Little is known about the water supply within this formation. No groundwater management plans cover water-bearing formations of the Napa-Sonoma Volcanic Highlands. Existing

and potential beneficial uses of groundwater within this formation have not been established. This groundwater basin was added to the 2007 groundwater quality control plan for the San Francisco Bay Basin and beneficial use designation will be determined at a later date; for the interim, a site-by-site determinations will be made (San Francisco Bay RWQCB 2007). Until more information is obtained and beneficial use designations have been made for the Napa-Sonoma Volcanic Highlands; water from this formation is not considered to be a reasonably foreseeable water supply for proposed new development under the 2008 Draft General Plan.

### **Uses of Yolo Subbasin Groundwater**

Only a very small portion of the Yolo Subbasin is located in Solano County—the area directly south of the city of Davis and north of Putah Creek. The Yolo County Flood Control and Water Conservation District, RD 108, RD 2035, and RD 2068 have adopted groundwater management plans pursuant to AB 3030 for the Yolo Subbasin. UC Davis is also preparing a groundwater management plan. DWR's Bulletin 118 reported studies that have estimated groundwater storage within the Yolo Subbasin to be more than 6 MAF, with yields ranging between 6.5% and 9.7% (DWR 2004). According to DWR's Bulletin 118, long-term trends do not indicate any significant decline in water levels, with the exception of localized pumping depressions in the vicinity of the Davis, Woodland, and Dunnigan/Zamora areas. The portion of the Yolo Subbasin that is located within Solano County is located near the city of Davis. It is unknown whether groundwater levels in the Yolo Subbasin within the unincorporated portions of Solano County are influenced by the pumping depression associated with groundwater extraction by the City of Davis. No land use changes have been proposed under the 2008 Draft General Plan for the portion of the overlying the Yolo Subbasin; however, it is possible that infill agricultural residential development may occur. Groundwater supplies for areas of new development overlying the Yolo Subbasin are reasonably foreseeable based on long-term evaluations of the aquifer; however, there is some uncertainty about future availability of groundwater within in these areas because of the pumping depression associated with the City of Davis. Additional hydrologic evaluations would be required to determine the long-term availability of the groundwater supply.

### **Surface-Water Supplies**

The City of Vallejo currently provides water service to unincorporated communities in the Green Valley/Suisun Valley areas. In 2002, approximately 157 afy of the identified 400-afy safe yield from the Lakes System was used (SCWA 2005a). Up to a remaining 243 afy is considered to be a reasonably foreseeable water supply in normal years to serve the proposed new development within the Green Valley area, assuming that inflow stream needs will be continually provided from Lake Curry. In dry years approximately 70% of the 243 afy, or 170 afy, is reasonably foreseeable.

### **New Water Supplies**

Additional water supplies may be available from local water districts or cities that serve or could potentially serve areas within the unincorporated areas of the county. These water supplies would be available through new service connections from local water districts or agreements through SCWA or the County Board of Supervisors. Such agreements or new service connections would need to be developed. The County could also obtain new water supplies through area-of-origin water right appropriations or purchase water from outside of Solano County. New water supplies are considered a reasonably foreseeable water supply; however, the amount of new water supply is uncertain.

The most accessible new water sources to serve the unincorporated areas of Solano County are water from agriculture conversion, conservation and efficiency, gray water collection and reuse, water recycling, and desalination. These new water sources are most appropriate for nonpotable uses like

irrigation. These new water sources would then offset the use of high-quality water for demands that would not require high-quality water supplies.

It is anticipated that conversion of agricultural land would create a firm yield of additional groundwater or surface-water availability for unincorporated areas of the county; however, the extent of surplus water supplies is uncertain. The projected future water demand for the 2008 Draft General Plan does not assume that water conservation would reduce rates of water usage over time. It is likely that there would be some water reduction over the projected water demands for residential and agricultural land uses as a result of the many water conservation initiatives established by the County and local water districts. Because specific water conservation goals or efficiency projects for the unincorporated portion of the county have not been established, a specific water reduction cannot be quantified or considered to be a firm or reasonably foreseeable water source for the 2008 Draft General Plan.

Potential opportunities for development of desalinated water in Solano County, including waters from San Francisco Bay and treated wastewater, have been identified (SCWA 2005b). California currently allows only subsurface irrigation for gray water use. Some wastewater in Solano County has a high salt content, which makes recycling and reuse difficult and could contribute to groundwater degradation. Although these new water sources are possible, specific projects have not been established within the county; therefore, development of desalinated water is not considered a reasonably foreseeable water source.

As mentioned in Section 4.9.1, “Existing Conditions,” above, water provided in Solano County is derived from myriad sources. Unincorporated areas of the county are located both within and outside of existing MSAs. For this analysis, water provisions are divided into two categories: agricultural water service and domestic water service. The primary suppliers for agricultural water services include SID; MPWD; RDs 2068, 2098, 2060, and 2104; other reclamation districts; and local surface water. The primary suppliers for domestic water service include SID, the City of Vallejo, the City of Suisun City, the City of Vacaville, and RNVWD. Independent groundwater wells and local waterway diversions are utilized in areas where no service provider is available. The water districts mentioned rely on water largely from surface water sources, including primarily SCWA and the Solano Project, and the North Bay Aqueduct.

**Population versus Demand for Water**

The Association of Bay Area Governments’ regional population forecast projects that the population of unincorporated Solano County would be 26,000 by 2030. However, implementation of the 2008 Draft General Plan could result in an estimated population of 39,455 by 2030 if buildout of all residential designated land were to occur at average historic densities (Table 4.9-15).

<b>Table 4.9-15 Population Forecast for Buildout of the 2008 Draft General Plan</b>			
Existing Population (2000)	Projected Population with the 2008 Draft General Plan (2030)		ABAG Projections for Unincorporated Solano County (2030)
	Growth under the Preferred Plan	Growth with Total Buildout (Maximum Development Scenario)	
19,988	39,455	59,443	26,000
<small>Note: ABAG – Association of Bay Area Governments Sources: Solano County 2006, data provided by Solano County in 2008</small>			

As shown in Table 4.9-11 above, conservatively estimating an increase in demand for potable water of 100 gallons per person per day (Marin County 2007) would correspond to an additional demand for high-

quality potable water of 2,184 afy with the Preferred Plan, based on population increase. As shown in Table 4.9-12 above, assuming that commercial land use generates 1,185.5 gpd per acre (Marin County 2007), the 2008 Draft General Plan would correspond to an additional demand for high-quality potable water of 526 afy based on commercial acreage. The total projected water needs with the Preferred Plan would be 2,710 afy.

### ***Agricultural Conversion and Rural Residential Land Uses***

Increases in land designated for residential, industrial, and commercial uses would result in conversions of irrigated agricultural acreage. Intensive irrigation of agricultural row crops typically consumes more water per acre than other land uses. According to DWR, irrigated agricultural crops typically consume 1 afy to 2.3 afy per acre, while suburban and urban residential uses typically consume 0.3 afy to 0.4 afy. Combined with effective water conservation, water recycling, and recharge practices, conversion of intensely irrigated agricultural land to typical urban uses can often result in a net decrease in water use.

Increases in rural residential land uses are largely proposed north of Vacaville, in the Pleasant Valley Area, and in Green Valley and Suisun Valley. The proposed residential land uses are located in currently developing areas and urban areas, to cluster new development corresponding to population growth near existing development, which would also encourage the use of existing water services, and would reduce the need for new infrastructure improvements. As mentioned in Section 4.9.1, "Existing Conditions," above, many of these areas are within existing MSAs. Areas north of Vacaville are served by the City of Vacaville, the Pleasant Valley area is within SID's service area, and Green Valley and Suisun Valley are within the service areas of the City of Vallejo and Suisun City. However, development would occur outside of MSAs, in which case water would be provided through annexation of additional properties into existing MSA boundaries associated with new development.

Projected population growth that would occur under the 2008 Draft General Plan would result in increases in water demand; however, the amount of increase would vary depending on future water use and management practices and the intensity and distribution of future land uses with future development. New development within the MSAs would rely on expansion of existing infrastructure; however, outside of existing MSAs, infrastructure would be limited to the existing providers' existing infrastructure with infill development.

Most new development would rely on groundwater wells. Groundwater and local supplies of surface water, which are the major water sources for areas outside of existing MSAs, are generally consistent but can fluctuate depending on factors such as well reliability, aquifer depletion, and water availability.

The Division of Environmental Health of the County's Department of Resource Management is responsible for permitting personal water wells and is ensuring that existing regulations are met in regard to water quality and supply. Long-term sustainability of county water supplies depends on both natural conditions (e.g., climate, soil permeability, topography, hydrogeology) and water supply management practices (distribution, conservation, reuse, and enhancement of supplies).

### ***Water Conservation Measures***

Water conservation measures are and would continue to be implemented to help reduce per capita water demands (SCWA 2005a). In Solano County, cities and special wastewater districts are responsible for wastewater treatment. Each of the cities and wastewater special districts has its own individual plan for water recycling. These efforts would be outlined in the individual cities' UWMPs. Water recycling is recognized as an important part in the Solano agencies' *Integrated Regional Water Management Plan* (IRWMP), but cities and districts are responsible for implementation (SCWA 2005a).

Environmental enhancement, habitat protection, and water supply operating restrictions resulting from endangered or threatened species may result in decreases in the total amount of water supplies available. Limitations to water supply can affect reliability of the water supply, which in turn would affect the ability to support future population growth in Solano County cities and unincorporated areas.

SWP supplies are limited in dry years, resulting in concern about water supply reliability in such years. SWP contracts specify that all SWP contractors be reduced proportionally when there is a water shortage. Most SWP contractors are developing their own projects to augment SWP supplies, such as local facilities for surface water storage and groundwater banks. Many of the methods used to increase SWP supply are tied to statewide water issues. The California Bay Delta Authority (i.e., the CALFED program) is implementing plans to enhance ecosystem restoration, increase water supply, promote efficient water use, improve water quality, and improve Delta levees. One of the main tenets of the authority is to seek improvements simultaneously in all of the facets of its programs.

SCWA, the primary water purveyor in the county, actively participates in planning to ensure that reliable water supplies are available to meet customers' needs and the growing current and future needs of the county. SCWA recently developed an IRWMP that identifies and prioritizes all the water resource related actions for the Solano agencies, and prioritizes SCWA actions to maintain a continued water supply. SCWA prepares an UWMP every 5 years, consistent with the requirements set forth in the California Water Code. Furthermore, approval of specific plans and large-scale development projects located within the county would continue to require preparation of a WSA pursuant to the California Water Code to analyze the ability of water supplies to meet the needs of the project, in the context of existing and planned future water demands. State general plan law requires that the 2008 Draft General Plan incorporate these provisions.

Because water supply sources are not always contained within jurisdictional boundaries, cooperation and coordination between all relevant regulatory agencies, municipalities, public and private water suppliers, and other stakeholders is critical.

Significant improvements in water use efficiency, water reuse and reclamation, and water conservation are critical to the long-term viability of the county's water supplies. Several policies and programs contained in the 2008 Draft General Plan would encourage an increase in the role of water conservation and the role of safe, beneficial reuse of secondary or tertiary treated wastewater in meeting the water supply needs of both urban and rural users. However, although the policies below would encourage public water suppliers to act in accordance with county desires, they cannot be compelled to do so. As a result, these policies may not be effective in reducing water supply impacts.

### **Supply for Population Growth in the Unincorporated County**

Unincorporated areas of the county currently have access to approximately 263,445 afy of known water supply, which would continue to be utilized for agriculture, residential, commercial and industrial uses.

The County currently has permitted private groundwater wells within the Tehama Formation, the largest notable water aquifer, which has experienced a 30-foot drop in recent years. Demand for high-quality potable water under the Preferred Plan would be approximately 2,710 afy. Because the unincorporated areas currently have access to more than 263,445 afy of water, supply should be sufficient to provide for the proposed population growth in the unincorporated areas of the county. Portions of this increase in commercial and residential development would be a result of conversion of agricultural lands, which is known to use more water per acre than these other land uses. However, a large portion of the area that is being proposed for development in the 2008 Draft General Plan is currently nonirrigated land, outside of an existing service area of a water agency that could supply water. Consequently, most of the new development proposed in the 2008 Draft General Plan would require individual groundwater wells.

It should be noted that water supplies from other water sources, including groundwater wells, the various reclamation districts, and individual diversions from local waterways are largely not quantified in Solano County. The County began recording groundwater well installations in the late 1980s, and many wells were established before this time. No record exists of those wells, and no projection can be made as to how much water they are using (Bell, pers. comm., 2006). Furthermore, agriculture is one of the largest consumers of water in the unincorporated county, and sources of water supply for agricultural properties include a large number of personal wells and surface water diversions from nearby waterways. Many of these diversions of surface water are not quantified, and it is currently unknown how much water is being used for agricultural purposes.

Conservation or reuse and reclamation practices, and acquisition of new water sources for additional water supply would continue to be required to support an IRWMP. Policies included in the 2008 Draft General Plan provide a framework for the County to pursue both avenues to ensure a sufficient water supply consistency for the county's growing population. Proposed policies encourage new developments in previously urbanized areas and the use of cluster developments to minimize sprawl and to limit the need for new infrastructure. Existing regulations requiring preparation of WSAs would ensure that larger projects proposed in unincorporated areas of the county prove that existing water capacity is available. These regulations, policies, and programs as well as those contained in Section 4.5, "Hydrology and Water Resources," would reduce the onset and severity of water supply deficiencies, which are presently unknown.

All lands outside of the jurisdictional boundaries of the seven incorporated cities compose unincorporated Solano County and constitute the geography to which the 2008 Draft General Plan would apply. As shown in Table 3-2 in Chapter 3, "Project Description," buildout of the 2008 Draft General Plan would result in a total (i.e., long term buildout to 2030) of 39,455 people, or an increase of approximately 19,467 people over the population of the existing land use (as of 2006). "Short term" is not specifically quantified or defined in either the SB 610/SB 221 regulations or in the decision in *Vineyard Citizens for Responsible Growth v. City of Rancho Cordova* (described in Section 4.5, "Hydrology and Water Resources"). "Short term" is therefore defined here as buildout to 2010. Using the total population projections of Table 4.5-5 to extrapolate the short term population change in the unincorporated areas results in a population of 22,585, an increase of 3,118 people compared with the population of the existing (2006) land use.

The water demands necessary to serve buildout of the 2008 Draft General Plan are shown in Tables 4.9-11 and 4.9-12. SCWA's water supply sources were calculated for all of Solano County, both the MSAs and the unincorporated areas that constitute buildout of the 2008 Draft General Plan. These water supply sources are shown in Tables 4.9-1 and 4.9-2.

### **State Water Project Water Supply and Demand**

The short term and long term water yield of the SWP North Bay Aqueduct is shown in Table 4.5-3. The County has contractual water through 2035 from the SWP. Although the total annual amount of SWP water for Solano County shown in Table 4.5-3 is the "Table A" allocation (i.e., the official SWP contractual amount) running to 2035 and renewable thereafter, the SWP will not be able to deliver its full contractual amount. For example, in 1991 and 1992, water allocations for SWP urban contractors were reduced to 30% and 45% of contracted supply, respectively, and in 2001 SWP supplies were curtailed to 39% of contracted supply. Several variables affect SWP deliveries: regulatory standards, operating rules, reservoir carryover supplies, demand in service areas, and most importantly, precipitation (SCWA 2005b). Table 4.9-16 shows the projected supplies and demands for Solano County under normal, single dry, and multiple dry years.

<b>Table 4.9-16</b>					
<b>SWP Water Supply and Demand for Solano County, 2010–2030</b>					
	Supply and Demand (afy)				
	2010	2015	2020	2025	2030
<b>Normal Water Year</b>					
Supply <sup>1</sup>	40,855	41,070	41,070	41,070	41,070
Demand <sup>2</sup>	47,506	47,756	47,756	47,756	47,756
<i>Difference (Supply minus Demand)</i>	(6,651)	(6,686)	(6,686)	(6,686)	(6,686)
<b>Single Dry Year</b>					
Supply <sup>3</sup>	29,929	30,086	30,086	30,086	30,086
Demand <sup>2</sup>	47,506	47,756	47,756	47,756	47,756
<i>Difference (Supply minus Demand)</i>	(17,577)	(17,670)	(17,670)	(17,670)	(17,670)
<b>Multiple Dry Years</b>					
Supply <sup>4</sup>	19,477	19,580	19,580	19,580	–
Demand <sup>2</sup>	47,506	47,756	47,756	47,756	–
<i>Difference (Supply minus Demand)</i>	(28,029)	(28,176)	(28,176)	(28,176)	
Notes:					
SWP – State Water Project					
<sup>1</sup> Assumes normal year supply is 86% of SWP contract amount.					
<sup>2</sup> Assumes demand is equal to contract amounts					
<sup>3</sup> Assumes single dry year supply is 63% of SWP contract.					
<sup>4</sup> Assumes multiple dry year supply is 41% of SWP contract.					
Source: SCWA 2005a					

Table 4.9-16 does not include Article 21 water, which is water that is available in excess of Table A contract amounts when there is water available in the Delta in excess of what can be pumped and stored in the SWP system. For North Bay Aqueduct water contractors, Article 21 water is available whenever the Delta is in excess conditions. Excess conditions in the Delta occur when the SWP and Reclamation’s Central Valley Project are pumping the maximum amount allowed, all Delta standards are met, and water is still available for export. Although SCWA has not used its full SWP contract amount in many years, a simplifying conservative assumption for demand estimation in the UWMP was that users would utilize the full contractual amounts of SWP water. SWP contractors are allowed to carry over unused water to the next calendar year. “Carryover water” becomes the first water used in the following year (SCWA 2005a).

### **Putah Creek Accord**

Water rights to Solano Project water are solely for Solano County water users (SCWA 2005b). The Condition 12 Settlement Agreement placed a cap on future water development in the watershed of Lake Berryessa. The Putah Creek Accord, negotiated in 2000, provides instream flow needs for Putah Creek downstream of the Putah Diversion Dam. The settlement provides for increased flows to Putah Creek, but includes reduced flows when Lake Berryessa is low in storage and includes a process for addressing illegal diversion of surface water in Putah Creek. Before the settlement, approximately 21,000 afy was released to Putah Creek to meet instream flow needs. The settlement requires the previous release amount as a baseline, with additional flows at specified times. Additionally, set flows were required at specified downstream flow locations. In normal hydrologic conditions the additional flows from the settlement amount to about an additional 1,000 afy, or 22,000 afy. In drier years the amount of additional flows increases. The Putah Creek Accord is taken into account in calculating the firm yield described above in this chapter (SCWA 2005b).

## **Solano Project Drought Measures Agreement**

As part of the renewal of the water supply contract for the Solano Project, the contracting cities (Fairfield, Vacaville, Vallejo, and Suisun City) entered into an agreement with the two agricultural Solano Project contracting districts (SID and MPWD) to share water supplies during drought periods. The “Drought Measures Agreement” was executed concurrently with the renewed Solano Project water supply agreements in 1999. The agreement is based on Solano Project storage levels, which trigger specific actions as follows:

- ▶ When Solano Project storage is less than 800,000 af on December 1, a drought contingency plan is developed. If storage is greater than 1.1 million af by the following April 1, the plan is suspended.
- ▶ When Solano Project storage is between 550,000 and 800,000 af on April 1, each of the parties to the agreement will forgo at least 5% of their contract amount that year. If storage is between 450,000 and 550,000 af on April 1, the parties forgo at least 10%. These forgone amounts are called “restricted carryover” and are credited to the party forgoing the water. This restricted carryover cannot be withdrawn from storage until Solano Project storage exceeds 800,000 af or is less than 450,000 af on a subsequent April 1. The concept is that the restricted carryover should not be used until conditions improve (storage in excess of 800,000 af) or worsen (storage less than 450,000 af). There is a further restriction for SID and MPWD.
- ▶ If storage is less than 450,000 af, the restricted carryover can be used or sold only for municipal purposes. When April 1 storage is below 450,000 af, no restricted carryover is accumulated, and full contract amounts are available. Restricted carryover cannot exceed 50% of any party’s annual contract amount. Restricted carryover is in addition to any voluntary carryover that is allowed under the Solano Project contracts.
- ▶ If Solano Project storage is less than 400,000 af on April 1, a drought emergency is declared. This will trigger the Solano Irrigation District Drought Impact Reduction Program. Under this program, SID growers will fallow land and provide up to 20,000 af for voluntary sale to cities (not restricted only to those with Solano Project contracts). Such a drought fallowing program was implemented in 1991, creating 15,000 af of SID water that was sold to cities and SCWA.

## **Vallejo Agreements**

Vallejo often has water supplies in excess of its current needs. Vallejo has entered into agreements with Benicia, Napa County, and Fairfield for sales and exchanges. Other city water exchange and banking agreements are described in Section 4.5, “Hydrology and Water Resources.”

## **Relevant Goals, Policies, and Programs of the 2008 Draft General Plan**

Implementation of the following goals, policies, and implementation programs in the Resources and Public Facilities and Services chapters of the 2008 Draft General Plan would ensure that steps are taken to promote sufficient water supply and the distribution of water to users through adequate infrastructure and public facilities appropriately located to meet projected needs.

### **Resources Chapter**

- ▶ **Policy RS.P-65:** Together with the Solano County Water Agency, monitor and manage the County’s groundwater supplies.
- ▶ **Program RS.I-70:** Together with the SCWA and the cities, create and maintain a comprehensive database of information regarding groundwater supply and quality. Seek funding to complete a

countywide groundwater study that fills the gaps among aquifer-specific studies. Coordinate with the SCWA to get more information on its groundwater study and subsequent groundwater management programs.

### ***Public Facilities and Services Chapter***

- ▶ **Goal PF.G-1:** Provide adequate public services and facilities to accommodate the level of development planned by the County.
- ▶ **Goal PF.G-2:** Ensure that residents throughout Solano County have access to essential public facilities and services.
- ▶ **Policy PF.P-1:** Provide public facilities and services essential for health, safety, and welfare in locations to serve local needs.
- ▶ **Policy PF.P-2:** Require new development and redevelopment to pay its fair share of infrastructure and public service costs.
- ▶ **Policy PF.P-3:** Increase efficiency of water, wastewater, stormwater, and energy use through integrated and cost-effective design and technology standards for new development and redevelopment.
- ▶ **Policy PF.P-4:** Ensure that adequate land is set aside within the unincorporated county for public facilities to support future needs.
- ▶ **Policy PF.P-5:** Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.
- ▶ **Policy PF.P-6:** Guide development requiring urban services to locations within and adjacent to cities.
- ▶ **Policy PF.P-7:** Coordinate with the cities to strongly encourage compact urban development within city urban growth areas to avoid unnecessary extension or reconstruction of roads, water mains, and services and to reduce the need for increased school, police, fire, and other public facilities and services.
- ▶ **Policy PF.P-8:** Notify the appropriate agencies (e.g., school districts, public safety, water) of new development applications within their service area early in the review process to allow sufficient time to assess impacts on facilities.
- ▶ **Policy PF.P-9:** Actively support efforts of the Solano County Water Agency, water districts, and regional water suppliers and distributors, to ensure that adequate high-quality water supplies are available to support current and future development projects in Solano County.
- ▶ **Policy PF.P-10:** Maintain an adequate water supply by promoting water conservation and development of additional cost-effective water sources that do not result in environmental damage.
- ▶ **Policy PF.P-11:** Promote and model practices to improve the efficiency of water use, including the use of water-efficient landscaping, beneficial reuse of treated wastewater, rainwater harvesting, and water-conserving appliances and plumbing fixtures.
- ▶ **Policy PF.P-12:** Protect the county's public water supply and delivery infrastructure from natural disasters or acts of terrorism.

- ▶ **Policy PF.P-13:** Support efforts by irrigation districts and others to expand Solano County’s irrigated agricultural areas.
- ▶ **Policy PF.P-14:** In areas identified with marginal water supplies, require appropriate evidence of adequate water supply and recharge to support proposed development and water recharge.
- ▶ **Policy PF.P-15:** Domestic water for rural development shall be provided through the use of on-site individual wells or through public water service.
- ▶ **Policy PF.P-16:** Provide and manage public water service through public water agencies.
- ▶ **Policy PF.P-17:** Limit public water infrastructure to developed areas or those designated for future development to prevent growth-inducing impacts on adjoining agricultural or open space lands.
- ▶ **Policy PF.P-18:** The minimum lot size for properties to be served by individual on-site wells and individual on-site sewage disposal systems shall be 5 acres. Where cluster development is proposed with on-site wells and sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Policy PF.P-19:** The minimum lot size for properties to be served by public water service with individual on-site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on-site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater 2.5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Program PF.I-6:** Implement the recommendations from the *English Hills Specific Plan Groundwater Investigation* establishing minimum parcel sizes to ensure adequate groundwater supply and recharge for the English Hills area.
- ▶ **Program PF.I-9:** Continue to require preparation of a water supply assessment pursuant to the California Water Code to analyze the ability of water supplies to meet the needs of regulated projects, in the context of existing and planned future water demands. Review the availability of water to serve new developments in the unincorporated area before permitting such developments and ensure that the approval of new developments will not have a substantial adverse impact on water supplies for existing water users.
- ▶ **Program PF.I-11:** Require new development proposing on-site water supplies in areas identified with marginal water supplies to perform a hydrologic assessment to determine whether project plans meet the County’s hydrologic standards.
- ▶ **Program PF.I-13:** Investigate the potential for innovative recycled water systems in Solano County, such as the use of greywater for domestic and agricultural purposes, and identify sources of funding for implementation of these systems.
- ▶ **Program PF.I-14:** Work with local partners and water agencies to educate the public about water conservation options, including landscaping, irrigation, low-water appliances, and other measures the public can take to reduce water use. Encourage water purveyors to provide incentives for customers that use water more efficiently.
- ▶ **Program PF.I-17:** Develop an information sharing program in cooperation with public water suppliers as necessary to make appropriate data available to the public pertaining to water supply and water use in each supplier’s jurisdiction.

## Conclusion

Because of the relatively small increase in water demand of 2,710 afy with the population growth proposed under the Preferred Plan and the expected increase in available water supplies from the conversion of agricultural lands to other uses, current water supplies should be sufficient to serve the proposed growth in the unincorporated areas. However, incorporated areas of Solano County are expected to experience much greater population growth through the planning period of the 2008 Draft General Plan. The entire county is projected to increase from a population of approximately 421,657 in 2005 to 677,628 by 2030 (SCWA 2005a). Because the population of unincorporated areas is projected to increase by 39,455, incorporated areas would experience an increase of approximately 216,500 persons.

Independent groundwater wells, including small systems and private wells, have no restrictions on the amount of water used and have not been currently quantified. The majority of water users in rural areas of the county would continue to be dependent on groundwater to meet their water needs. Uncertainty about long-term availability of water supplies and facilities and the lack of direct County jurisdiction over public water supplies in the region results in a level of uncertainty about the adequacy of future supplies in unincorporated areas. Further, recent depletion of the Tehama Formation aquifer would suggest that groundwater availability may also be compromised in the future. Therefore, this impact would be significant.

Short-term groundwater supplies are a reasonably foreseeable water supply for new development under the 2008 Draft General Plan. However, there is some uncertainty about the availability and adequacy of long-term groundwater supplies in Solano County because such supplies have not been adequately quantified. Because of this uncertainty, the availability of long-term water supplies for proposed new development and potential impacts as a result of insufficient supplies are also uncertain. The above-referenced regulatory requirements and proposed goals, policies, and programs in the 2008 Draft General Plan provide direction to successfully manage existing water supplies through coordination with other water agencies and groundwater users within Solano County. New water conservation and recycling programs established under the 2008 Draft General Plan would also promote the future availability of new water supplies. Program PF.I-11 would require new development proposing on-site water supplies in areas identified with marginal water supplies to perform a hydrologic assessment to determine whether project plans would meet the County's hydrologic standards. Policy PF.P-14 would also require appropriate evidence of adequate water supply and recharge to support proposed development, and water recharge would be required in areas identified with marginal water supplies. Implementation of these policies and programs would reduce the level of uncertainty about short-term water supply availability in areas where groundwater has already been established to be marginal.

Policy RS.P-65 and Program RS.I-70 call for the coordination of monitoring and management of the county's groundwater supplies, maintenance of a comprehensive database of information regarding groundwater supply and quality, efforts to obtain funding to complete a countywide groundwater study that fills the gaps among aquifer-specific studies, and coordination with SCWA to get more information on its groundwater study and subsequent groundwater management programs. These programs and policies would reduce the impacts of insufficient long-term water supplies by providing for collaboration with other groundwater users within the county to manage and obtain needed information to assess the condition of countywide groundwater resources. However, implementing the policies and programs of the 2008 Draft General Plan and fulfilling regulatory requirements would not completely avoid the uncertainty about whether sufficient long-term groundwater supplies would be available for proposed new development, or about the impacts of new water demands on long-term groundwater supplies. Therefore, this impact would be significant.

#### Mitigation Measure 4.9-1a(1): Implement Measures to Ensure Sufficient Water Supplies for Development Projects.

The County shall implement the following measures to ensure sufficient water supplies for land development projects in the unincorporated county under the 2008 Draft General Plan:

- ▶ Before approval of any project as defined in Part 2.10 of the California Water Code, the lead water supply agency shall comply with SB 610 requirements to ensure that adequate water supply is available and is sufficient to meet current and future demands.
- ▶ Before approval of any tentative small-lot subdivision map for a proposed residential project of more than 500 dwelling units (this requirement also applies to increases of 10% or more in service connections for public water systems with fewer than 500 service connections), the County shall comply with SB 221 requirements for verification of sufficient subdivision water supplies, as specified in Section 66473.7 of the Government Code.
- ▶ Before approval of any tentative small-lot subdivision map for a proposed residential project of 500 or fewer units, the County need not comply with Section 66473.7 or formally consult with the public water system that would provide water to a proposed subdivision, but shall nevertheless make a factual showing or impose conditions similar to those required by Section 66473.7 to ensure an adequate water supply for development authorized by the map.
- ▶ Before recordation of any final small-lot subdivision map, or before County approval of any project-specific discretionary approval or entitlement required for nonresidential land uses, the County or the project applicant shall demonstrate, based on substantial evidence, the availability of a long-term, reliable water supply from a public water system for the amount of development that would be authorized by the final subdivision map or project-specific discretionary nonresidential approval or entitlement. Such a demonstration shall consist of a written verification that existing sources are or will be available and that needed physical improvements for treating and delivering water to the project site will be in place before occupancy.
- ▶ The County shall comply with SB 221 requirements for verification of sufficient water supplies as specified in Section 66473.7 of the Government Code.
- ▶ Before County approval of any project-specific for industrial, special-purpose area, or public/quasi-public land use development, the County or the project applicant shall conduct a water supply assessment to demonstrate that there are sufficient projected water supplies to meet the projected demands of the project. The water supply assessment shall include the following components:
  - estimation of the safe yield from the underlying aquifer;
  - short-term and long-term water demands of the project for at least the next 20 years;
  - short-term and long-term available water supplies for at least the next 20 years;
  - comparison of short-term and long-term supply and demand;
  - comparison of the safe yield with the existing and future yields from the aquifer; and
  - disclosure of cumulative demands on the water source and disclosure of any shortcomings.

#### Mitigation Measure 4.9-1a(2): Implement a Countywide Groundwater Balance Budget and Monitoring Program.

Ongoing groundwater monitoring is critical for evaluating existing conditions and comparing groundwater extractions against projected sustainable yields on a countywide basis. To achieve this, a countywide groundwater balance budget shall be developed that incorporates the provisions of Policy RS.P-65, which calls for coordination with SCWA to monitor and manage the county's groundwater

supplies, and Program RS.I-70, which requires the County Department of Resource Management, together with SCWA and the cities, to create and maintain a comprehensive database of information about groundwater supply and quality, and to complete a countywide groundwater study that fills the gaps among disparate aquifer-specific studies in the county. The groundwater balance budget shall also address any potential groundwater supplies that may be required to maintain wetland features or wildlife habitat. This groundwater balance budget and monitoring program shall be implemented to facilitate evaluation of current groundwater conditions. It shall also provide evaluation of the effectiveness of the 2008 Draft General Plan goal, policies, and programs associated with Impact 4.5-4a in Section 4.5, “Hydrology and Water Resources,” that pertain to groundwater-recharge efforts and sustainable groundwater levels.

Mitigation Measure 4.9-1a(3): Comply with the Recommendations of the *North Solano Groundwater Resources Report* for a Staged Mitigation Plan.

The County, in coordination with SCWA, shall require certain new development projects, as specified below, to implement the following recommended principles of a “staged mitigation” monitoring plan from the *North Solano Groundwater Resources Report*:

1. Conduct a monitoring period of at least 5 years to establish a baseline condition of the aquifer.
2. If during this 5-year period static groundwater levels are observed to be dropping relative to historical levels or set thresholds, then invoke a 2-year cautionary period and increase monitoring.
3. If water levels do not recover or continue to drop during the cautionary period, then reduce groundwater dependency until groundwater levels stabilize.

The County shall apply this requirement specifically to new development projects within areas designated Water-Dependent Industrial that will demand a large amount of water (e.g., power plants) and within special-purpose areas, and to development projects requiring new community water systems that are subject to a permit from the County or DPH. Implementation of the above principles shall be required in order to enable the groundwater resources of the north central Solano County area to be safely managed and maintained into the future.

~~Although Mitigation Measure 4.9-1a(1) may work to reduce some portion of the impact associated with water supply, it would not reduce this impact to a less than significant level. Similarly, implementation of Mitigation Measure 4.9-1a(2) would partially reduce the impact of insufficient water supplies associated with uncertain future availability of groundwater. However, the ability of groundwater supplies to meet the increased water demand resulting from the implementation of the 2008 Draft General Plan would remain uncertain. For this reason, the impact would remain **significant and unavoidable**.~~

Mitigation Measure 4.9-1a(1) would reduce the impact associated with the uncertainty of long-term water supply by requiring that a water supply assessment demonstrate that long-term water supply is available before new industrial, public/quasi-public, or special-purpose areas are developed. The possibility of curtailing development would not need to be evaluated because project approval would depend on demonstrating that adequate water supplies would be available.

Mitigation Measure 4.9-1a(2) would reduce the level of uncertainty about availability of long-term water supplies countywide and would allow the county’s groundwater purveyors to better manage groundwater. A groundwater balance budget would also lead to better understanding of existing groundwater consumption by users of private wells and any groundwater demands necessary to ensure quality of wildlife habitat and wetland features. Mitigation Measure 4.9-1a(2) would also help to quantify the amount of groundwater stored within the aquifers underlying Solano County. Coordinated groundwater monitoring would identify whether increased water consumption would have an adverse impact on groundwater supplies.

Mitigation Measure 4.9-1a(3) would require that additional groundwater monitoring be performed for large water users. It would require that a staged mitigation plan be implemented to reduce the potential impacts on long-term water supplies from water consumption by new development proposed under the 2008 Draft General Plan. Implementing policies of the 2008 Draft General Plan along with the above-referenced mitigation measures would reduce the level of uncertainty about whether sufficient long-term water supplies would be available for new development. The policies and mitigation measures would establish monitoring protocols to evaluate the sufficiency of water supplies and would identify whether potential overdraft of the aquifer is occurring. Mitigation Measure 4.9-1a(3) would then require that reliance on groundwater be reduced until groundwater levels stabilize. Monitoring and staged mitigation would reduce the impact of new water demands on long-term water demands, should an unforeseeable overdraft occur.

For these reasons, with the implementation of Mitigation Measures 4.9-1a(1) through 4.9-1a(3) in conjunction with the policies and programs contained in the 2008 Draft General Plan, impacts associated with insufficient water supplies would be reduced to a **less-than-significant** level.

**IMPACT 4.9-1b** **Insufficient Water Supplies to Meet the Future Water Demand in Unincorporated Areas Served by the County – Maximum Development Scenario.** *Land uses and development consistent with the Maximum Development Scenario would increase the demand for water. Available water sources would be insufficient to serve some of the unincorporated areas of the county with the buildout of the Maximum Development Scenario. In areas with insufficient water supplies, new methods to obtain water and additional sources of supply would be required. This impact would be significant.*

This impact is similar to Impact 4.9-1a described above; however, the increased density of buildout for the Maximum Development Scenario would require additional water supply of 5,061 ~~2,531~~ afy over the Preferred Plan, for a total of 40,146 ~~5,241~~ afy (see Tables 4.9-11 and 4.9-12). For the same reasons as described above, this impact would be significant.

**Mitigation Measure 4.9-1b(1): Implement Measures to Ensure Sufficient Water Supplies for Development Projects.**

This mitigation measure is the same as Mitigation Measure 4.9-1a(1) for the Preferred Plan.

**Mitigation Measure 4.9-1b(2): Implement a Countywide Groundwater Balance Budget and Monitoring Program.**

This mitigation measure is the same as Mitigation Measure 4.9-1a(2) for the Preferred Plan.

**Mitigation Measure 4.9-1b(3): Comply with the Recommendations of the *North Solano Groundwater Resources Report* for a Staged Mitigation Plan.**

This mitigation measure is the same as Mitigation Measure 4.9-1a(3) for the Preferred Plan.

For the same reasons as described for the Preferred Plan, implementation of these mitigation measures would reduce the impact, but not to a **less-than-significant level**. ~~This impact would remain significant and unavoidable.~~

One commenter suggested that Mitigation Measure 4.9-1a(1) be modified to require that a performance bond be secured for subdivision development guaranteeing that the subdivision's water supply will operate satisfactorily for 6 years after the subdivision is completed. The comment is noted; however, requiring a performance bond to

secure water supply for a period of 6 years is arbitrary and would not adequately ensure the sufficiency of long-term water supplies, nor would it sufficiently reduce impacts associated with inadequate water supplies.

State law does not require that actual water supplies be secured for potential new development proposed under the 2008 Draft General Plan, but rather that impacts associated with new water demands and obtaining new water supplies be addressed and properly mitigated in the EIR for the 2008 Draft General Plan. In this case, the impact is that uncertainty about the availability of groundwater could result in insufficient water supplies to serve the new development proposed under the 2008 Draft General Plan EIR.

Because the availability of groundwater countywide is not fully understood, the appropriate mitigation to reduce this impact is twofold:

1. Undertake a comprehensive and coordinated approach to groundwater documentation, monitoring, and management to enable early detection of possible groundwater overdrafts and implementation of conservation measures to reduce the potential for insufficient water supplies.
2. Require each project proponent to conduct a detailed site-specific study of groundwater availability before development is approved to demonstrate that (a) there is sufficient water supply to serve the project in the long term and (b) the increased water demand from the project would not adversely affect long-term water supplies for existing development.

These requirements are established under Policies PF.P-14 and RS.P-65 and Programs PF.I-11 and RS.I-70 of the 2008 Draft General Plan and Mitigation Measures 4.9-1a(1), 4.9-1a(3), 4.9-1b(1), and 4.9-1b(3) in the DEIR. For a response to the question of why projects of 500 or more housing units trigger SB 221 requirements, please refer to pages 4.9-23 and 4.9-24 of the DEIR for a complete explanation of SB 221. SB 221 was designed to ensure that adequate water supplies would be available for larger projects, which are defined for subdivision projects as having 500 or more housing units. Regarding how large subdivisions comport with the principles of the Orderly Growth Initiative, please refer to Master Response I, "Orderly Growth Initiative," in this chapter of the FEIR.

To address comments alleging an inadequate analysis in the DEIR of water storage and water related infrastructure impacts, Impacts 4.9-2a and 4.9-2b in Section 4.9, "Public Services and Utilities," have been revised. As shown in Chapter 4 of this FEIR, Impacts 4.9-2a and 4.9-2b on page 4.19-41 through 4.9-43 of the DEIR are revised as follows:

**IMPACT 4.9-2a** *New or Expanded Water Supply Facilities – Preferred Plan. Expansion and extension of water supply and distribution facilities is required for buildout of the 2008 Draft General Plan under the Preferred Plan. Although goals and policies have been identified to reduce impacts, construction of these facilities could result in significant effects on the environment. This impact would be **significant**.*

Demand for water would continue to increase with the population and job growth projected under the 2008 Draft General Plan, and the need for additional water supply facilities could increase. Increased density of development in unincorporated areas of the county would require provision of additional water. Portions of the unincorporated county where future growth could be expected would be located within existing MSAs, and would obtain services from those districts. Areas outside of MSA boundaries would be served through annexation of additional properties into existing MSA boundaries or would require individual water wells. Consequently, most of the new development would be expected to require individual wells.

Because groundwater would be the main source of future water supplies serving new residential populations and industrial land uses within the unincorporated areas of the county, new wells would be

installed and additional infrastructure may be required to provide operational, fire, and emergency storage for new development to ensure consistent groundwater supply. Infrastructure needs may include water distribution systems, treatment systems, or water storage facilities; however, these infrastructure needs would be evaluated on a project-by-project basis. Identifying specific infrastructure needs in this EIR would be speculative.

For unincorporated areas of the county also located within the service areas of local water districts, an expansion of service connections to local water agencies could include additional groundwater wells, water treatment facilities, pipelines, pump houses, and conveyance facilities to obtain, convey, and store groundwater or surface-water supplies. Facilities required to serve projected population growth and development could include additional groundwater wells, water treatment facilities within various service districts, pipelines, pump houses, and wells. As water reuse increases, facilities that recycle used water may also be needed, depending on the needs of each public water purveyor. The site-specific impacts of these facilities cannot be determined until such facilities are proposed and subjected to environmental review.

Typical impacts related to new or expanded facilities may include the following:

- ▶ exposure of soils to erosion and loss of topsoil,
- ▶ cumulative surface-water quality impacts,
- ▶ conversion of existing agricultural lands or resources,
- ▶ construction-related air emissions,
- ▶ construction-related and operational noise impacts,
- ▶ visual and/or light and glare impacts,
- ▶ increased energy use associated with pumps and other mechanical equipment, and
- ▶ loss of protected species and their habitats.

In addition, if local water districts expand to supply new customers that are currently outside the districts' existing service-area boundaries, a reduction of service levels could occur for existing customers. The development of new sources of groundwater and surface water and reductions in service levels could also cause adverse social and economic impacts such as an increase in water rates to cover new infrastructure and more frequent water use restrictions, and perhaps losses of agricultural yield or production at affected businesses.

The County would be responsible for determining project-specific impacts of new development that would require individual water wells or water systems within the unincorporated portions of the county. It would be the responsibility of those service districts where expansion is proposed to determine impacts as a result of water service expansion. , but would likely consist of impacts from construction-related noise, dust, and grading. The fact that water facilities may be located near streams or water bodies would mean that impacts on fish and wildlife, erosion, and streamflow may also occur.

## **Relevant Policies and Programs of the 2008 Draft General Plan**

To meet the demands related to increased water facility and supply, several policies and programs in the 2008 Draft General Plan would reduce some of the environmental impacts related to the demand for new or expanded water facilities:

- ▶ **Policy PF.P-5:** Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.
- ▶ **Policy PF.P-6:** Guide development requiring urban services to locations within and adjacent to cities.

- ▶ **Policy PF.P-7:** Coordinate with the cities to strongly encourage compact urban development within city urban growth areas to avoid unnecessary extension or reconstruction of roads, water mains, and services and to reduce the need for increased school, police, fire, and other public facilities and services.
- ▶ **Policy PF.P-9:** Actively support efforts of the Solano County Water Agency, water districts, and regional water suppliers and distributors, to ensure that adequate high-quality water supplies are available to support current and future development projects in Solano County.
- ▶ **Policy PF.P-11:** Promote and model practices to improve the efficiency of water use, including the use of water-efficient landscaping, beneficial reuse of treated wastewater, rainwater harvesting, and water-conserving appliances and plumbing fixtures.
- ▶ **Policy PF.P-14:** In areas identified with marginal water supplies, require appropriate evidence of adequate water supply and recharge to support proposed development and water recharge.
- ▶ **Policy PF.P-16:** Limit public water infrastructure to developed areas or those designated for future development to prevent growth-inducing impacts on adjoining agricultural or open space lands.
- ▶ **Policy PF.P-19:** The minimum lot size for properties to be served by public water service with individual on site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater 2.5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Program PF.I-13:** Investigate the potential for innovative recycled water systems in Solano County, such as the use of greywater for domestic and agricultural purposes, and identify sources of funding for implementation of these systems.
- ▶ **Program PF.I-14:** Work with local partners and water agencies to educate the public about water conservation options, including landscaping, irrigation, low-water appliances, and other measures the public can take to reduce water use. Encourage water purveyors to provide incentives for customers that use water more efficiently.
- ▶ **Program PF.I-18:** Develop an information sharing program in cooperation with public water suppliers as necessary to make appropriate data available to the public pertaining to water supply and water use in each supplier's jurisdiction.

## Conclusion

Although the policies described above may reduce some of the adverse environmental impacts associated with the construction and operation of new or expanded water supply facilities, an analysis of site-specific impacts would be ~~speculative beyond the scope of this EIR~~. Such impacts would be evaluated as part of a separate environmental review for the individual project. This impact would be significant.

## Mitigation Measure

No mitigation is available beyond the updated 2008 Draft General Plan policies and programs discussed in the impact analysis above. This impact would remain **significant and unavoidable**.

**IMPACT 4.9-2b** **New or Expanded Water Supply Facilities – Maximum Development Scenario.** *Expansion and extension of water supply and distribution facilities is required for buildout of the 2008 Draft General Plan under the Maximum Development Scenario. Although goals and policies have been identified to reduce impacts, construction of these facilities that could result in significant effects on the environment. Although goals and policies have been identified to reduce impacts, construction of these facilities could result in significant effects on the environment. This impact would be **significant**.*

This impact is similar to Impact 4.9-2a described above; however, the increased density of buildout for the Maximum Development Scenario would increase demand for water facilities more than under the Preferred Plan. Although the policies described above may reduce some of the adverse environmental impacts associated with the construction and operation of new or expanded water supply facilities, analysis of site-specific impacts is beyond the scope of this EIR. Such impacts would be evaluated as part of a separate environmental review for the individual project. For the same reasons as described above, this impact would be significant.

#### Mitigation Measure

No mitigation is available beyond the updated 2008 Draft General Plan policies and programs discussed under Impact 4.9-2a above. This impact would remain **significant and unavoidable**.

One commenter requested a mitigation measure requiring that new water storage facilities (aboveground and/or buried) be developed and operated in conformance with the current water master plans in place for each MSA. As mentioned within the revised “Methodology” discussion in Section 4.9.3 of the DEIR (see above), any new water storage facility that would be required in unincorporated Solano County within an MSA would be evaluated as part of city annexation and would be incorporated within each city’s general plan. Any new water storage facility that would be required to serve unincorporated Solano County within the service area of a local water district would be constructed by the local district according to its own standards. Individual water storage systems for projects using water from private wells would be required to construct water storage facilities in accordance with County standards. Because the impact of new water treatment and storage facilities is limited to the unincorporated areas that are located outside of the MSAs, this recommended mitigation measure would not apply to or reduce the impacts of new water supply facilities.



### 3 COMMENTS AND INDIVIDUAL RESPONSES

This chapter contains the comment letters received on the DEIR followed by individual responses to those comments not addressed in Chapter 2, “Master Responses.” Comment letters and responses to comments are arranged in the following order:

- ▶ Federal Agencies
- ▶ State Agencies
- ▶ Regional Agencies
- ▶ Local Agencies
- ▶ Organizations
- ▶ Individuals
- ▶ Commenters at April 2008 workshops on the 2008 Draft General Plan
- ▶ Agency Comments Received after the Close of the Comment Period
- ▶ Other

Each letter and each comment within a letter have been given an identification number. Responses are numbered so that they correspond to the appropriate comment. Where appropriate, responses are cross-referenced between letters or with a master response. Attachments referenced by commenters within their letters are a part of the County’s administrative record and are available for public review during regular business hours at the Solano County Department of Resource Management, 675 Texas Street, Suite 5500, Fairfield, California 94533.

Table 3-1 provides a list of all agencies and persons who submitted comments on the DEIR during the public review period and who commented on the DEIR during workshops held throughout the county in April 2008.

<b>Table 3-1 List of Commenters</b>			
Comment No.	Commenter	Agency	Date
<b>Federal Agencies</b>			
1	Cay C. Gonde, Assistant Field Supervisor, Endangered Species Program	U.S. Fish and Wildlife Service	June 6, 2008
<b>State Agencies</b>			
2	Lisa Carboni, District Branch Chief, Local Development—Intergovernmental Review	California Department of Transportation	June 2, 2008
3	Brian Leahy, Assistant Director	California Department of Conservation, Division of Land Resource Protection	May 8, 2008
4	Suzanne Butterfield, Deputy Director, Special Projects	Delta Protection Commission	January 3, 2008
5	Charles Armor, Regional Manager, Bay Delta Region	California Department of Fish and Game	May 30, 2008
<b>Regional Agencies</b>			
6	Matthew R. Jones, Senior Air Quality Planner	Yolo/Solano Air Quality Management District	May 29, 2008
7	Maureen Gaffney, Bay Trail Planner	Bay Trail Project of Association of Bay Area Governments	May 30, 2008
8	Sahrye Cohen, Coastal Planning Analyst	San Francisco Bay Conservation and Development Commission	June 2, 2008

**Table 3-1  
List of Commenters**

Comment No.	Commenter	Agency	Date
9	Kathleen Caringi, Land Planner	Pacific Gas and Electric Company	May 30, 2008
<b>Local Agencies</b>			
10	Mary Ann Courville, Mayor	City of Dixon	May 28, 2008
11	Erin Beavers, Assistant Director, Department of Community Development	City of Fairfield	June 2, 2008
12	Scott D. Sexton, Director of Community Development	City of Vacaville	June 2, 2008
13	Rick Martinez, Chairman	Dixon Regional Watershed Joint Powers Authority	May 28, 2008
14	Alexander O. Rodriguez, Fire Chief	City of Dixon Fire Department	May 23, 2008
15	Alexander O. Rodriguez, Fire Chief	City of Dixon Fire Department	May 30, 2008
16	Shaun Pritchard, Executive Officer	Solano Local Agency Formation Commission	June 2, 2008
17	Robert Macaulay, Director of Planning	Solano Transportation Authority	May 30, 2008
18	Heather McCollister, Community Development Director	City of Suisun City	June 2, 2008
<b>Organizations</b>			
19	Robin Leong, Member of Conservation Committee	Napa-Solano Audubon Society	June 2, 2008
20	Janet S. Cobb, President	California Oak Foundation	May 22, 2008
21	Vince Vitalie	Collinsville Coalition for Protection of the Environment	June 2, 2008
22	Michael Garabedian, Founding Member	Critical Mass Agriculture	June 2, 2008
23	Jonathan Evans, Staff Attorney	Center for Biological Diversity	June 2, 2008
24	Nicole Byrd, Field Representative	Greenbelt Alliance	June 2, 2008
25	Duane Kromm	Solano County Orderly Growth Committee	June 2, 2008
26	Matthew D. Zinn	Shute, Mihaly & Weinberger LLP	June 2, 2008
27	Kenn Browne, Vice Chair	Sierra Club/Solano Group	June 2, 2008
28	Marilyn Farley, Executive Director	Solano Land Trust	June 2, 2008
29	David Isaac Tam, Research and Development Director	Sustainability, Parks, Recycling And Wildlife Legal Defense Fund (SPRAWLDEF)	June 2, 2008
<b>Individuals</b>			
30	Bob Berman	NA	June 2, 2008
31	Belinda T. Smith, AICP	NA	June 2, 2008
32	Ernst Bak	NA	May 13, 2008
33	Ernst Bak	NA	May 28, 2008
34	Ernst Bak	NA	May 30, 2008
35	Ernst Bak	NA	June 2, 2008

**Table 3-1  
List of Commenters**

Comment No.	Commenter	Agency	Date
36	Ernst Bak	NA	June 3, 2008
37	Ernst Bak	NA	June 2, 2008
38	George Guynn, Jr.	NA	June 2, 2008
39	Grant A. Kreinberg	NA	May 30, 2008
40	Gerald Shirar	NA	May 28, 2008
41	William S. Reustle	NA	July 6, 2007
42	Jack Batson	NA	June 2, 2008
43	June Guidotti	NA	June 1, 2008
44	John Kocourek	NA	May 28, 2008
45	Lawrence Zinkin	NA	May 27, 2008
46	Marime Burton	NA	June 2, 2008
47	Mimi Fleige	NA	May 20, 2008
48	Maureen Kocourek	NA	May 28, 2008
49	Martin Ramirez	NA	June 1, 2008
50	Roberto Valdez Jr.	NA	June 2, 2008
51	James D. DeKloe	Biological Sciences and Technology, Solano Community College	June 1, 2008
52	Michelle LaPena	LaPena Law Corporation	April 29, 2008
<b>Commenters at the April 2008 General Plan Workshops</b>			
53	Mark Martinsan	Solano Irrigation District	April 21, 2008
54	Ben de Groot	De Groot Enterprises	April 21, 2008
55	Margi Stern	NA	April 21, 2008
<b>Agency Comments Received after the Close of the Comment Period</b>			
56	Esther Blanco, Community Services Management Analyst	City of Fairfield Community Services Department	June 5, 2008
57	Deborah R. Slon, Deputy Attorney General, for Edmund G. Brown Jr., Attorney General	California Department of Justice, Office of the Attorney General	June 16, 2008
58	Elizabeth Patterson, Mayor	City of Benicia	June 4, 2008 (received by Solano County June 16, 2008)
<b>Other</b>			
59	Jenny Bard, Assistant Director of Communications and Advocacy	American Lung Association of California	May 22, 2008

### **3 COMMENTS AND INDIVIDUAL RESPONSES**

Please refer to Volume II of this FEIR for Chapter 3, which contains the comment letters received on the DEIR for the 2008 Draft General Plan followed by individual responses to those comments not addressed in Chapter 2.

## 4 CORRECTIONS AND REVISIONS TO THE DEIR

This chapter includes revisions made to the text in the DEIR after its publication and public review. The changes shown in this chapter reflect all of the following:

- ▶ clarifications in response to comments received on the DEIR,
- ▶ correction of production or typographical errors,
- ▶ addition or deletion of text, and
- ▶ inclusion of additional information in response to questions from those commenting on the DEIR.

The changes are presented in the order in which the original text appeared in the DEIR and are identified by DEIR page number. Revisions are shown as excerpts from the DEIR text, with strikethrough text (~~strikethrough~~) for deletions and underlined text (underlining) for additions.

### CHAPTER 1, “INTRODUCTION”

The second paragraph of Section 1.6, “Relationship to Other County Plans and Zoning,” on page 1-5 of the DEIR is revised as follows:

The County’s adoption of the 2008 Draft General Plan may lead to revisions to the County’s Development Code, including the Zoning Ordinance. It is possible that changes could be made to other existing County plans and programs as well, including changes to the Orderly Growth Initiative, depending on the final adopted provisions of the 2008 Draft General Plan. Any inconsistencies with the Orderly Growth Initiative would require approval by Solano County voters to allow the County Board of Supervisors to adopt the 2008 Draft General Plan.

A number of future actions may be based, in whole or in part, on the environmental evaluation undertaken as part of the 2008 Draft General Plan and this EIR. Review and approval of subsequent development projects may require review and approval by agencies including but not limited to:

The paragraph under Section 1.7, “Subsequent Actions Required,” on page 1-7 of the DEIR is revised as follows:

Further actions or procedures required to allow implementation of the 2008 Draft General Plan would include the processing of zoning ordinances, specific plans, tentative maps, site design plans, building permits, and/or grading permits. These actions would occur as part of future development project proposals, which would also be subject to CEQA requirements. The only discretionary action anticipated to be taken by the County involves adoption of the 2008 Draft General Plan itself. In addition, the Solano Local Area Formation Commission (LAFCO) has authority to create new or expand existing public agencies that provide municipal services that may be necessary to serve future growth envisioned for Solano County.

The following text is added as the third bullet in the bulleted list on page 1-9 of the DEIR:

- ▶ California Department of Conservation, Division of Mines and Geology (contains the Farmland Mapping and Monitoring Program, Williamson Act Program, and the California Farmland Conservancy Program)

The following text is added to the end of the first bulleted list under Section 1.10, “Agencies Expected to Use this EIR,” on page 1-10 of the DEIR:

- ▶ Solano Local Area Formation Commission (review, approval, and/or policy amendment for the formation of new or expansion of existing municipal service agencies)

## **CHAPTER 2, “EXECUTIVE SUMMARY”**

Impacts and mitigation measures that have changed since the DEIR are presented beginning on the next page.

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<b>4.1 Land Use</b>			
<p><b>4.1-4a (Preferred Plan) and 4.1-4b (Maximum Development Scenario): Incompatibility with Established Land Uses.</b> Implementation of the 2008 Draft General Plan would result in changes in land use type, density, and scale in existing agricultural areas and in areas adjacent to incorporated cities and unincorporated communities. These changes would result in land use conflicts and incompatibilities. Although the 2008 Draft General Plan contains policies and programs to reduce incompatibilities, the impacts would not be fully mitigated. This impact would be <b>significant</b>.</p>	S	<p><b>Mitigation Measures 4.1-4a(1) (Preferred Plan) and 4.1-1b(1) (Maximum Development Scenario):</b> Require Minimum Mitigation Ratio of 1.5:1 or Higher for Farmland Conversion.</p> <p>Program AG.I-1 of the 2008 Draft General Plan shall be amended to have a minimum mitigation ratio of 1.5:1 or higher for farmland conversion to mitigate the impacts of new nonagricultural uses on adjacent and neighboring agricultural operations. Program AG.I-1 shall be amended to read as follows.</p> <p>AG.I-1: Create and adopt a farmland conversion mitigation program and ordinance. Require compensation for loss of agricultural land. Establish appropriate mitigation ratios for the program or utilize a graduated mitigation mechanism. The mitigation ratio shall be a minimum of 1.5:1 (1.5 acres of farmland protected through mitigation for each acre of farmland converted). The program shall not present regulatory barriers to agritourism, agricultural services, and agricultural processing in regions and within land use designations where such uses are permitted and encouraged. The program shall also establish mitigation within the same agricultural region as the proposed development project, or within the Agricultural Reserve Overlay district, as a preferred strategy. The program shall incorporate a fee option, and shall provide an exemption for farmworker housing. Mitigation lands shall be of similar agricultural quality to the lands being converted.</p> <p><b><u>Mitigation Measures 4.1-4a(2) (Preferred Plan) and 4.1-1b(2) (Maximum Development Scenario):</u></b> <u>Require Use of Clustering and Building Envelope Size and Locational Controls.</u></p> <p><u>Policy LU.P-17 of the 2008 Draft General Plan shall be amended to require the use of clustering and building envelope size and locational controls to mitigate the impacts of new nonagricultural uses on adjacent and neighboring agricultural</u></p>	SU

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>operations. Policy LU.P-17 shall be amended to read as follows (deletions shown in <del>strikeout text</del> and insertions shown in <i>italics</i>):</p> <p><u>LU.P-17: <del>Encourage</del> <i>Require</i> clustering of residential development and the use of building envelope size and locational controls in residential development when necessary to preserve agricultural lands, natural resource areas and environmental quality, to provide for the efficient delivery of services and utilities, and to mitigate potential health and safety hazards.</u></p> <p>Although Mitigation Measures 4.1-4a(1) and 4.1-4a(2) may work to reduce some portion of the impact associated with agricultural and nonagricultural use conflicts, <del>it</del> <u>they</u> would not reduce these impacts to below a level of significance. For this reason, the impact would remain significant and unavoidable.</p>	
<p><b>4.2 Air Quality</b></p>			
<p><b>4.2-1a (Preferred Plan) and 4.2-1b (Maximum Development Scenario): Generation of Short-Term Construction-Related Emissions of Criteria Air Pollutants and Precursors.</b> Emissions of ROG and NO<sub>x</sub> during construction consistent with the 2008 Draft General Plan would exceed BAAQMD's significance threshold of 80 lb/day and YSAQMD's significance threshold of 10 TPY for ROG and NO<sub>x</sub> and 80 lb/day for PM<sub>10</sub>. In addition, control measures recommended by BAAQMD and YSAQMD for construction-related emissions of PM<sub>10</sub> are not currently required, nor are they projected to be required. Thus, construction-related emissions of criteria air pollutants and precursors could violate an ambient air quality standard, contribute substantially to an existing or predicted air quality violation, and/or expose sensitive receptors to substantial pollutants. As a result, this impact would be <b>significant</b>.</p>	<p>S</p>	<p><b>Mitigation Measures 4.2-1a(1) (Preferred Plan) and 4.2-1b(1) (Maximum Development Scenario): Require Implementation of Supplemental Measures to Reduce Construction-Related Exhaust Emissions.</b> In addition to the measures recommended by BAAQMD and YSAQMD for construction emissions of PM<sub>10</sub> and incorporated into the 2008 Draft General Plan under Program HS.I-60, the County shall require each project applicant, as a condition of project approval, to implement the following measures to further reduce exhaust emissions from construction-related equipment:</p> <ul style="list-style-type: none"> <li>▶ Commercial electric power shall be provided to the project site in adequate capacity to avoid or minimize the use of portable gas-powered electric generators and equipment.</li> <li>▶ Where feasible, equipment requiring the use of fossil fuels (e.g., diesel) shall be replaced or substituted with electrically driven equivalents (provided that they are not run via a portable generator set).</li> <li>▶ To the extent feasible, alternative fuels and emission controls shall be used to further reduce NO<sub>x</sub> and PM<sub>10</sub></li> </ul>	<p>SU</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>exhaust emissions.</p> <ul style="list-style-type: none"> <li>▶ On-site equipment shall not be left idling when not in use in accordance with applicable state and air district guidance.</li> <li>▶ The hours of operation of heavy-duty equipment and/or the amount of equipment in use at any one time shall be limited.</li> <li>▶ Construction shall be curtailed during periods of high ambient pollutant concentrations; this may involve ceasing construction activity during the peak hour of vehicular traffic on adjacent roadways or on Spare the Air Days.</li> <li>▶ Staging areas for heavy-duty construction equipment shall be located as far as possible from sensitive receptors.</li> <li>▶ Before construction contracts are issued, the project applicants shall perform a review of new technology, in consultation with BAAQMD and YSAQMD, as it relates to heavy-duty equipment, to determine what (if any) advances in emissions reductions are available for use and are economically feasible. Construction contract and bid specifications shall require contractors to utilize the available and economically feasible technology on an established percentage of the equipment fleet. It is anticipated that in the near future, both NO<sub>x</sub> and PM<sub>10</sub> control equipment will be available.</li> </ul> <p><b>Mitigation Measures 4.2-1a(2) (Preferred Plan) and 4.2-1ab(2) (Maximum Development Scenario): Require Implementation of Supplemental Measures to Reduce Fugitive PM<sub>10</sub> Dust Emissions.</b> In addition to the required basic control measures, the County shall require each project applicant, as a condition of project approval, to implement the following enhanced and additional control measures recommended by BAAQMD and YSAQMD to further reduce fugitive PM<sub>10</sub> dust emissions:</p> <ul style="list-style-type: none"> <li>▶ Hydroseeding shall be used or nontoxic soil stabilizers shall be applied to inactive construction areas (previously graded areas inactive for 10 days or more).</li> </ul>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> <li>▶ Exposed stockpiles (e.g., dirt, sand) shall be enclosed, covered, or watered twice daily, or nontoxic soil binders shall be applied to such stockpiles.</li> <li>▶ Traffic speeds on unpaved roads shall be limited to 15 mph.</li> <li>▶ Sandbags or other erosion control measures shall be installed to prevent runoff of silt to public roadways.</li> <li>▶ Vegetation shall be replanted in disturbed areas as quickly as possible.</li> <li>▶ Wheel washers shall be installed on all exiting trucks, or the tires or tracks of all trucks and equipment leaving the site shall be washed off.</li> <li>▶ Windbreaks shall be installed or trees/vegetative windbreaks shall be planted at windward side(s) of construction areas.</li> <li>▶ Excavation and grading activity shall be suspended when winds (instantaneous gusts) exceed 25 mph.</li> <li>▶ The area subject to excavation, grading, and other construction activity at any one time shall be limited, as necessary.</li> </ul>	
<p><b>4.2-2a (Preferred Plan) and 4.2-2b (Maximum Development Scenario): Consistency with Air Quality Planning Efforts.</b>            Future development in Solano County would generate emissions of criteria air pollutants (PM<sub>10</sub>) and ozone precursors, both of which affect regional air quality. Anticipated population and development consistent with the 2008 Draft General Plan could lead to operational (mobile-source and area-source) emissions that exceed thresholds. This impact would be <b>significant</b>.</p>	<p>S</p>	<p><b>Mitigation Measures 4.2-2a (Preferred Plan) and 4.2-2b (Maximum Development Scenario): Coordinate with Air Districts on Assumptions from Air Quality Plan Updates.</b>            The County shall coordinate with BAAQMD and YSAQMD at the earliest opportunity to ensure that all new assumptions from new air quality plan updates are implemented as part of the 2008 Draft General Plan.</p> <p><u>The County shall also do the following:</u></p> <ul style="list-style-type: none"> <li>▶ <i>Meet air quality standards:</i> Seek to attain or exceed the more stringent of federal or state ambient air quality standards for each measured pollutant.</li> <li>▶ <i>Require mitigation of air quality impacts:</i> Require projects that generate significant levels of air pollutants to incorporate best available air quality mitigation in the</li> </ul>	<p>SU</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>project design.</p> <ul style="list-style-type: none"> <li>▶ <i>Inform regional and local agencies:</i> Notify regional and local jurisdictions of proposed projects in unincorporated areas that may affect regional air quality, as identified by BAAQMD, YSAQMD, and ARB.</li> <li>▶ <i>Evaluate air quality impacts of proposed projects and plans:</i> As part of the environmental review process, use the current applicable air district guidance to evaluate the significance of air quality impacts from projects or plans, and to establish appropriate minimum mitigation requirements necessary for project or plan approval.</li> </ul> <p><i>Assist in the enforcement of air quality standards:</i> Assist EPA, ARB, and applicable air district with measuring emissions and enforcing the provisions of the Clean Air Act and regional rules and regulations.</p>	
<p><b>4.2-4a (Preferred Plan) and 4.2-4b (Maximum Development Scenario): Generation of Long-Term, Operational, Local Mobile-Source Emissions of CO.</b> Based on BAAQMD’s and YSAQMD’s screening criteria, implementation of the 2008 Draft General Plan could result in LOS levels being lowered to LOS E or LOS F at some county intersections resulting in long-term operational, local mobile-source emissions of CO that substantially contribute to emissions concentrations or exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm. As a result, this impact would be <b>significant</b>.</p>	<p>S</p>	<p><b>Mitigation Measures 4.2-4a(1) (Preferred Plan) and 4.2-4b(1) (Maximum Development Scenario): Require Implementation of Measures to Reduce Operational Emissions from Mobile Sources.</b> The County shall require each project applicant, as a condition of project approval, to implement the following mitigation measures, as appropriate:</p> <ul style="list-style-type: none"> <li>▶ Intersections affected by individual projects shall be evaluated for violations of CO concentration thresholds.</li> <li>▶ Development review shall focus on upgrading roads in Solano County to County design standards if the new development significantly contributes to the need to upgrade these roads, regardless of whether the new development occurs inside a city or within the unincorporated county.</li> </ul> <p>The County shall support regular monitoring of the transportation system by the California Department of Transportation and the Solano Transportation Authority, with emphasis on studying congested areas to identify the cause, duration, and severity of the congestion.</p>	<p>SU</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p><b><u>Mitigation Measures 4.2-4a(2) (Preferred Plan) and 4.2-4b(2) (Maximum Development Scenario):</u></b> Implement EPA Recommendations for Wood-Burning Appliances. All new wood-burning appliances installed in the county shall be installed in accordance with EPA recommendations and the County shall consider a replacement program in coordination with BAAQMD and YSAQMD.</p>	
<p><b>4.2-5a (Preferred Plan) and 4.2-5b (Maximum Development Scenario): Exposure of Sensitive Receptors to Emissions of Toxic Air Contaminants.</b> With implementation of the 2008 Draft General Plan, new or modified sources of TACs could be placed near existing sensitive receptors, and new sensitive receptors could be developed near existing sources of TACs. As a result, sensitive receptors could be exposed to substantial concentrations of TACs. This impact would be <b>less than significant</b> for construction-related emissions, but <b>significant</b> for some types of operational emissions.</p>	S/LTS	<p><b>Mitigation Measures 4.2-5a (Preferred Plan) and 4.2-5b (Maximum Development Scenario): Require Implementation of Measures to Reduce the Potential for Exposure to TACs from Mobile Sources.</b> The County shall require each project applicant to implement the following measures as a condition of project approval:</p> <ul style="list-style-type: none"> <li>▶ Activities involving idling trucks shall be oriented as far away from and downwind of existing or proposed sensitive receptors as feasible.</li> <li>▶ <u>Applicable state and air district guidance shall be followed and strategies shall be incorporated to reduce the idling time of main propulsion engines through alternative technologies such as IdleAire, electrification of truck parking, and alternative energy sources for TRUs to allow diesel engines to be completely turned off.</u></li> <li>▶ Proposed developments shall incorporate site plans that move sensitive receptors as far as feasibly possible from major roadways (100,000+ average daily trips) <u>and shall follow all applicable state and air district guidance in relation to TAC reduction methods.</u></li> </ul>	SU
<b>4.3 Noise</b>			
<p><b><u>4.3-3a (Preferred Plan) and 4.3-3b (Maximum Development Scenario): Traffic Noise Level Increases Caused by Development Consistent with the 2008 Draft General Plan.</u></b> Implementation of the 2008 Draft General Plan would result in greater traffic volumes on county roadways than currently exists. The greater traffic volumes would result in increased traffic noise on county roadways. This impact would be <b>significant</b>.</p>	S	<p><b><u>Mitigation Measures 4.3-3a (Preferred Plan) and 4.3-3b (Maximum Development Scenario):</u></b> Adopt Countywide Noise Reduction Program. The County shall adopt a countywide noise reduction program to reduce traffic and other noise levels countywide. The program shall include, but shall not be limited to, the following specific elements for noise abatement consideration where reasonable and feasible:</p>	SU

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> <li>▶ Noise barrier retrofits</li> <li>▶ Truck usage restrictions</li> <li>▶ Reduction of speed limits</li> <li>▶ Use of quieter paving materials</li> <li>▶ Building façade sound insulation</li> <li>▶ Traffic calming</li> <li>▶ Additional enforcement of speed limits and exhaust noise laws</li> <li>▶ Signal timing</li> </ul> <p>It is recognized that the above 2008 Draft General Plan policies and Mitigation Measure 4.3-4-3a, used individually or collectively, can result in a reduction of traffic noise levels at affected sensitive receptor locations. Nonetheless, despite the implementation of such a noise abatement program, it is infeasible to ensure that existing residential uses will not be exposed to future traffic noise levels exceeding the County’s noise standards or significantly exceeding levels they are exposed to today. <u>For example, it may not be possible to construct a noise barrier at an existing residence due to engineering constraints (utility easements or driveway openings), and building façade sound insulation would only benefit interior spaces, so outdoor activity areas may still be affected. It may also be infeasible to reduce speed limits in areas where speed surveys would not safely support the reduction. In addition, busy streets tend to also serve commercial uses, so restricting trucks on the busier streets may be impractical. Although a combination of the listed measures could be highly effective in reducing traffic noise levels on a countywide basis, it is not possible to state with absolute certainty that it would be possible to mitigate this impact at every noise-sensitive use within the County.</u> As a result, this impact would remain <b>significant and unavoidable</b>.</p>	
<b>4.6 Biological Resources</b>			
<b>4.6-1a (Preferred Plan) and 4.6-1b (Maximum Development Scenario): Loss of Habitat for Swainson’s Hawk, Other Raptors, and Burrowing Owl.</b> Buildout of the 2008 Draft General Plan could result in the conversion of 5,697 acres of agricultural habitat, resulting in the loss of habitat for Swainson’s hawk and other raptors, as well as burrowing owl	S	<b>Mitigation Measures 4.6-1a (Preferred Plan) and 4.6-1b (Maximum Development Scenario): Preserve Agricultural Foraging Habitat.</b> The County shall implement the following measures to mitigate permanent impacts of future projects consistent with the 2008 Draft General Plan on Swainson’s hawk and burrowing owl foraging habitat in agricultural areas of	LTS

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<p>and other resident and migratory wildlife species. This impact would be <b>significant</b>.</p>		<p>Solano County:</p> <p><b>(1) Preservation of Foraging Habitat.</b> Agricultural foraging habitat shall be preserved and managed at a 1:1 ratio (mitigation impact acreage), where the foraging habitat preserved is of equal or better quality than the foraging habitat affected. Habitat preservation may be achieved through the purchase of credits at an authorized mitigation bank, fee title (with an applicable conservation easement dedicated to an approved organization), or purchase of suitable conservation easements directly from landowners. All habitat preserves established shall have a resource management plan prepared by one or more qualified persons experienced in the development and implementation of restoration, mitigation, and management plans for the Swainson’s hawk and burrowing owl. At a minimum, the resource management plan shall do the following:</p> <ul style="list-style-type: none"> <li>▶ specify control measures and programs for invasive exotic and noxious weeds, to be implemented in perpetuity and include annual surveys to visually assess and identify weed infestations and identify annual control measures;</li> <li>▶ specify control measures for invasive and destructive nonnative animal species, to be implemented in perpetuity and include annual surveys to visually assess and identify new infestations and appropriate control measures;</li> <li>▶ create a management endowment or other permanent funding mechanism that is acceptable to the long-term management entity and sufficient to manage the property in perpetuity, consistent with the approved management plan;</li> <li>▶ provide for replacement of nesting habitat for the Swainson’s hawk distributed throughout the agricultural areas of Solano County;</li> <li>▶ specify maintenance requirements and responsibilities for implementation, long-term ownership and/or management responsibility, annual reporting requirements, and a funding mechanism; and</li> </ul>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> <li>▶ provide for permanent preservation under a conservation easement that prohibits all of the following:                             <ul style="list-style-type: none"> <li>• plantings of orchards and/or vineyards, except in designed farmstead areas;</li> <li>• cultivation of perennial vegetable crops, <u>rice, and cotton annual crops</u>;</li> <li>• commercial feedlots (defined as any open or enclosed areas where domestic livestock owned by other than the grantor are grouped together for intensive feeding purposes);</li> <li>• horticultural specialties, including sod, nursery stock, ornamental shrubs, ornamental trees, and flowers;</li> <li>• commercial greenhouses or plant nurseries; <del>and</del></li> <li>• commercial aquaculture of aquatic plants and animals and their byproducts; <del>and</del></li> <li>• <u>commercial wind energy development.</u></li> </ul> </li> </ul> <p><b>(2) Additional Measures for Protection of Burrowing Owl Habitat.</b> Agricultural habitat preserves shall meet the following additional criteria to mitigate the loss of burrowing owl foraging habitat:</p> <ul style="list-style-type: none"> <li>▶ <i>Suitable Burrow and Cover Habitat.</i> A minimum of 1 acre of habitat per 80 acres of preserve land shall be permanently taken out of production to provide suitable nesting and cover habitat for burrowing owls. This 1 acre shall consist of one continuous block of habitat and shall not be adjacent to a County road or highway.</li> <li>▶ <i>Artificial Burrows.</i> A minimum of two burrow complexes (three burrows per complex) shall be installed and maintained in perpetuity within the 1 acre of habitat set aside for burrowing owls.</li> <li>▶ <i>Vegetation Height:</i> Within the 1 acre of habitat set aside from agricultural production for burrowing owls, management measures shall be implemented and adequately funded to maintain average effective vegetation height at 6 inches or less from February 1 through April 15, when owls</li> </ul>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		typically select mates and nest burrows. In addition, the set-aside area must be kept free of tree and shrub canopy cover in perpetuity.	
<p><b>4.6-2a (Preferred Plan) and 4.6-2b (Maximum Development Scenario): Loss of Value of Upland Grassland, Oak Woodland, Oak Savanna, and Scrub/Chaparral Habitats.</b>                      Buildout of the 2008 Draft General Plan would result in the loss or reduced habitat value of 2,272 acres of upland grassland, 1,766 acres of oak woodland, 995 acres of oak savanna, and 97 acres of scrub/chaparral habitats. This impact would be <b>significant</b>.</p>	S	<p><b>Mitigation Measures 4.6-2a (Preferred Plan) and 4.6-2b (Maximum Development Scenario): Require a Habitat Inventory and Mitigation and Management Plans, and Specify a Replacement Ratio for Native Trees and Shrubs.</b>                      The County shall implement the following measures to mitigate impacts of future projects consistent with the 2008 Draft General Plan on upland grassland, oak woodland, oak savanna, and scrub/chaparral habitats:</p> <p><b>(1) Habitat Inventory and Assessment.</b> The County shall require all future projects to conduct, as a condition of project approval, appropriately timed biological resources inventories designed to assess the presence of wetlands, rock outcrops, serpentine or other unique edaphic substrates, and special-status species and uncommon natural habitats. Such a survey shall be completed as part of a complete application for a project.</p> <p><b>(2) Habitat Mitigation.</b> Where conversion of upland grasslands, oak woodland, oak savanna, and scrub/chaparral is unavoidable as part of a project's development, <del>the County shall require the project applicant to</del> <u>compensatory mitigation shall be provided at a minimum 1:1 ratio. The County shall also require the project applicant to</u> prepare and implement mitigation and management plans for mitigation areas, <u>including on-site avoidance and off-site preserves.</u> The County shall develop minimum standards that address management and restoration requirements based on subdivision size, affected communities, presence of other valuable habitats and special-status species, and development in accordance with preserved-area edge ratios.</p> <p>Where clustering of development results in a contiguous block of habitat greater than 40 acres with no more than a 1.25:1 development-to-preserve edge, affected acreage shall be calculated only for the development area and individual lots.                      Developments with higher development-to-preserve edge ratios</p>	LTS

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>and preserved areas less than 40 acres shall be required to implement additional habitat preservation and management activities based on the types and values of the habitats at the project site.</p> <p>Preserved habitats shall also be subject to the following conditions:</p> <ul style="list-style-type: none"> <li>▶ Preserved mitigation sites shall have equivalent woodland resources. Total area, canopy cover, woodland type, and habitat value shall be considered when determining whether off-site resources are equivalent to those of the project site.</li> <li>▶ Preserved areas shall contain similar topographic and elevational gradients.</li> <li>▶ All preserves established shall have a resource management plan that includes the minimum applicable requirements to this habitat associated species identified in Mitigation Measure 4.6-1a.</li> </ul> <p><b>(3) Tree Replacement.</b> In addition to the other requirements outlined in the oak woodland protection ordinance (Program RS.I-3), the ordinance shall specify a replacement ratio for all native trees and shrubs. The ratio shall be sufficient to restore canopy cover and stand characteristics similar to what was removed within a specified time frame. If mitigation of native tree removal is required, planting plans shall be included as part of the resource management plan for oak woodland prepared by one or more qualified persons experienced in the development and implementation of oak woodland and savanna restoration, mitigation, and management plans. Plans shall also include minimum survival standards, monitoring and maintenance requirements for a minimum of 10 years, and provisions for guaranteed replacement of trees, should survival fall below performance standards.</p>	
<p><b>4.6-3a (Preferred Plan) and 4.6-3b (Maximum Development Scenario): Loss or Reduction in Habitat Values of Valley Floor Grassland and Vernal Pool Grassland Habitats.</b> Buildout of the 2008 Draft General Plan would result in the loss</p>	<p>S</p>	<p><b>Mitigation Measures 4.6-3a (Preferred Plan) and 4.6-3b (Maximum Development Scenario): Require a Habitat Inventory, Buffer Zones, and Appropriate Avoidance and Compensatory Measures to Mitigate Habitat Loss.</b> The</p>	<p>LTS</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<p>or reduced habitat value of 8,389 acres of valley floor grassland habitat and 2,375 acres of vernal pool grassland habitat. This impact would be <b>significant</b>.</p>		<p>County shall implement the following measures to mitigate impacts of future projects consistent with the 2008 Draft General Plan on valley floor grassland and vernal pool habitats:</p> <p><b>(1) Habitat Inventory and Assessment.</b> The County shall require all future projects to conduct, as a condition of project approval, appropriately timed biological resources inventories designed to assess the presence of wetlands, other unique edaphic substrates, and special-status species and uncommon natural habitats. <u>Survey protocols shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game for review and approval prior to their implementation.</u> Such a survey shall be completed as part of a complete application for a project.</p> <p><b>(2) Buffer Zones for Extremely Rare and/or Range-Limited Species.</b> If Colusa grass, Solano grass, San Joaquin Valley orcutt grass, Ferris’s milkvetch, Conservancy fairy shrimp, Ricksecker’s water scavenger beetle, or Delta green ground beetle are found to be present, populations of these species shall be protected. The County shall require projects to develop site-specific buffer zones that shall include, at a minimum, the immediate watershed for the occupied vernal pools and a minimum 500-foot buffer beyond the boundary of this immediate watershed.</p> <p><b>(3) Habitat Mitigation.</b> Compensatory mitigation for the conversion and loss of vernal pool and valley floor grassland habitats shall be provide <u>for no net loss of wetland acreage and overall habitat value at a 1:1 ratio</u> through a combination of preservation of high-quality vernal pool and grassland habitat and the construction and restoration of vernal pool habitat. Where conversion of these communities is unavoidable as part of a project’s development, the County shall require the project applicant to prepare and implement mitigation and management plans consistent with policies and implementation programs of the 2008 Draft General Plan. The County shall establish standards for preservation and restoration of uplands and wetlands (including vernal pool and swale habitats and seasonal wetlands) that are based on, but not limited to, the standards in USFWS’s <i>Recovery Plan for Vernal Pool Ecosystems of California and Southern</i></p>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p><i>Oregon</i> (USFWS 2005) and the Solano HCP, and that take into account the needs of grassland-dependent special-species animals as well as more common species.</p> <p>Preserved habitats shall also be subject to the following conditions:</p> <ul style="list-style-type: none"> <li>▶ Preserved mitigation sites shall have equivalent or higher quality resources. All preserves established shall have a resource management plan that includes the minimum applicable requirements to this habitat associated species identified in Mitigation Measure 4.6-1a.</li> <li>▶ All project applicants shall be required to provide proof to the County Department of Resource Management that they have obtained all necessary state and federal authorizations (e.g., USACE Section 404 permit, RWQCB Section 401 certification or waste discharge requirements, and compliance with ESA and CESA) before the issuance of any grading permits or other actions that could result in ground-disturbing activities.</li> <li>▶ Preserves shall contain a large core area where ground-squirrel control is prohibited and shall maintain artificial burrow complexes until suitable, natural burrow densities can be reached.</li> </ul> <p><b>(4) Habitat Mitigation for Special-Status Plant Species.</b> Avoidance measures shall be used when feasible and compensatory mitigation shall be used when avoidance is not possible. Avoidance measures shall include establishing buffer zones to avoid effects on special-status plants; installing exclusion fencing around the existing plant populations before and during construction; and training construction personnel on the identification and location of special-status plants on the project site. Compensatory mitigation shall include replanting on-site or propagating plants at a nearby conservation site through seeding or translocation. Mitigation ratios shall be sufficient to achieve performance criteria of no net loss of either contiguous occupied habitat or the number of individual plants. This may</p>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>require planting or restoration ratios higher than 1:1 to guarantee long-term success. Postproject monitoring shall verify that avoidance and mitigation measures are successful.</p> <p><b>(5) Habitat Mitigation for Vernal Pool Invertebrates.</b>                      Compensatory mitigation for vernal pool invertebrate species shall include the following additional requirements:</p> <ul style="list-style-type: none"> <li>▶ The preservation component shall include habitat occupied by the affected species.</li> <li>▶ The constructed/restored habitats shall incorporate a variety of pool conditions that include dense complexes of small and medium-sized pools with minimal spacing interspersed among widely spaced larger pools. Larger, turbid-water, playa-type pools shall also be incorporated where appropriate soil conditions are present. The appropriate species associations for these vernal pool types are as follows:                             <ul style="list-style-type: none"> <li>• Dense complexes of small and medium pools with minimal spacing: Vernal pool fairy shrimp and midvalley fairy shrimp</li> <li>• Larger, deeper pools: Vernal pool tadpole shrimp and California linderiella (as well as Conservancy fairy shrimp addressed below)</li> <li>• Playa pools with turbid water: Conservancy, vernal pool and tadpole shrimp</li> </ul> </li> </ul> <p><b>(b) Habitat Mitigation for California Tiger Salamanders.</b>                      Mitigation shall be required for any activities that result in the conversion of upland habitat within <u>1.3 miles</u> <del>2,100 feet</del> of California tiger salamander breeding habitat (excluding lands separated from breeding sites by incompatible land uses) that result in the conversion of upland and/or aquatic breeding habitats for California tiger salamander to incompatible land uses (e.g., development, intensive recreation). Mitigation shall consist of two components: preservation and enhancement of suitable upland habitat, and preservation and construction of new</p>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		breeding habitat consistent with the mitigation standards specified above.	
<p><b>4.6-4a (Preferred Plan) and 4.6-4b (Maximum Development Scenario):</b> Potential for Direct and Indirect Impacts on Riparian, Stream, and Open-Water Habitats. Buildout of the 2008 Draft General Plan could result in direct and indirect impacts on riparian, stream, and open-water habitats. This impact would be <b>significant</b>.</p>	S	<p><b>Mitigation Measures 4.6-4a (Preferred Plan) and 4.6-4b (Maximum Development Scenario): Require an Inventory for Special-Status Species and Uncommon Habitats, and Appropriate Mitigation of Impacts on Valley Elderberry Longhorn Beetle, Salmonid, and Other Habitats.</b> The County shall implement the following measures to mitigate impacts of future projects consistent with the 2008 Draft General Plan on riparian, stream, and open-water habitats:</p> <p><b>(1) Habitat Inventory and Assessment.</b> The County shall require all future projects, as a condition of project approval, to conduct appropriately timed biological resources inventories designed to assess the presence of special-status species and uncommon natural habitats. <u>Survey protocols shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game for review and approval prior to their implementation.</u> Such a survey shall be completed as part of a complete application for a project.</p> <p><b>(2) Habitat Mitigation.</b> Where conversion of riparian and channel habitats is unavoidable as part of a project’s development, the County shall require the project applicant to prepare and implement mitigation and management plans. The County shall develop minimum standards that address management and restoration requirements based on subdivision size, affected communities, presence of other valuable habitats and special-status species, and development in accordance with preserved-area edge ratios.</p> <p>Preserved habitats shall also be subject to the following conditions:</p> <ul style="list-style-type: none"> <li>▶ Preserved mitigation sites shall have equivalent riparian woodland resources. Total area, canopy cover, woodland type, and habitat value shall be considered when determining whether off-site resources are equivalent to</li> </ul>	LTS

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>those of the project site.</p> <ul style="list-style-type: none"> <li>▶ Preserved areas shall contain similar topographic and elevational gradients.</li> <li>▶ All preserves established shall have a resource management plan that includes the minimum applicable requirements for this habitat associated species identified in Mitigation Measure 4.6-1a. Compensatory mitigation requirements for removal of native trees and shrubs shall be met through tree replacement as specified in Mitigation Measure 4.6-2a.</li> <li>▶ All project applicants shall be required to provide proof to the County Department of Resource Management that they have obtained all necessary state and federal authorizations (e.g., USACE Section 404 permit, RWQCB Section 401 certification or waste discharge requirements, DFG Section 1602 agreement, and compliance with ESA and CESA) before issuance of any grading permits or other actions that could result in ground-disturbing activities.</li> </ul> <p><b>(3) Valley Elderberry Longhorn Beetle and Elderberry Shrub Mitigation.</b> The following mitigation measures shall be implemented to avoid, minimize, and mitigate impacts on valley elderberry longhorn beetle:</p> <p>(a) Any ground-disturbing activities within 100 feet of elderberry plants containing stems measuring 1 inch or greater in diameter at ground level shall conform to the following minimum avoidance measures:</p> <ul style="list-style-type: none"> <li>▶ A setback shall be established measuring at least 20 feet from the dripline of each elderberry plant containing stems measuring 1 inch or greater in diameter at ground level from the edge of an established road, intensively farmed field, or facility (whichever is closer). The setbacks shall be fenced and flagged to identify the setback zone (i.e., areas into which equipment and materials shall not encroach). Fire fuel breaks (disked land) may not be included within the 20-foot setback; however, vegetation may be cleared by mowing (e.g., mower, mechanical trimmers, hand tools) to</li> </ul>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>less than 2 inches in height. Where encroachment resulting in new soil disturbance (e.g., disking, trenching, grading) within the 20-foot setback zone is unavoidable, the project applicant shall provide compensatory mitigation at a 50% (1:2) ratio of the standard requirements identified below for habitat mitigation.</p> <ul style="list-style-type: none"> <li>▶ Construction contractors shall be briefed on the need to avoid damaging elderberry plants and the possible penalties for not complying with these requirements.</li> <li>▶ Work crews shall be instructed about the status of the beetle and the need to protect its elderberry host plant.</li> <li>▶ No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1 inch or greater in diameter at ground level.</li> <li>▶ Mowing of grasses or ground cover shall occur only from July through April to reduce fire hazard. Mowing shall be done in a manner that avoids damaging plants (e.g., bark shall not be stripped away through careless use of mowing or trimming equipment).</li> <li>▶ Trimming of elderberry stems less than 1 inch in diameter shall occur between September 1 and March 14. The recommended period for trimming is between November and the first 2 weeks in February, when the plants are dormant and after they have lost their leaves.</li> <li>▶ (b) In cases where removal of elderberry shrubs or their stems measuring 1 inch or greater (removal or trimming) is unavoidable, the affected elderberry shrubs shall be salvaged and replanted and additional elderberry shrubs and associated native riparian plants shall be planted according to the ratios specified in the following criteria:</li> <li>▶ All elderberry shrubs scheduled for removal shall be transplanted to an approved, secure site (an approved mitigation bank location within Solano County or nonbank site approved by the County and USFWS). All nonbank</li> </ul>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>relocation sites shall be protected by a conservation easement or other applicable protection measure, and funding shall provided for long-term monitoring and maintenance. Transplanting shall occur between June 15 and March 15. No elderberry shrub may be transplanted between March 16 and June 14, except where isolated bushes are more than 0.5 mile away from other suitable valley elderberry longhorn beetle habitat and there is no sign of use (exit holes).</p> <ul style="list-style-type: none"> <li>▶ A minimum of five elderberry seedlings or rooted cuttings and five associated native, woody riparian plants per removed elderberry bush shall be planted within the mitigation area, or applicable credits shall be purchased from a mitigation bank in Solano County approved to sell valley elderberry longhorn beetle credits.</li> <li>▶ Transplanted elderberry and planted elderberry and associated native riparian plants shall be managed and monitored for a minimum of 5 years. A minimum of 80% of the transplanted elderberry and planted elderberry and associated species shall be alive and in good health at the end of the 5-year period. If survivorship rates drop below 80%, additional planting of applicable species (elderberry or associated native riparian species) shall occur and additional monitoring shall occur until the initial 80% survival rate is achieved for a minimum of 3 consecutive years. Monitoring reports shall be submitted to USFWS annually for review, approval, and compliance reporting.</li> <li>▶ Mitigation planting shall occur, to the maximum extent practicable, in areas adjacent to the impact area and/or located to fill in existing gaps in riparian corridors. These requirements may be deleted once the species is delisted.</li> </ul> <p><b>(4) Mitigation of Impacts on Salmonids.</b> The following measures shall be implemented to avoid, minimize, and mitigate impacts on steelhead and chinook salmon, including those impacts that may result from new instream crossings:</p> <p>(a) For projects that would result in impacts on streams that are known to support or have the potential to support salmonids—</p>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>Green Valley, Suisun, American Canyon, and Putah Creeks, and to a lesser extent Ulatis, Alamo, Jameson Canyon, and Ledge wood Creeks and their tributaries—the following avoidance and minimization measures apply:</p> <ul style="list-style-type: none"> <li>▶ Instream work shall be allowed only during specified work windows from June 15 to October 15 during low-flow conditions.</li> <li>▶ No fill material, including concrete, shall be allowed to enter any waterways. Any concrete piers, footings, or other structures shall be poured in tightly sealed forms and shall not be allowed contact with surface waters until the cement has fully cured. This process takes a minimum of 14–28 days.</li> <li>▶ Channel disturbance shall be kept to a minimum, no material shall be left in the channel, and if bridge footings are to be protected by riprap, the channel bottom elevation shall not be elevated above the natural channel bottom.</li> <li>▶ For bridge removal, no portions of the old structure shall be left in the channel, and where abutments are removed, no depressions shall be left; they shall be filled in with clean river rock or gravel of an appropriate size (approximately 2–4 inches).</li> <li>▶ Where practicable, bridge design shall be full span and avoid adversely affecting channel hydraulics. Bridge and road design shall prevent direct discharge (such as culverts or bridge drains) of any untreated stormwater runoff directly into any waterways.</li> <li>▶ Construction BMPs and erosion control methods shall be utilized during construction. Such methods shall include revegetation of all bare soil before the rainy season and any other measures necessary to ensure that there is no increase in sediment entering waterways.</li> <li>▶ If cofferdams are to be used, turbid water pumped out of the dam shall not be allowed to reenter the channel unless sediment has settled out so that there is no increase in</li> </ul>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>turbidity in downstream waters.</p> <ul style="list-style-type: none"> <li>▶ Construction sites shall be monitored to ensure that no salmonids are present that may be harmed. If salmonids are present, a qualified fishery biologist shall be required to capture and relocate the fish. Where column repairs are to be done, materials used shall be nontoxic to aquatic life.</li> <li>▶ All equipment refueling and maintenance shall occur outside the creek channel and appropriate measures shall be taken to prevent the discharge of fuels or other contaminants to the stream in the event of spills.</li> <li>▶ Water that contacts wet concrete and has a pH greater than 9 shall be pumped out and disposed of outside the creek channel.</li> <li>▶ (b) All new stream crossings in streams that are known to, or that have the potential to, support salmonids shall follow the guidelines developed by NMFS to allow for safe passage of salmonids. For new instream crossings, the following alternatives and structure types shall be considered in order of preference:               <ol style="list-style-type: none"> <li>1. Nothing—Road realignment to avoid crossing the stream</li> <li>2. Bridge—Spanning the stream to allow for long-term dynamic channel stability</li> <li>3. Streambed simulation strategies—Bottomless arch, embedded culvert design, or ford</li> <li>4. Nonembedded culvert—Often referred to as a hydraulic design; associated with more traditional culvert design approaches, and limited to low slopes for fish passage</li> <li>5. Baffled culver or structure designed with a fishway—For steeper slopes</li> </ol> </li> </ul> <p>If a segment of stream channel where a crossing is proposed is in an active salmonid spawning area, then only full-span bridges or streambed simulations are acceptable.</p>	
<p><b>4.6-6a (Preferred Plan) and 4.6-6b (Maximum Development Scenario): Potential Direct and Indirect Impacts on Marsh and Tidal Flat Habitat.</b> Buildout of the 2008 Draft General Plan could result in direct and indirect</p>	<p>S</p>	<p><b>Mitigation Measures 4.6-6a (Preferred Plan) and 4.6-6b (Maximum Development Scenario): Require Surveys for Wetlands and Special-Status Species, Develop an Avoidance and Mitigation Plan, and Replace Affected Habitats at a 2:1</b></p>	<p>LTS</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<p>impacts on marsh and tidal flat habitat. This impact would be <b>significant</b>.</p>		<p><b>Ratio.</b> The County shall require all future projects, as a condition of project approval, to conduct appropriately timed biological resources inventories designed to determine the presence of wetlands (marsh, tidal flat, and channel) and associated special-status species. <u>Survey protocols shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game for review and approval prior to their implementation.</u> Such a survey shall be completed as part of a complete application for a project.</p> <p>For projects that may have potential impacts on special-status plant and animal species within marsh habitat, the project applicants shall develop a site-specific resource avoidance and minimization plan for approval by the County, DFG, and USFWS.</p> <p>Where conversion of marsh, channel, and tidal flat habitats is unavoidable as part of a project’s development, the County shall require the project applicant to prepare and implement mitigation and management plans. At a minimum, affected habitats shall be replaced at a 2:1 ratio.</p>	
<p><b>4.6-7a (Preferred Plan) and 4.6-7b (Maximum Development Scenario): Loss or Disturbance of Raptor and Loggerhead Shrike Nests.</b> Buildout of the 2008 Draft General Plan could result in the loss or disturbance of raptor and loggerhead shrike nests from removal of trees and shrubs associated with the loss of 1,766 acres of oak woodland, 995 acres of oak savanna, and 97 acres of scrub/chaparral habitats. This impact would be <b>significant</b>.</p>	<p>S</p>	<p><b>Mitigation Measures 4.6-7a (Preferred Plan) and 4.6-7b (Maximum Development Scenario): Require Nest Surveys and Buffers and Implement Mitigation Measures 4.6-1a, 4.6-2a, 4.6-3a, 4.6-4a, and 4.6-6a.</b> The County shall implement the following measures to mitigate impacts of future projects consistent with the 2008 Draft General Plan on raptor and loggerhead shrike nests:</p> <p>(1) A qualified biologist shall conduct surveys for raptor and loggerhead shrike nests before pruning or removal of trees, ground-disturbing activities, or construction activities to locate any active nests on or <u>within ¼ mile of a project site immediately adjacent to the site.</u> The surveys shall be designed and of sufficient intensity to document raptor nesting activity within <u>¼ mile</u> <del>500 feet</del> of planned work activities. Preconstruction surveys shall be conducted at <u>15</u> <del>21</del>-day intervals unless construction activities have been initiated in an area. Preconstruction surveys shall be conducted between February 1 and August 31. Locations of active nests shall be</p>	<p>LTS</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>described and protective measures implemented. Protective measures shall include establishment of avoidance areas around each nest site. <del>Species-specific</del> Avoidance areas shall be clearly delineated (i.e., by orange construction fencing) and shall be a minimum of: ¼ mile for golden eagle; 500 feet for Swainson’s hawk, northern harrier, and short eared owl; 250 feet during the breeding season and 160 feet during the non-breeding season for burrowing owl; 300 feet <del>from the dripline of the nest tree or nest</del> for other raptors, and 100 feet for shrikes. <u>Buffer zones shall be measured from the dripline of the nest tree or nest, whichever is farthest.</u> The active nest sites within an exclusion zone shall be monitored on a weekly basis throughout the nesting season to identify any signs of disturbance. These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active. A report shall be prepared at the end of each construction season detailing the results of the preconstruction surveys. The report shall be submitted to DFG by November 30 of each year. <u>Buffer zones and monitoring requirements may be modified in consultation with and upon approval from DFG.</u></p> <p>(2) The County shall implement Mitigation Measures 4.6-1a, 4.6-2a, 4.6-3a, 4.6-4a, and 4.6-6a to reduce impacts on potential nesting habitat for raptors and loggerhead shrike.</p>	
<p><b>4.6-9a (Preferred Plan) and 4.6-9b (Maximum Development Scenario): Direct Mortality of Bats and Birds from Expansion of Wind Energy Resources.</b> Development and establishment of wind turbines within the Wind Energy Resource Overlay proposed in the 2008 Draft General Plan could cause significant mortality of special-status bats and raptors as well as other migratory and resident birds. This impact would be <b>significant</b>.</p>	<p>S</p>	<p><b>Mitigation Measures 4.6-9a (Preferred Plan) and 4.6-9b (Maximum Development Scenario): Require Project-Specific Collision Risk Assessments, Enhanced Avoidance and Minimization Measures, Appropriate Compensatory Habitat Mitigation, and Contingency Plans.</b> The County shall implement the following measures to reduce the risk of direct mortality of bats and birds from the expansion of wind energy resources in Solano County:</p> <p><b>(a) Collision Risk Assessment.</b> Consistent with Policy RS.I-48, the County shall require project applicants for wind turbine generator proposals to include a collision risk assessment or a “Pre-permitting Assessment” as outlined in <i>California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development</i> as part of the application for project entitlement (CEC and DFG 2007). The risk assessment shall</p>	<p>LTS</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>determine whether projected overall avian and bat fatality rates are low, moderate, or high relative to other projects and shall provide measures to avoid overall avian and bat casualties attributable to collisions with wind turbines.</p> <p><b>(b) Avoidance and Minimization.</b> Policy RS.P-56 encourages the use of technology or siting to minimize adverse impacts from energy production facilities on the environment, including wildlife. This policy shall be expanded to require all project proposals for the development of wind energy to implement the following measures when selecting a project site and turbine layout and developing the facility’s infrastructure:</p> <ul style="list-style-type: none"> <li>▶ Fragmentation and habitat disturbance shall be minimized.</li> <li>▶ Buffer zones shall be established to minimize collision hazards (for example, placement of turbines within 100 meters of a riparian area shall be avoided).</li> <li>▶ Impacts shall be reduced with appropriate turbine design and layout.</li> <li>▶ Artificial habitat for prey at the turbine base area shall be reduced.</li> <li>▶ Lighting that attracts birds and bats shall be avoided.</li> <li>▶ Power line impacts shall be minimized by placing lines under ground whenever possible.</li> <li>▶ Use of structures with guy wires shall be avoided.</li> <li>▶ Nonoperational turbines shall be decommissioned.</li> </ul> <p><u>The County shall also require project applicants for new wind turbine generator proposals, before and as a condition of project approval, to consult with DFG, USFWS, and species experts in the development of site-specific avoidance and minimization requirements to minimize impacts on sensitive, high-value, or protected habitats. These requirements shall include developing appropriate buffers between wind energy development projects, existing conservation easements, and mitigation banks.</u></p>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p><b>(c) Habitat Mitigation.</b> The County shall require project applicants for new wind turbine generator proposals, before and as a condition of project approval, to consult with DFG, USFWS, and species experts in the development of site-specific ratios and fees to use in establishing compensation formulae. The compensation formulae shall be biologically based and reasonable, shall provide certainty about the availability and sufficiency of funds to be expended, and shall assure that the mitigation will continue to provide biological resource value over the life of the project. At a minimum, the following list of potential options shall be considered in developing compensatory mitigation:</p> <ul style="list-style-type: none"> <li>▶ Off-site conservation and protection of essential habitat:                             <ul style="list-style-type: none"> <li>• Nesting and breeding areas</li> <li>• Foraging habitat</li> <li>• Roosting or wintering areas</li> <li>• Migratory rest areas</li> <li>• Habitat corridors and linkages</li> </ul> </li> <li>▶ Off-site conservation and habitat restoration:                             <ul style="list-style-type: none"> <li>• Restored habitat function</li> <li>• Increased carrying capacity</li> </ul> </li> <li>▶ Off-site habitat enhancement:                             <ul style="list-style-type: none"> <li>• Predator control programs</li> <li>• Removal of exotic/invasive species</li> </ul> </li> </ul> <p><b>(d) Postconstruction Monitoring and Contingency Plans.</b> Accurately assessing the potential for bat and bird mortality from wind resource projects is difficult, and once completed, such a project could have unanticipated fatalities. Therefore, before issuing a permit, the County shall require project applicants for any new wind turbine generator proposals to include a contingency plan to mitigate high levels of unanticipated fatalities. Permit conditions shall explicitly establish a range of compensatory mitigation options to offset unexpected fatalities and the thresholds that will trigger implementation. <u>Applicants shall consult with DFG and USFWS to determine the level of preproject and postproject</u></p>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p><u>monitoring required.</u> The need for compensatory mitigation for unexpected impacts shall be determined by postconstruction monitoring. Postconstruction monitoring shall conform to the guidelines outlined in <i>California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development</i> (CEC and DFG 2007).</p>	
<p><b>4.9 Public Services and Utilities</b></p>			
<p><b>4.9-1a (Preferred Plan) and 4.9-1b (Maximum Development Scenario): Insufficient Water Supplies to Meet the Future Water Demand in Unincorporated Areas Served by the County.</b> Land uses and development consistent with the 2008 Draft General Plan would increase the demand for water. Available water sources would be insufficient to serve some of the unincorporated areas of the county with buildout of the 2008 Draft General Plan. New methods to obtain water and additional sources of supply would be required. This impact would be <b>significant</b>.</p>	<p>S</p>	<p><b>Mitigation Measures 4.9-1a(1) (Preferred Plan) and 4.9-1b(1) (Maximum Development Scenario): Implement Measures to Ensure Sufficient Water Supplies for Development Projects.</b> The County shall implement the following measures to ensure sufficient water supplies for land development projects in the unincorporated county under the 2008 Draft General Plan:</p> <ul style="list-style-type: none"> <li>▶ Before approval of any project as defined in Part 2.10 of the California Water Code, the lead water supply agency shall comply with SB 610 requirements to ensure that adequate water supply is available and is sufficient to meet current and future demands.</li> <li>▶ Before approval of any tentative small-lot subdivision map for a proposed residential project of more than 500 dwelling units (this requirement also applies to increases of 10% or more of service connections for public water systems with fewer than 500 service connections), the County shall comply with SB 221 requirements for verification of sufficient subdivision water supplies, as specified in Section 66473.7 of the Government Code.</li> <li>▶ Before approval of any tentative small-lot subdivision map for a proposed residential project of 500 or fewer units, the County need not comply with Section 66473.7 or formally consult with the public water system that would provide water to a proposed subdivision, but shall nevertheless make a factual showing or impose conditions similar to those required by Section 66473.7 to ensure an adequate water supply for development authorized by the map.</li> <li>▶ Before recordation of any final small-lot subdivision map, or</li> </ul>	<p>SU</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		<p>before County approval of any project-specific discretionary approval or entitlement required for nonresidential land uses, the County or the project applicant shall demonstrate, based on substantial evidence, the availability of a long-term, reliable water supply from a public water system for the amount of development that would be authorized by the final subdivision map or project-specific discretionary nonresidential approval or entitlement. Such a demonstration shall consist of a written verification that existing sources are or will be available and that needed physical improvements for treating and delivering water to the project site will be in place before occupancy.</p> <ul style="list-style-type: none"> <li>▶ The County shall comply with SB 221 requirements for verification of sufficient water supplies as specified in Section 66473.7 of the Government Code.</li> </ul> <p><b>Mitigation Measures 4.9-1a(2) (Preferred Plan) and 4.9-1b(2) (Maximum Development Scenario): Implement a Countywide Groundwater Balance Budget and Monitoring Program.</b>                      Ongoing groundwater monitoring is critical for evaluating existing conditions and comparing groundwater extractions against projected sustainable yields on a countywide basis. To achieve this, a countywide groundwater balance budget shall be developed that incorporates the provisions of Policy RS.P-65, which calls for coordination with SCWA to monitor and manage the county’s groundwater supplies, and Program RS.I-70, which requires the County Department of Resource Management, together with SCWA and the cities, to create and maintain a comprehensive database of information about groundwater supply and quality, and to complete a countywide groundwater study that fills the gaps among disparate aquifer-specific studies in the county. This groundwater balance budget and monitoring program shall be implemented to facilitate evaluation of current groundwater conditions. It shall also provide evaluation of the effectiveness of the 2008 Draft General Plan goal, policies, and programs associated with Impact 4.5-4a in Section 4.5, “Hydrology and Water Resources,” that pertain to groundwater-recharge efforts and sustainable groundwater levels.</p>	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<p><b>4.9-3a (Preferred Plan) and 4.9-3b (Maximum Development Scenario): Increased Wastewater Treatment Demand.</b> Land uses and development consistent with the 2008 Draft General Plan would generate additional wastewater flows that would be served by city municipal treatment facilities and individual sewer systems, and larger development would be permitted for the construction of small-scale treatment facilities. The County is responsible for permitting and managing wastewater treatment outside of MSAs, in which individual sewer systems and small centralized treatment facilities are used on a case-by-case basis. The County does not have quantifiable data available showing total demand and capacity of these individual systems; therefore, the ability to serve the buildout of the 2008 Draft General Plan is unknown. Although some uncertainty exists about the long-term ability to serve the county's future wastewater needs, current regulations and policies would provide a mechanism to provide wastewater services to areas where future development is expected. This impact would be <b>significant</b>.</p>	<p>S</p>	<p><b>Mitigation Measures 4.9-3a (Preferred Plan) and 4.9-3b (Maximum Development Scenario): Implement Measures to Ensure Sufficient Wastewater Collection and Removal Systems for Development Projects.</b> The County shall implement the following measures to ensure the availability of adequate wastewater collection, <u>treatment</u>, and removal systems for land development projects in the unincorporated county under the 2008 Draft General Plan:</p> <ul style="list-style-type: none"> <li>▶ Before approval of any tentative subdivision map for a proposed residential project, the County shall formally consult with the wastewater system provider that would serve the proposed subdivision to make a factual showing or impose conditions to ensure the availability of an adequate wastewater removal system for the proposed development, <u>including provisions for collection, treatment, and disposal of the contents of septic systems.</u></li> <li>▶ Before recordation of any final small-lot subdivision map, or before County approval of any project-specific discretionary approval or entitlement for nonresidential land uses, the County or the project applicant shall demonstrate, based on substantial evidence, the availability of a long-term, reliable wastewater collection system for the amount of development that would be authorized by the final subdivision map or project-specific discretionary nonresidential approval or entitlement. Such a demonstration shall consist of a written verification that existing treatment capacity is or will be available and that needed physical improvements for treating wastewater from the project site will be in place before occupancy <u>and permitted under applicable regulatory programs.</u></li> </ul>	<p>SU</p>
<p><b>4.14 Recreation</b></p>			
<p><b>4.14-1a (Preferred Plan): Need for New or Expanded Parks or Recreational Facilities.</b> Buildout of the 2008 Draft General Plan would result in a need for new or expanded parks and recreation facilities. Buildout at average densities would result in a condition where demand for parks outstrips the existing supply. The County would have only 5.4 acres of</p>	<p>S</p>	<p><b>Mitigation Measure 4.14-1a (Preferred Plan): Require Developers to Pay Fair-Share Park and Recreation Impact Fees.</b> <u>The County shall develop and implement a park impact fee payment program for new development in nonagricultural and open space zoning districts.</u> As a condition of approval of all residential development, the County shall require project</p>	<p>LTS</p>

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<p>parkland per 1,000 residents. This would be substantially lower than the County’s adopted parkland provision standard of 10 acres per 1,000 residents. This impact would be <b>significant</b>.</p>		<p>developers to mitigate any adverse impacts on park and recreational facilities through the payment of a fair-share impact fee. The park mitigation impact fees shall be designed to mitigate impacts reasonably related to a proposed residential development and <u>fees collected through the program</u> must be used <u>by the County</u> to acquire or develop park and recreational facilities <u>within 5 years of collection</u>. “Development,” for the purposes of this measure, shall mean all single-family structures requiring a building permit, condominium and multifamily residential units, planned residential development, and all multifamily structures that require building permits, but shall exclude remodel or renovation permits that do not result in additional dwelling units. Impact fees shall be based on a fee formula developed by the County. Payment of the required impact fee shall occur before the issuance of any building permit. <u>If the County determines that it is in the best interest of providing adequate levels of parkland provision, a developer may be given the option to dedicate parkland in lieu of the impact fee. Parkland dedication will provide the same amount of acreage as is required under the impact fee.</u></p>	

## CHAPTER 3, “PROJECT DESCRIPTION”

Exhibit 3-2 on page 3-5 of the DEIR is revised as shown on Page 4-33 of this chapter, to correspond to Figure LU-1 of the 2008 Draft General Plan.

The last paragraph on page 3-24 of the DEIR is revised as follows:

The Maximum Development Scenario represents the highest theoretical amount of development that would be possible under the 2008 Draft General Plan. In this scenario the development properties would occur at the highest density and intensity allowed by the plan. The Maximum Development Scenario would generate substantially more dwelling units, commercial square footage, and population growth than the Preferred Plan. ~~Although it is extremely unlikely that maximum buildout could occur, such a scenario must be analyzed to demonstrate the highest possible level of environmental impact that could result from the project. For this reason, t~~The Maximum Development Scenario is also utilized in analyses contained in Chapter 4 of this EIR.

Table 3-2, “Land Use Projections of the 2008 Draft General Plan,” on page 3-25 of the DEIR is revised to change the acreage under “Existing Land Use (2006)” for the Traditional Community—Residential land use category to 728 acres. In addition, the following note is added at the bottom of the table:

\* These 728 acres are identified as Suburban Residential in the current *Solano County General Plan*.

## SECTION 4.1, “LAND USE”

A map of existing land uses is provided on page 4-35 of this chapter as a new exhibit, Exhibit 4.1-1, of the DEIR. The first sentence under “Existing Land Use Patterns” on page 4.1-2 of the DEIR is revised as follows:

Exhibit 4.1-1 shows existing land uses in Solano County and Table 4.1-1 indicates the acreage of existing such uses in Solano County.

The paragraph immediately preceding Table 4.1-6 on page 4.1-7 of the DEIR is revised as follows:

Table 4.1-6 describes the change in acreage between ~~the existing land uses and the proposed amendments contained in~~ land use designations proposed within the 2008 Draft General Plan ~~Update~~.

Mitigation Measure 4.1-4a on page 4.1-19 of the DEIR is revised as follows:

**Mitigation Measure 4.1-4a(1): Require Minimum Mitigation Ratio of 1.5:1 or Higher for Farmland Conversion.**

Program AG.I-1 of the 2008 Draft General Plan shall be amended to have a minimum mitigation ratio of 1.5:1 or higher for farmland conversion to mitigate the impacts of new nonagricultural uses on adjacent and neighboring agricultural operations. Program AG.I-1 shall be amended to read as follows.

**AG.I-1:** Create and adopt a farmland conversion mitigation program and ordinance. Require compensation for loss of agricultural land. Establish appropriate mitigation ratios for the program or utilize a graduated mitigation mechanism. The mitigation ratio shall be a minimum of 1.5:1 (1.5 acres of farmland protected through mitigation for each acre of farmland converted). The program shall not present regulatory barriers to agritourism, agricultural services, and agricultural processing in regions and within land use designations where such uses are permitted and encouraged. The program shall also establish mitigation within the same agricultural region as the proposed development project, or within the Agricultural Reserve Overlay district, as a preferred strategy.

The program shall incorporate a fee option, and shall provide an exemption for farmworker housing. Mitigation lands shall be of similar agricultural quality to the lands being converted.

**Mitigation Measure 4.1-4a(2): Require Use of Clustering and Building Envelope Size and Locational Controls.**

Policy LU.P-17 of the 2008 Draft General Plan shall be amended to require the use of clustering and building envelope size and locational controls to mitigate the impacts of new nonagricultural uses on adjacent and neighboring agricultural operations. Policy LU.P-17 shall be amended to read as follows (deletions shown in ~~strikeout text~~ and insertions shown in *italics*):

**LU.P-17: ~~Encourage~~ *Require* clustering of residential development and the use of building envelope size and locational controls in residential development when necessary to preserve agricultural lands, natural resource areas and environmental quality, to provide for the efficient delivery of services and utilities, and to mitigate potential health and safety hazards.**

Although Mitigation Measures 4.1-4a(1) and 4.1-4a(2) may work to reduce some portion of the impact associated with agricultural and nonagricultural use conflicts, ~~it~~ they would not reduce these impacts to below a level of significance. For this reason, the impact would remain **significant and unavoidable**.

Mitigation Measure 4.1-4b on page 4.1-20 of the DEIR is revised as follows:

**Mitigation Measure 4.1-4b(1): Require Minimum Mitigation Ratio of 1.5:1 or Higher for Farmland Conversion.**

This measure is the same as Mitigation Measure 4.1-4a(1) above. ~~For the same reasons as described above, the impact would remain significant and unavoidable.~~

**Mitigation Measure 4.1-4b(2): Require Use of Clustering and Building Envelope Size and Locational Controls.**

This measure is the same as Mitigation Measure 4.1-4a(2) above.

For the same reasons as described above, the impact would remain **significant and unavoidable**.

## **SECTION 4.2, "AIR QUALITY"**

The fourth bullet in the bulleted list of Mitigation Measure 4.2-1a(1) on page 4.2-24 of the DEIR is revised as follows:

- ▶ On-site equipment shall not be left idling when not in use in accordance with applicable state and air district guidance.

Mitigation Measure 4.2-2a on page 4.2-28 of the DEIR (and Mitigation Measure 4.2-2b, also on page 4.2-28) is revised as follows. Please note that although only Mitigation Measure 4.2-2a is shown here, the revision also applies to Mitigation Measure 4.4-2b.

**Mitigation Measure 4.2-2a: Coordinate with Air Districts on Assumptions from Air Quality Plan Updates.**

The County shall coordinate with BAAQMD and YSAQMD at the earliest opportunity to ensure that all new assumptions from new air quality plan updates are implemented as part of the 2008 Draft General Plan.

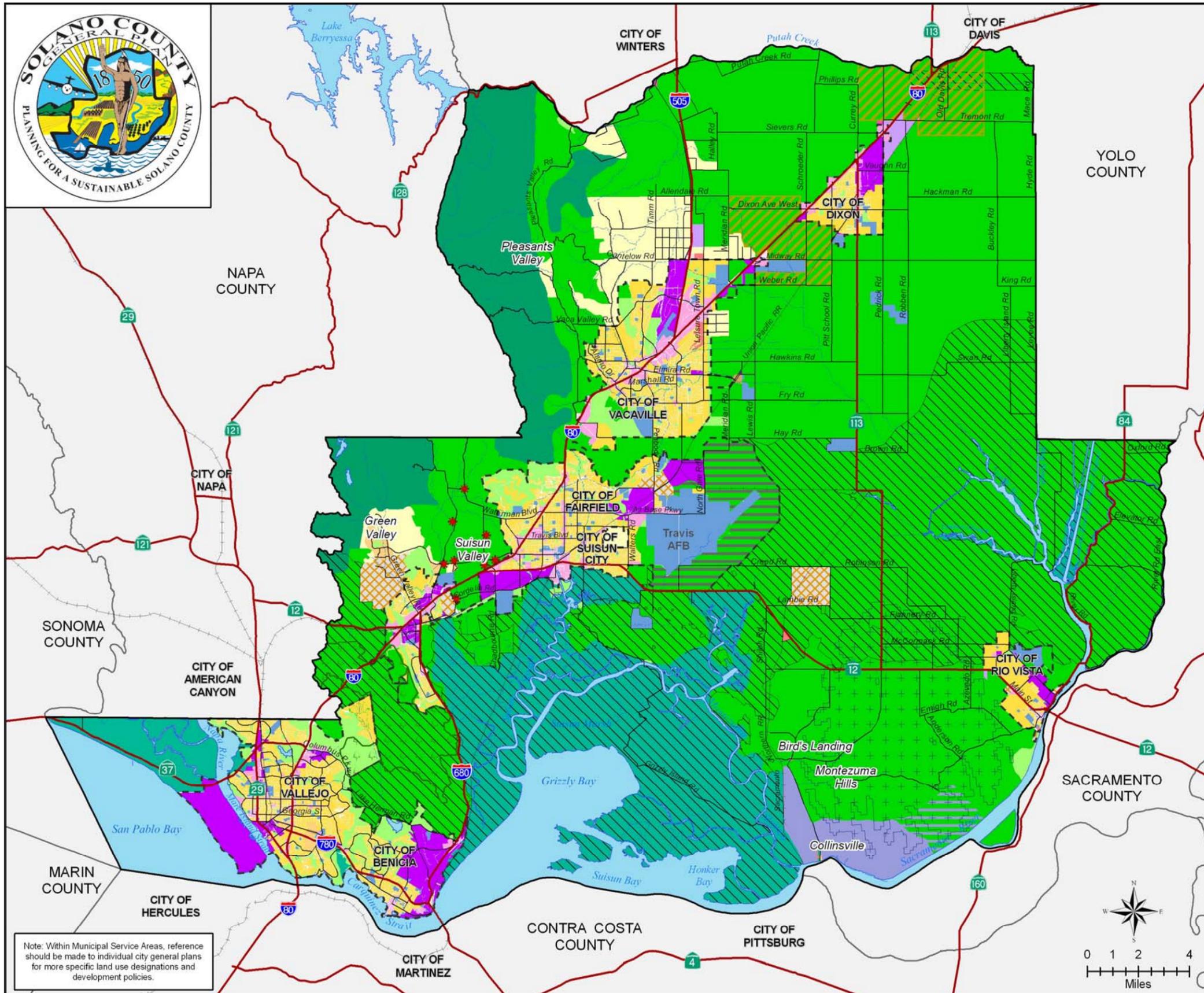
The County shall also do the following:



# Solano County General Plan EIR

## Exhibit 3-2

### Land Use Map



#### Legend

##### General Plan Land Use Designations

- Natural Resource Designations**
  - Water Bodies and Courses
  - Park and Recreation
  - Marsh
- Agricultural Designations**
  - Watershed
  - Agriculture
- Public Designations**
  - Public/Quasi-Public
- Residential Designations**
  - Rural Residential
  - Traditional Community - Residential
  - Traditional Community - Mixed Use
  - Urban Residential; Urban Residential
- Commercial Designations**
  - Neighborhood Commercial
  - \* Neighborhood Agricultural/Tourist Center
  - Commercial Recreation
  - Service Commercial
  - Highway Commercial
  - Urban Commercial
- Industrial Designations**
  - General Industrial
  - Limited Industrial
  - Water Dependent Industrial
  - Urban Industrial
- Special Purpose Areas**
  - Specific Project Areas
- Overlays**
  - Water Dependant Industrial - Reserve
  - Travis Reserve Area
  - Wind Energy Resource Overlay
  - Agricultural Reserve Overlay
  - Tri-City/County Cooperative Planning Area
  - Resource Conservation Overlay

Note: Within Municipal Service Areas, reference should be made to individual city general plans for more specific land use designations and development policies.



"Planning for a Sustainable Solano County"





# Solano County General Plan EIR

## Exhibit 4.1-1

### Existing Land Use

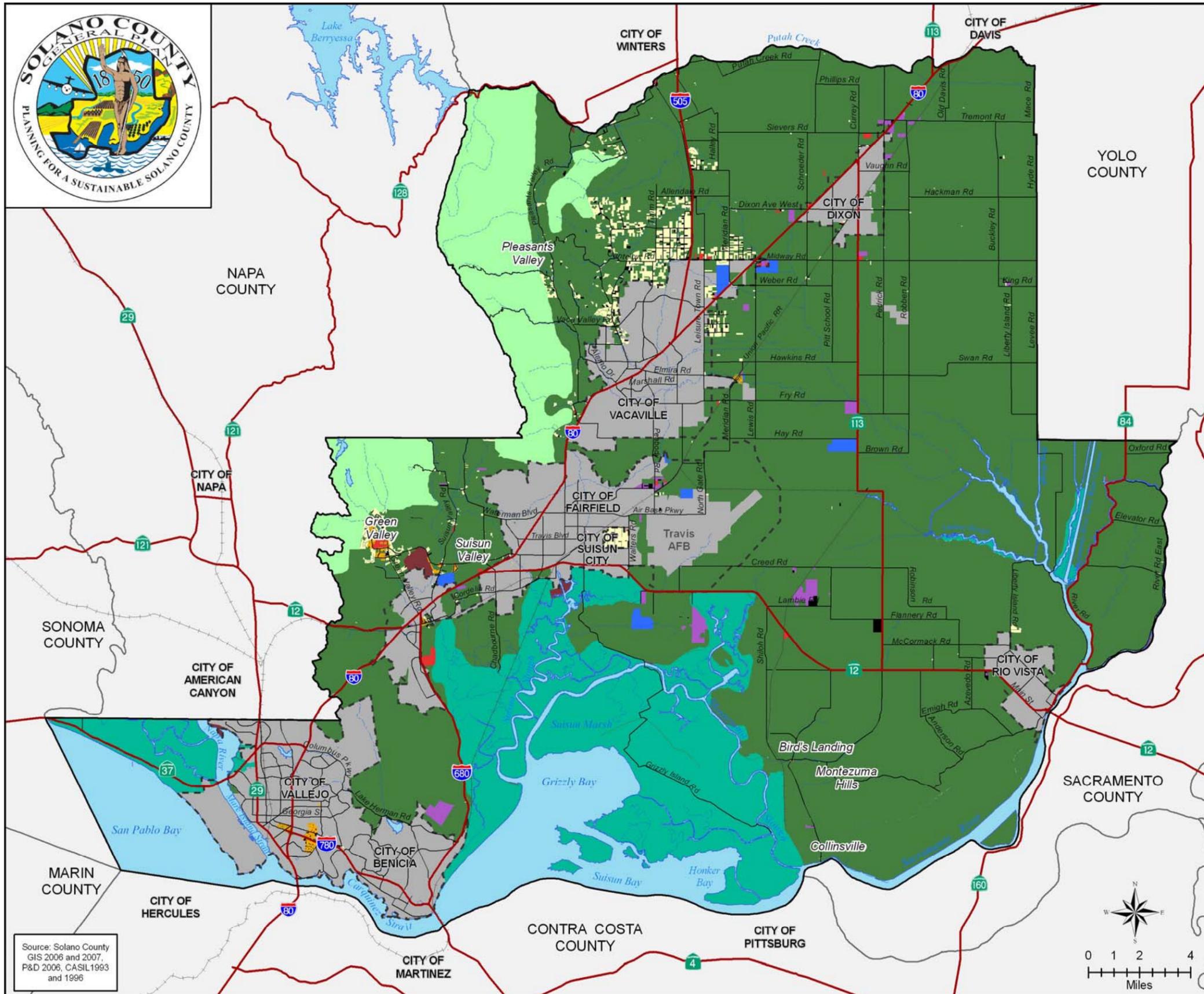
#### Legend

##### Existing Land Use

- Watershed
- Marsh
- Agriculture
- Rural Residential
- Urban Residential
- Traditional Community Residential
- Commercial
- Park and Recreation
- Industry
- Public
- Water Body
- Vacant
- Incorporated Area

##### Basemap Layers

- Roadways
- Highways
- Railroads
- Streams and Creeks
- Major Water Features
- Municipal Service Areas
- Adjacent Counties



Source: Solano County GIS 2006 and 2007, P&D 2006, CASIL1993 and 1996

"Planning for a Sustainable Solano County"



- ▶ Meet air quality standards: Seek to attain or exceed the more stringent of federal or state ambient air quality standards for each measured pollutant.
- ▶ Require mitigation of air quality impacts: Require projects that generate significant levels of air pollutants to incorporate best available air quality mitigation in the project design.
- ▶ Inform regional and local agencies: Notify regional and local jurisdictions of proposed projects in unincorporated areas that may affect regional air quality, as identified by BAAQMD, YSAQMD, and ARB.
- ▶ Evaluate air quality impacts of proposed projects and plans: As part of the environmental review process, use the current applicable air district guidance to evaluate the significance of air quality impacts from projects or plans, and to establish appropriate minimum mitigation requirements necessary for project or plan approval.
- ▶ Assist in the enforcement of air quality standards: Assist EPA, ARB, and applicable air district with measuring emissions and enforcing the provisions of the Clean Air Act and regional rules and regulations.

The existing Mitigation Measure 4.2-4a and Mitigation Measure 4.2-4b on pages 4.2-32 and 4.2-33, respectively, are renumbered as 4.2-4a(1) and 4.2-4b(1), and the following new mitigation measure, which serves as both Mitigation Measure 4.2-4a(2) and Mitigation Measure 4.2-4b(2), is added on page 4.2-32 of the DEIR:

**Mitigation Measure 4.2-4a(2): Implement EPA Recommendations for Wood-Burning Appliances.**

All new wood-burning appliances installed in the county shall be installed in accordance with EPA recommendations and the County shall consider a replacement program in coordination with BAAQMD and YSAQMD.

The second and third bullets in the bulleted list of Mitigation Measure 4.2-5a on page 4.2-36 of the DEIR are revised as follows:

- ▶ Applicable state and air district guidance shall be followed and strategies shall be incorporated to reduce the idling time of main propulsion engines through alternative technologies such as IdleAire, electrification of truck parking, and alternative energy sources for TRUs to allow diesel engines to be completely turned off.
- ▶ Proposed developments shall incorporate site plans that move sensitive receptors as far as feasibly possible from major roadways (100,000+ average daily trips) and shall follow all applicable state and air district guidance in relation to TAC reduction methods.

## **SECTION 4.3, “NOISE”**

The “State Plans, Policies, Regulations, and Laws” section of Section 4.3 (pages 4.3-15 through 4.3-17) of the DEIR is revised to add the following new section at the end of the section:

**Thresholds for Determination of a Significant Project-Related Noise Level Increase**

Based on studies of test subjects’ reactions to changes in environmental noise levels, the Federal Interagency Commission on Noise (FICON) developed the following recommendations for thresholds to be used in assessing the significance of project-related noise level increases for transportation noise sources. Where background noise levels without the project would be less than 60 dBA L<sub>dn</sub>, a 5-dBA or greater noise level increase due to the project is considered significant. Where background noise levels

without the project would range from 60 to 65 dBA L<sub>dn</sub>, a 3-dBA or greater noise level increase due to the project is considered significant. Finally, where background noise levels without the project would exceed 65 dBA L<sub>dn</sub>, a 1.5-dBA or greater noise level increase due to the project is considered significant. This graduated scale is based on findings that people in quieter noise environments would tolerate larger increases in noise levels without adverse effects, whereas people already exposed to elevated noise levels exhibited adverse reactions to noise for smaller increases.

The last paragraph on page 4.3-18 of the DEIR is modified as follows:

Table 4.3-8 compares projected future traffic noise levels under the Preferred Plan and the Maximum Development Scenario to those under existing conditions (2007). This table provides an evaluation of the cumulative changes in traffic noise levels that would result from development under the Preferred Plan or the Maximum Development Scenario. The shaded cells in Table 4.3-8 indicate those roadway segments where the increase in noise would exceed the significance thresholds. Specifically, if existing traffic noise levels are less than 60 dBA L<sub>dn</sub>, a 5-dB or greater increase due to the project is identified as significant. If existing ambient noise levels range from 60 to 65 dBA L<sub>dn</sub>, the threshold of significance is 3 dB, and if if ambient levels exceed 65 dBA, the threshold is 1.5 dBA.

Table 4.3-8 on pages 4.3-21 through 4.3-24 of the DEIR is modified as shown below, to shade the roadway segments for which a significant project-related noise level increase is identified:

Segment	Roadway	Segment Description	Existing Condition (dBA L <sub>dn</sub> )	2008 Draft General Plan (dBA L <sub>dn</sub> )			
				Preferred Plan	Change	Max. Dev't. Scenario	Change
1	I-80	Solano-Yolo County Line	79	80	1	80	1
2		North of SR 37	79	80	1	80	1
3		East of American Canyon Road	79	80	1	80	1
4		At Carquinez Bridge	79	81	2	81	2
5		North of Tennessee Street	79	80	1	80	1
6		East of Suisun Valley Road	83	83	0	83	0
7		East of Pleasants Valley Road	80	81	1	81	1
8		East of Leisure Town Road	79	80	1	80	1
9	I-780	West of Military West (Benicia)	78	78	1	78	1
10	I-680	At Benicia Bridge	79	81	2	81	2
11		North of Marshview Road	76	77	1	77	1
12	I-505	North of Allendale Road	71	75	4	75	4
13		South of Midway Road	74	76	2	77	3
14	SR 84	At Solano-Yolo County Line	61	66	5	66	5
15	SR 37	East of Walnut Avenue	75	76	1	76	1
16		West of I-80	77	78	1	78	1

**Table 4.3-8  
Project-Related Increases in Traffic Noise on Major Solano County Roadways  
under the 2008 Draft General Plan Relative to Existing (2007) Conditions<sup>1</sup>**

Segment	Roadway	Segment Description	Existing Condition (dBA L <sub>dn</sub> )	2008 Draft General Plan (dBA L <sub>dn</sub> )			
				Preferred Plan	Change	Max. Dev't. Scenario	Change
17	SR 29	South of Lake-Napa County Line	64	64	0	64	0
18		Solano-Napa County Line	75	76	1	76	1
19	SR 128	East of Junction with SR 121 South	66	70	4	70	4
20		East of Franz Valley Road	67	71	4	71	4
21	SR 12/121	West of Old Sonoma Road	74	75	1	75	1
22	SR 12	East of Junction with SR 84 North	72	74	2	74	2
23		West of Solano-Napa County Line	75	77	2	77	2
24		West of Beck Avenue (Leg A)	76	78	2	78	2
25		East of Pennsylvania Avenue	76	77	1	77	1
26		East of Scandia Road	71	74	3	74	3
27		SR 113	North of I-80 (near Davis)	75	77	2	77
28	North of SR 12		66	68	2	69	3
29	South of Dixon City Limits		64	68	4	69	5
30	South of I-80		70	70	0	70	0
31	Air Base Parkway	East of I-80 (#53)	71	72	1	72	1
32		West of Railroad Tracks (#8)	69	71	2	71	2
33	Alamo Drive	South of Marshall Road	67	67	0	67	0
34		East of I-80	66	67	1	67	1
35	American Canyon Road	American Canyon City Limits	62	65	3	65	3
36	Batavia Road	South of Dixon City Limits	57	60	3	61	4
37	Benicia Road	East of Lemon Street	62	66	4	66	4
38	Broadway	North of Tennessee Street	66	68	2	68	2
39	Collinsville Road	Entire Segment	57	57	0	57	0
40	Columbus Parkway	North of Tennessee Street	65	68	3	68	3

**Table 4.3-8  
Project-Related Increases in Traffic Noise on Major Solano County Roadways  
under the 2008 Draft General Plan Relative to Existing (2007) Conditions<sup>1</sup>**

Segment	Roadway	Segment Description	Existing Condition (dBA L <sub>dn</sub> )	2008 Draft General Plan (dBA L <sub>dn</sub> )			
				Preferred Plan	Change	Max. Dev't. Scenario	Change
41	Cordelia Road	West of Hale Ranch Road	63	62	-2	61	-2
42		East of Pennsylvania Avenue	57	58	1	58	1
43	Curtola Parkway	West of Lemon Street	69	70	1	70	1
44	Davis Street	South of Bella Vista Road	61	63	2	63	2
45	Dixon Avenue	East of Gateway Drive	64	68	4	68	4
46	East Tabor Avenue	East of Tolenas Avenue (#7)	63	64	1	64	1
47	Georgia Street	West of 14th Street	64	64	0	64	0
48	Lake Herman Road	East of Columbus Parkway	61	64	3	64	3
49	Leisure Town Road	North of Orange Drive	66	69	3	70	4
50	Magazine Street	West of Sixth Street	62	63	1	62	0
51	Mason Street–Elmira	East of Peabody Road	69	69	0	69	0
52	North Texas Street	East of I-80 (#40)	67	69	2	69	2
53	North Connector	East of Suisun Valley Road	57	69	12	69	12
54	Nut Tree Road	South of Burtoin Drive	66	68	2	68	2
55	Oakwood Avenue	North of Tennessee Street	63	65	2	65	2
56	Peabody Road	North of Cement Hill Road	68	70	2	70	2
57	Pedrick Road–Road 98	Entire Segment	57	57	0	57	0
58	Petrified Forest Road	At Sonoma-Napa County Line	64	66	2	66	2

**Table 4.3-8  
Project-Related Increases in Traffic Noise on Major Solano County Roadways  
under the 2008 Draft General Plan Relative to Existing (2007) Conditions<sup>1</sup>**

Segment	Roadway	Segment Description	Existing Condition (dBA L <sub>dn</sub> )	2008 Draft General Plan (dBA L <sub>dn</sub> )			
				Preferred Plan	Change	Max. Dev't. Scenario	Change
59	Pitt School Road	South of Dixon City Limits	57	57	0	57	0
60		North of Market Street	61	63	2	63	2
61	Pleasants Valley Road	North of Vaca Valley Parkway	57	57	0	57	0
62		South of Vaca Valley Parkway	57	57	0	57	0
63	Redwood Parkway	West of Fairgrounds Drive	70	70	0	70	0
64	Road 89/Winters Road	Entire Segment	57	62	5	62	5
65	Rockville Road	East of Suisun Valley Road	64	64	0	64	0
66	Sacramento Street	North of Tennessee Street	63	66	3	65	2
67	Solano Avenue	West of Phelan Avenue	63	65	2	64	1
68	Sonoma Boulevard	North of Tennessee Street	70	70	1	70	1
69		North of I-80	67	69	2	69	2
70	Stevenson Bridge	Entire Segment	57	57	0	57	0
71	Suisun Valley Road	Solano-Napa County Line	61	62	1	62	1
72	Sunset Avenue	South of Travis Boulevard (#16)	67	68	1	68	1
73	Tennessee Street	West of Mariposa Street	68	69	1	69	1
74	Travis Boulevard	East of I-80 (#84)	69	70	1	70	1
75	Tuolumne Street	North of Tennessee Street	64	66	2	66	2
76	Vanden Road	South of Leisure Town Road	61	66	5	66	5
77	West Texas Street	East of I-80 (#101)	66	68	2	67	1
78	Wilson Avenue	North of Tennessee Street	65	67	2	67	2

**Table 4.3-8  
Project-Related Increases in Traffic Noise on Major Solano County Roadways  
under the 2008 Draft General Plan Relative to Existing (2007) Conditions<sup>1</sup>**

Segment	Roadway	Segment Description	Existing Condition (dBA L <sub>dn</sub> )	2008 Draft General Plan (dBA L <sub>dn</sub> )			
				Preferred Plan	Change	Max. Dev't. Scenario	Change
<sup>1</sup> Traffic noise level at 100 feet from roadway centerline in terms of day/night average levels Notes: dBA = A-weighted decibels; I-80 = Interstate 80; I-505 = Interstate 505; I-680 = Interstate 680; I-780 = Interstate 780; L <sub>dn</sub> = day-night average noise level; SR = State Route Sources: Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108); data provided by Bollard Acoustical Consultants in 2008							

The first paragraph of Impact 4.3-2a on page 4.3-30 of the DEIR is modified as follows to include wastewater treatment plants within the generalized list:

Under the Preferred Plan, future development of noise-generating uses (e.g., industries, commercial loading docks, automotive maintenance facilities, recreational areas, wastewater treatment plants), in areas containing noise-sensitive land uses (e.g., residential dwellings, schools, hospitals, parks, hotels, places of worship, libraries) could cause noise levels to exceed acceptable limits as defined in Tables 4.3-9 and 4.3-10 and described in Impact 4.3-1a above.

The last paragraph under Mitigation Measure 4.3-3a on page 4.3-31 of the DEIR is revised as follows:

It is recognized that the above 2008 Draft General Plan policies and Mitigation Measure 4.3-4-3a, used individually or collectively, can result in a reduction of traffic noise levels at affected sensitive receptor locations. Nonetheless, despite the implementation of such a noise abatement program, it is infeasible to ensure that existing residential uses will not be exposed to future traffic noise levels exceeding the County's noise standards or significantly exceeding levels they are exposed to today. For example, it may not be possible to construct a noise barrier at an existing residence due to engineering constraints (utility easements or driveway openings), and building façade sound insulation would only benefit interior spaces, so outdoor activity areas may still be affected. It may also be infeasible to reduce speed limits in areas where speed surveys would not safely support the reduction. In addition, busy streets tend to also serve commercial uses, so restricting trucks on the busier streets may be impractical. Although a combination of the listed measures could be highly effective in reducing traffic noise levels on a countywide basis, it is not possible to state with absolute certainty that it would be possible to mitigate this impact at every noise-sensitive use within the County. As a result, this impact would remain **significant and unavoidable**.

## **SECTION 4.4, "TRANSPORTATION AND CIRCULATION"**

The bulleted list of major arterial roadways on page 4.4-5 of the DEIR is revised as follows:

- ▶ *Curtola Parkway*—Portions in unincorporated Solano County near Vallejo
- ▶ *SR 113*—From west of Rio Vista to I-80, and a short segment of interchange adjacent to the Yolo County line near Davis
- ▶ *SR 12*—Between Rio Vista and Suisun City, and between Fairfield and the Napa County line
- ▶ *SR 29*—Portions in unincorporated Solano County near Vallejo

- ▶ *SR 37*—Portions in unincorporated Solano County west of Vallejo
- ▶ *Peabody Road*—A small portion between Vacaville and Fairfield
- ▶ *River Road (SR 84)*—From north of Rio Vista to Yolo County line
- ▶ *North Connector*—Between Cordelia and central Fairfield
- ▶ *Leisure Town Road*—from south of I-80 to Vanden Road
- ▶ *Vanden Road*—from west of Leisure Town Road to Peabody Road

The text after the last paragraph of the “Transit Service” section on page 4.4-16 is added as follows. Please note that all subsequent tables in Section 4.4, and text references to these tables, are renumbered to reflect the insertion of the new table below.

The Transit Element of the *Solano Comprehensive Transportation Plan (Solano Transportation Authority 2005a)* identifies potential new express bus routes that could operate if subsidy funding is available for intercity services. In this plan, specific transit needs of unincorporated Solano County include:

- ▶ Solano Paratransit support,
- ▶ more joint bus operations,
- ▶ subsidized paratransit taxi service,
- ▶ expanded regional express bus service,
- ▶ study of the consolidation of intercity transit services, and
- ▶ support for the County paying its fair share for transit service provided to residents of the unincorporated county by others.

The Transit Element identifies several specific projects that have a park-and-ride function. Those projects—such as rail, ferry or express bus service—have some potential to directly benefit unincorporated Solano County. These benefits include:

- ▶ expanded Vallejo Baylink ferry service,
- ▶ increased capacity of the Curtola park-and-ride facility,
- ▶ possible ferry service to Benicia, and
- ▶ expanded regional connections through express buses.

The *Solano Comprehensive Transportation Plan* details a proposal for a major regional express bus network. This network is summarized in Table 4.4-5. The system proposed here is “unconstrained” so that if funds are not made available, these routes will not be operated as suggested.

**Table 4.4-5  
Proposed 2030 Bus Network—Unconstrained System**

<u>Existing Route</u>	<u>Proposed Route</u>	<u>Origin</u>	<u>Destination</u>	<u>Via</u>	<u>Peak Frequency</u>	<u>Base Frequency</u>
<u>40</u>		<u>Vacaville</u>	<u>Walnut Creek BART</u>	<u>Fairfield, I-80, I-680</u>	<u>10</u>	<u>30</u>
<u>80</u>		<u>Napa</u>	<u>El Cerrito del Norte BART</u>	<u>Vallejo, I-80</u>	<u>5</u>	<u>15</u>
<u>90</u>		<u>Vacaville</u>	<u>El Cerrito del Norte BART</u>	<u>Fairfield, I-80</u>	<u>10</u>	<u>60</u>
<u>30</u>	<u>new</u>	<u>Sacramento</u>	<u>Novato</u>	<u>Davis, Dixon, Vacaville, Fairfield, Vallejo, Marin</u>	<u>30</u>	<u>30</u>
	<u>new</u>	<u>Vallejo</u>	<u>Walnut Creek BART</u>	<u>Benicia, I-780</u>	<u>10</u>	<u>30</u>
	<u>new</u>	<u>Napa</u>	<u>Suisun City</u>	<u>Jameson Canyon Road (SR 12)</u>	<u>30</u>	<u>60</u>
	<u>new</u>	<u>Suisun City</u>	<u>Rio Vista</u>	<u>SR 12</u>	<u>30</u>	<u>60</u>
	<u>new</u>	<u>Rio Vista</u>	<u>Antioch</u>	<u>SR 160</u>	<u>60</u>	
	<u>new</u>	<u>Rio Vista</u>	<u>Lodi</u>	<u>SR 12</u>	<u>60</u>	
<u>20</u>		<u>Vacaville</u>	<u>Fairfield</u>	<u>Local</u>	<u>30</u>	<u>30</u>
<u>85</u>		<u>Davis</u>	<u>Vallejo</u>	<u>Dixon, Vacaville, Fairfield, Vallejo</u>	<u>15</u>	<u>15</u>
	<u>new</u>	<u>Vallejo</u>	<u>Fairfield</u>	<u>Benicia Industrial Park</u>	<u>60</u>	

Note: BART = Bay Area Rapid Transit ; I-80 = Interstate 80 ; I-680 = Interstate 680 ; I-780 = Interstate 780 ; SR = State Route  
Source: Solano Transportation Authority 2005a

The existing Table 4.4-6 on page 4.4-25 of the DEIR is revised as follows:

**Table 4.4-6-7  
High-Accident Locations**

<u>Category</u>	<u>Location</u>			<u>Average Number</u>	<u>Average Rate</u>	<u>State Average<sup>1</sup></u>
<u>Intersection<sup>1</sup></u>	<u>Suisun Valley Road and Rockville Road</u>			<u>4.8</u>	<u>0.97</u>	<u>0.43</u>
<u>Intersection<sup>1</sup></u>	<u>Vanden Road and Canon Road</u>			<u>1.4</u>	<u>0.34</u>	<u>0.43</u>
<u>Intersection<sup>1</sup></u>	<u>Rockville Road and Abernathy Road</u>			<u>1.6</u>	<u>0.31</u>	<u>0.43</u>
<u>Intersection<sup>1</sup></u>	<u>N. Gate Road and Canon Road</u>			<u>0.8</u>	<u>0.26</u>	<u>0.43</u>
<u>Pedestrian<sup>2</sup></u>	<u>Solano County Areas</u>			<u>1.8</u>	<u>0.09</u>	<u>0.43</u>
<u>Category</u>	<u>Route</u>	<u>From</u>	<u>To</u>	<u>Average Number</u>	<u>Average Rate</u>	<u>State Average</u>
<u>Freeway<sup>3</sup></u>	<u>SR 12</u>	<u>I-80</u>	<u>Walters Road</u>	<u>97.5</u>	<u>1.45</u>	<u>1.61</u>
<u>Freeway<sup>3</sup></u>	<u>SR 12</u>	<u>Napa County line</u>	<u>I-80</u>	<u>41</u>	<u>1.33</u>	<u>1.33</u>
<u>Freeway<sup>3</sup></u>	<u>I-80</u>	<u>Carquinez Bridge</u>	<u>SR 37</u>	<u>314.7</u>	<u>1.28</u>	<u>1.04</u>
<u>Freeway<sup>3</sup></u>	<u>SR 37</u>	<u>Sonoma County line</u>	<u>I-80</u>	<u>137.7</u>	<u>0.93</u>	<u>1.24</u>
<u>Freeway<sup>3</sup></u>	<u>SR 12</u>	<u>Walters Road</u>	<u>Rio Vista</u>	<u>75.3</u>	<u>0.86</u>	<u>0.96</u>
<u>Freeway<sup>3</sup></u>	<u>I-80</u>	<u>Red Top Road</u>	<u>North Texas Street</u>	<u>434.8</u>	<u>0.86</u>	<u>0.93</u>

**Table 4.4-6-7  
High-Accident Locations**

Category	Location			Average Number	Average Rate	State Average <sup>1</sup>
Freeway <sup>3</sup>	SR 113	I-80	SR 12	37.7	0.75	<u>1.05</u>
Freeway <sup>3</sup>	I-780	I-80	I-680	90.5	0.74	<u>0.92</u>
Freeway <sup>3</sup>	I-80	SR 37	Red Top Road	146.5	0.65	<u>0.64</u>
Freeway <sup>3</sup>	I-80	N. Texas Street	Alamo Drive	136.5	0.58	<u>0.81</u>
Freeway <sup>3</sup>	I-680	Benicia Bridge	I-80	142.3	0.56	<u>0.79</u>
Freeway <sup>3</sup>	I-80	Alamo Street Drive	SR 113	348.5	0.48	<u>0.75</u>
Freeway <sup>3</sup>	I-505	Yolo County Line	I-80	29.3	0.38	<u>0.52</u>

Notes:

I-80 = Interstate 80; I-505 = Interstate 505; I-680 = Interstate 680; I-780 = Interstate 780; SR = state route

<sup>1</sup> Intersection—Accidents per million entering vehicles; state average provided by Caltrans (1999 Intersection Accident Rates)

<sup>2</sup> Pedestrian—Yearly average per 1,000 population

<sup>3</sup> Freeway—Accidents per million vehicle miles

Source: Solano Transportation Authority 2005

The text after the “Pedestrian Network” paragraph on page 4.4-26 is added as follows. Please note that all subsequent tables in Section 4.4, and text references to these tables, are renumbered to reflect the insertion of the new table below.

A number of pedestrian projects and Transportation for Livable Communities concepts have been developed through the Solano Countywide Pedestrian Plan (Solano County 2004a). Many of the projects in the Solano Countywide Pedestrian Plan are sponsored by jurisdictions but include County participation because portions of the projects would be in unincorporated areas. These projects generally focus on improving connectivity to common destinations (e.g., retail, schools, offices, recreational attractions). These projects, listed in Table 4.4-9, include overcrossings, sidewalks, and recreational trails.

**Table 4.4-9  
Proposed Pedestrian and Transportation for Livable Communities Projects**

Project Title	Summary Description	Status
<u>Red Top Road Overcrossing</u>	<u>Add bicycle and pedestrian elements to project</u>	<u>Project</u>
<u>Homestead Avenue Improvement Project</u>	<u>Construct sidewalk and new I-780 overcrossing</u>	<u>Project</u>
<u>Fulton Avenue Improvement Project</u>	<u>Construct sidewalk</u>	<u>Project</u>
<u>Old Town Cordelia Improvement Project</u>	<u>Construct pedestrian/bicycle path with amenities</u>	<u>Project</u>
<u>Jepson Parkway Concept Plan</u>	<u>Provide bicycle path and transit-compatible features</u>	<u>Project</u>
<u>Union Avenue to Main Street Streetscape Enhancements Program</u>	<u>Enhance corridor with sidewalks, signs and other treatments</u>	<u>Project</u>
<u>North Connector</u>	<u>Construct of bicycle/pedestrian path and other features</u>	<u>Project</u>
<u>Connection from Cordelia to King Ranch Open Space</u>	<u>Extend recreational trail to King Ranch Open Space</u>	<u>Concept</u>
<u>Connection from Red Top Road to Lynch Canyon Open Space</u>	<u>Repair landside repair and permit bicycle and pedestrian access</u>	<u>Concept</u>
<u>Connection from Lake Herman Park to Sky Valley Open Space</u>	<u>Construct recreational trail</u>	<u>Concept</u>
<u>Connection from Wardlow Park to Blue Rock Springs</u>	<u>Construct recreational trail</u>	<u>Concept</u>

<u>Project Title</u>	<u>Summary Description</u>	<u>Status</u>
<u>Green Valley Road Path Extensions</u>	<u>Extend pathway from New Neitzel Road to Neitzel Road</u>	<u>Concept</u>
<u>Mangels Boulevard Path Extension</u>	<u>Extend to Solano Community College</u>	<u>Concept</u>
<u>Connection from Lagoon Valley to Paradise Valley</u>	<u>Connect areas with path</u>	<u>Concept</u>
<u>Tri-City and County Regional Trail Connections</u>	<u>Provide new connections for Lynch Canyon Preserve, Hiddenbrooke and Northgate Open Space</u>	<u>Concept</u>

Source: Solano Transportation Authority 2004a.

The following text is added after the bulleted list at the end of the “Bicycle Network” section on page 4.4-27 of the DEIR. Please note that all subsequent tables in Section 4.4, and text references to these tables, are renumbered to reflect the insertion of the new table below.

The Alternatives Modes Element of the *Solano Comprehensive Transportation Plan* is based on the *Solano Countywide Bicycle Plan* (Solano County 2004b). This plan has identified several projects to provide intercity bicycle linkages and increase the availability of recreational trails in the unincorporated portion of the county. These projects are summarized in Table 4.4-10. Most of these projects involve either new bicycle paths or bicycle lanes.

<u>Project Title</u>	<u>County Roads</u>	<u>Facility Class</u>	<u>Phase</u>
<u>Dixon to Vacaville Bike Route</u>	<u>Porter Road, Pitt School Road, Hawkins Road</u>	<u>II</u>	<u>1</u>
<u>Vacaville to Fairfield (North Route)</u>	<u>Elmira Road Pathway</u>	<u>I</u>	<u>1</u>
<u>Jepson Parkway—Vacaville to Suisun City (South Route)</u>	<u>Leisure Town Road, Vanden Road, Cement Hill Road, Walters Road</u>	<u>I</u>	<u>1</u>
<u>Central County Bikeway—Suisun City to Rio Vista</u>	<u>State Route 12</u>	<u>II</u>	<u>1</u>
<u>I-80/ 680/SR 12 Interchange Project—Cordelia to Napa County</u>	<u>State Route 12</u>	<u>I or II</u>	<u>1</u>
<u>Solano Bikeway—Fairfield to Vallejo</u>	<u>Linear Park Extension, Red Top Road, McCary Road</u>	<u>I or II</u>	<u>1</u>
<u>Vallejo to Sonoma County</u>	<u>State Route 37</u>	<u>I</u>	<u>1</u>
<u>Vallejo to Benicia</u>	<u>Benicia Road</u>	<u>II</u>	<u>1</u>
<u>Benicia to Cordelia</u>	<u>Lopes Road</u>	<u>III</u>	<u>1</u>
<u>North Connector</u>	<u>Business Center Drive area</u>	<u>I</u>	<u>1</u>
<u>Pleasants Valley Route</u>	<u>Pleasants Valley Road, Cherry Glen Road</u>	<u>II</u>	<u>2</u>
<u>Lake Herman Road</u>	<u>Lake Herman Road</u>	<u>II</u>	<u>2</u>
<u>Suisun Valley Road</u>	<u>Suisun Valley Road</u>	<u>II</u>	<u>2</u>
<u>Abernathy/Mankas Corner Route</u>	<u>Abernathy Road, Mankas Corner Road</u>	<u>II</u>	<u>2</u>
<u>State Route 12 Overcrossing</u>	<u>Red Top Road</u>	<u>I</u>	<u>2</u>
<u>Gibson Canyon Road</u>	<u>Gibson Canyon Road</u>	<u>II</u>	<u>2</u>
<u>Putah Creek Bridge</u>	<u>Near Winters Road and Putah Creek Road</u>	<u>I</u>	<u>2</u>

Source: Solano Transportation Authority 2004b

The description under “Solano Transportation Authority” on page 4.4-28 of the DEIR is revised as follows:

The creation of congestion management agencies in 1990 began a new era of localized, interjurisdictional planning at the countywide level. Within Solano County, all jurisdictions, including the County, participate in a singular agency for transportation planning and funding, known as the Solano Transportation Authority (STA). ~~This agency STA~~ is responsible for overseeing a number of programs and funds. A key directive of ~~this agency STA~~ is to prepare a congestion management program document every 2 years, which in turn requires preparation of a forecast travel demand model that is consistent with the MTC’s regional travel demand model. This model is known as the Solano-Napa Model because it was jointly developed with participation from both counties. The Solano Congestion Management Program (CMP) is an important implementation document. The CMP specifically states that all communities must be in compliance with the program to receive various funds for road maintenance and construction. One program specifically related to the 2008 Draft General Plan is STA’s Land Use Impact Analysis Program. This program requires the traffic conditions created by new development to be mitigated. If monitoring of traffic congestion, or a projection of congestion up to 7 years from the current year, finds congestion exceeding STA standards, then preparation of a deficiency plan could be required.

The text at the end of the second paragraph of the “Forecasting Tool” section under the methodology discussion on page 4.4-29 is added as follows. Please note that all subsequent tables in Section 4.4, and text references to these tables, are renumbered to reflect the insertion of the new table below.

The overall control totals for 2030 vary only slightly, but the forecasts for Solano County are lower in Projections 2007 than in Projections 2005 (Table 4.4-11). The accuracy of a travel forecasting model to project traffic is generally within 5%, so that the differences here are considered insignificant. Specific traffic count data were obtained through technical memoranda distributed as part of the Napa/Solano Travel Model development rather than by special traffic counts taken for the 2008 Draft General Plan.

<b>Table 4.4-11</b>					
<b><u>Comparison of Projections 2007 and Projections 2005 Totals for Solano County for Year 2030</u></b>					
<u>Projections 2005</u>		<u>Projections 2007</u>		<u>Differences</u>	
<u>Households</u>	<u>Jobs</u>	<u>Households</u>	<u>Jobs</u>	<u>Households</u>	<u>Jobs</u>
<u>193,840</u>	<u>217,910</u>	<u>188,290</u>	<u>215,000</u>	<u>-2.9%</u>	<u>-1.3%</u>
<u>Source: ABAG 2005, 2007</u>					

The bulleted list on page 4.4-33 of the DEIR is revised as follows:

- ▶ *I-80 east of Pleasants Valley Road: LOS E to LOS F in both directions*
- ▶ ~~*Peabody Road east of Pleasants Valley Road: LOS E to LOS F in both directions*~~
- ▶ *Alamo Drive south of Marshall Drive: LOS D to LOS E in the northbound direction*

The following text is added immediately after the first bulleted list and before “Relevant Policies of the 2008 Draft General Plan” on page 4.4-41 of the DEIR. Please note that all subsequent tables in Section 4.4, and text references to these tables, are renumbered to reflect the insertion of the new table below.

Table 4.4-15 presents an evaluation of the major intersections that would be affected by the proposed land use change in the northeast Dixon area, in the vicinity of the Pedrick Road/I-80 interchange. The three Pedrick Road intersections examined—at the I-80 westbound ramps, I-80 eastbound ramps/Sparling Road, and Vaughn Road—are the key locations that were evaluated in prior traffic studies for the City of

Dixon adjacent to the proposed land use change for areas on Pedrick Road, near the Pedrick Road/I-80 interchange, and on Sparling Lane.

<b>Table 4.4-15 Performance of Pedrick Road Intersections under Various Alternatives</b>					
<b><u>Intersection No.</u></b>	<b><u>East-West Road</u></b>	<b><u>North-South Road</u></b>	<b><u>Intersection LOS, Year 2030</u></b>		
			<b><u>No Project</u></b>	<b><u>Preferred Plan</u></b>	<b><u>Maximum Development Scenario</u></b>
<u>1</u>	<u>I-80 Eastbound Ramps/ Sparling Road</u>	<u>Pedrick Road</u>	<u>C</u>	<u>C</u>	<u>C</u>
<u>2</u>	<u>I-80 Westbound Ramps</u>	<u>Pedrick Road</u>	<u>C</u>	<u>C</u>	<u>C</u>
<u>3</u>	<u>Vaughn Road</u>	<u>Pedrick Road</u>	<u>A</u>	<u>A</u>	<u>B</u>

Notes:  
 I-80 = Interstate 80; LOS = level of service  
 Intersections assumed as signalized based upon mitigation measures required by the *Northeast Quadrant Specific Plan* prepared by the City of Dixon, as listed in the Dixon Downs Draft Environmental Impact Report. Intersections analyzed for the p.m. peak hour, as presented in the Dixon traffic impact study guidelines listed in the Dixon Downs Draft Environmental Impact Report.  
 Sources: Data provided by DKS Associates in 2008; TRAFFIX files

## **SECTION 4.5, “HYDROLOGY AND WATER RESOURCES”**

The “Surface-Water Resources” section in Section 4.5.1, “Existing Conditions,” beginning on page 4.5-1 of the DEIR is revised as follows:

### **SURFACE-WATER RESOURCES**

Surface-water resources within Solano County are diverse and include many creeks, drainages, sloughs, marshes, and bays. Exhibits 4.5-1 and 4.5-2 show the water service areas and major water resources, watersheds, and water bodies in Solano County. ~~As shown in Exhibit 4.5-2, Solano County has two major drainage provinces, the Sacramento River/Delta Drainage Province and the San Francisco Bay Drainage Province. As a result, Solano County falls within the jurisdiction of two regional water quality control boards (RWQCBs), the San Francisco Bay RWQCB and the Central Valley RWQCB.~~ Each of the major water resources in Solano County is described in more detail below. Water quality characteristics of significant water bodies are discussed in additional detail in the “Water Supply and Water Demand” section of the Water Resources Background Report prepared for the 2008 Draft General Plan (Solano County 2006).

### **Major Creek and Drainage Systems**

Solano County has two major drainage provinces, the Sacramento River/Delta Drainage Province and the San Francisco Bay Drainage Province. Major drainage features are shown in Exhibit 4.5-2. As a result, Solano County falls within the jurisdiction of two regional water quality control boards (RWQCBs), the San Francisco Bay RWQCB and the Central Valley RWQCB. The San Francisco Bay Province includes the southwestern portion of the county and includes the local watersheds of the Napa River, American Canyon Creek, Green Valley Creek, Suisun Creek, Ledgewood Creek, Laurel Creek, McCoy Creek, Union Creek, and their tributaries, which drain into San Francisco Bay through Suisun Bay and San Pablo Bay. The Sacramento River Province includes local watersheds in the northeast portion of the county.

Major drainages in this province include Alamo Creek, Ulatis Creek, Putah Creek and their tributaries, which drain into the Sacramento–San Joaquin Delta.

The following text is added at the end of the “Surface-Water Resources” section on page 4.5-9 of the DEIR (please note that all subsequent tables in Section 4.5, and text references to these tables, are renumbered to reflect the insertion of the new table below):

**DAMS**

A total of 18 dams are located within Solano County, 10 of which have been identified as potentially causing injury or loss of life in the event of failure. Two additional dams outside of Solano County have also been identified as potentially causing injury or loss of life in the county. These 12 dams are regulated and routinely inspected under the jurisdiction of DWR’s Division of Safety of Dams (DSOD) (see the description of DWR under “State Plans, Policies, Regulations, and Laws” below). Table 4.5-1 presents a summary of dams located in or near Solano County that would affect the county in the event of dam failure.

<b>Table 4.5-1</b>				
<b>Dams in and in the Vicinity of Solano County</b>				
<u>Name or Location of Dam</u>	<u>Structural Type</u>	<u>Capacity (af)</u>	<u>Owner</u>	<u>Date of Construction</u>
<b><u>Dams Located in Solano County Capable of Causing Injury or Loss of Human Life with Failure</u></b>				
<u>1. Fleming Hill No. 2</u>	<u>Earth</u>	<u>34</u>	<u>City of Vallejo</u>	<u>1912</u>
<u>2. Lake Chabot</u>	<u>Earth</u>	<u>1,120</u>	<u>City of Vallejo</u>	<u>1870</u>
<u>3. Lake Frey</u>	<u>Earth</u>	<u>1,075</u>	<u>City of Vallejo</u>	<u>1894</u>
<u>4. Lake Herman</u>	<u>Earth</u>	<u>2,210</u>	<u>City of Benicia</u>	<u>1906</u>
<u>5. Lake Madigan</u>	<u>Earth</u>	<u>1,711</u>	<u>City of Vallejo</u>	<u>1908</u>
<u>6. Pennsylvania Creek</u>	<u>Earth</u>	<u>160</u>	<u>State Highways</u>	<u>1958</u>
<u>7. Pine Lake</u>	<u>Earth</u>	<u>360</u>	<u>City of Benicia</u>	<u>1942</u>
<u>8. Summit Reservoir</u>	<u>Earth</u>	<u>221</u>	<u>City of Vallejo</u>	<u>1968</u>
<u>9. Swanzy Lake</u>	<u>Earth</u>	<u>107</u>	<u>City of Vallejo</u>	<u>1931</u>
<u>10. Putah Creek Division</u>	<u>Gravity</u>	<u>720</u>	<u>U.S. Bureau of Reclamation</u>	<u>1957</u>
<b><u>Dams Located within the County, but Declared Exempt for the OES Inundation Mapping Program since No Injury or Loss of Human Life is Anticipated with Failure</u></b>				
<u>11. Bascherini Dam</u>	<u>Earth</u>	<u>19</u>	<u>Solano Irrigation District</u>	
<u>12. Dickson Hill Dam</u>	<u>Earth</u>	<u>23</u>	<u>City of Fairfield</u>	
<u>13. Giles Dam</u>	<u>Earth</u>	<u>119</u>	<u>Billy Yarbrough</u>	
<u>14. Green Valley Lake Dam</u>	<u>Earth</u>	<u>150</u>	<u>J. J. Willard</u>	
<u>15. Harris Dam</u>	<u>Earth</u>	<u>40</u>	<u>William J. McGuire</u>	
<u>16. Main Prairie Dam #3</u>	<u>=</u>	<u>96</u>	<u>Main Prairie Water District</u>	
<u>17. Mangels Dam</u>	<u>Earth</u>	<u>276</u>	<u>Lewis Mangels</u>	
<u>18. Municipal Dam</u>	<u>Earth</u>	<u>169</u>	<u>City of Suisun City</u>	

<b>Table 4.5-1 Dams in and in the Vicinity of Solano County</b>				
<u>Name or Location of Dam</u>	<u>Structural Type</u>	<u>Capacity (af)</u>	<u>Owner</u>	<u>Date of Construction</u>
<b><u>Dams Located Outside the County that, with Failure, Would Inundate Planning Area Lands</u></b>				
<u>19. Lake Curry</u>	<u>Earth</u>	<u>10,700</u>	<u>City of Vallejo</u>	<u>1926</u>
<u>20. Monticello Dam</u>	<u>Concrete Arch</u>	<u>1,600,000</u>	<u>U.S. Bureau of Reclamation</u>	<u>1957</u>
Notes: af = acre-feet; OES = Governor's Office of Emergency Services Source: Solano County 1977				

Four of the dams listed in Table 4.5-1 above—the dams at Lakes Chabot, Frey, Herman, and Madigan—are relatively old and, if failure were to occur, could endanger population centers in Solano County. However, based on 2005 inspections and current information for these dams, they are deemed satisfactory for continued use (DSOD 2005). Monticello Dam retains one of the largest reservoirs in northern California, storing 1,600,000 acre-feet of Putah Creek water; it is likely that extensive flooding of county lands would occur if this dam were to fail. Monticello Dam was constructed relatively recently (1957) and is considered to be seismically sound. The Association of Bay Area Governments (ABAG) found the following for Solano County: 16,766 urban acres are subject to dam inundation; 3,577 miles of roadway are in an area subject to dam inundation; and 23 critical health care facilities, schools, or County-owned facilities are in an area subject to dam inundation (ABAG 2008a).

According to the existing land use data for the unincorporated areas of Solano County for 2005, ABAG reported that approximately 24% of urban areas and 29% of nonurban areas would become inundated as a result of dam failure (ABAG 2008b). ABAG has prepared maps of areas within the unincorporated areas of Solano County, including the cities of Vacaville, Rio Vista, Suisun-Fairfield, Benicia, Vallejo, and Dixon that would be inundated as a result of dam failure (ABAG 2007). The maps show that the entire northeast corner of the county, including the entire city of Dixon and portions of Vacaville and Rio Vista, would be inundated from a failure of Monticello Dam. In addition, incorporated areas southwest of Fairfield and Suisun City would also be inundated as a result of failures of the Pennsylvania Creek and Lake Curry Dams. Failures of the Pine Lake and Lake Herman Dams would inundate lands located within the Benicia Municipal Service Area (MSA). A small portion of land located south of the Vallejo MSA would become inundated by failures of the failure of the Summit Reservoir, Swanzy Lake, Lake Chabot, Fleming Hill No. 2, and Lake Frey Dams. These inundation maps are available from ABAG and the OES.

The “Groundwater Resources” section on pages 4.5-10 and 4.5-11 of the DEIR is revised as follows:

## **GROUNDWATER RESOURCES**

There are four groundwater basins within Solano County as defined by DWR (2006): the Napa-Sonoma Lowlands subbasin within the Napa-Sonoma Valley basin, the Suisun-Fairfield Valley basin, and the Solano and Yolo Valley subbasins within the Sacramento Valley Basin. Other groundwater areas are not well defined (Exhibit 4.5-2). For additional information regarding groundwater subbasins within Solano County, please refer to “Groundwater Management Plans” in the “State Plans, Policies, Regulations, and Laws” section in Section 4.9, “Public Services and Utilities.”

The cities of Rio Vista and Dixon are served exclusively by groundwater from the Solano Subbasin underlying the cities. Vacaville gets approximately one-third of its municipal water supply from this basin, which underlies the eastern portion of the city. Most of the growers within the Solano Irrigation District (SID) use surface water supplied by SID, but SID also has its own wells to supplement its

surface-water supply from the Solano Project. Maine Prairie Water District (MPWD) and Reclamation District (RD) 2068 provide surface water to their growers and do not currently use groundwater underlying their districts; however, they are considering utilizing groundwater to supplement surface-water supplies to meet future needs. Growers outside of districts that provide surface water rely entirely on groundwater unless they have an individual right to a surface-water supply. SID also provides domestic-water service to several areas of the unincorporated county along with the cities of Vallejo, Suisun City, and Vacaville.

Most rural residential landowners have individual shallow groundwater wells that serve their domestic needs. Some small rural residential water systems also distribute groundwater to their customers. The Solano Subbasin, which underlies the northeastern portion of the county, is the largest groundwater basin in the county. This basin starts from the foothills above Vacaville and extends to the Sacramento River and from Putah Creek to the north to the boundaries of Fairfield to the south. 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 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. Vacaville's wells draw from the Tehama Formation for groundwater supply. The Suisun–Fairfield Valley Basin is the second largest groundwater basin in Solano County. It lies southwest of English Hills beneath the cities of Fairfield and Suisun City. This basin is not used in a significant capacity because of low yields and poor water quality (SCWA 2005b).

Groundwater levels drop in dry years, but rebound in wet years. Before development of the Solano Project, groundwater was used extensively in Solano County, both for municipal supplies and for agriculture. One of the main reasons the Solano Project (see below Section 4.9, "Public Services and Utilities," for further description) was developed was to rectify groundwater overdraft in some agricultural areas. Once the Solano Project started making agricultural water deliveries, groundwater levels rebounded.

Public agencies that overlie the Solano Subbasin have developed groundwater management plans as specified in Assembly Bill (AB) 3030 (Chapter 947, Statutes of 1992), a state law that authorizes local agencies to prepare groundwater management plans. Solano County Water Agency (SCWA) prepares biannual monitoring reports on groundwater levels for the groundwater basin. Groundwater level data come from DWR and local public agencies that utilize the groundwater basin. According to the most recent SWA/SCWA monitoring report for 1999–2002, spring groundwater elevations throughout the Solano Subbasin decreased slightly on average between 0.9 feet and 5.6 feet. Within the Southwest Putah Plain area, groundwater elevations slightly increased, on an average of 0.04 foot (SWA 2004). No determination of the potential cause for the slight decrease in groundwater elevations was reported (SWA 2004). An updated SCWA groundwater monitoring report is anticipated to be available in early 2009 (Okita, pers. comm., 2008a). According to the fall 2007 groundwater elevation monitoring report, water levels within the shallow and deep aquifers in the Rural North Vacaville Water District (RNVWD) service area experience seasonal fluctuations. Overall groundwater levels have experienced a decrease of approximately 18 feet within the shallow aquifer and 30 feet in the deep aquifer (RNVWD 2008). The Cities of Vacaville, Dixon, and Rio Vista have not reported any significant reduction in groundwater levels. The reason for the decreased groundwater elevations within these portions of the county is not presently understood. The fall 2007 groundwater elevation monitoring report recommended that a longer period of data gathering be required to determine the reason for the decline, whether below-normal rainfall or pumping by RNVWD and others within the region (RNVWD 2008). In addition, SCWA has recently implemented a program to monitor groundwater conditions within the deep aquifer of the Tehama Formation. SCWA had installed three of the four deep wells that will be used for monitoring as of July 2008 (Okita, pers. comm., 2008b). SCWA's monitoring program will collect supplemental data that will assist the agency in understanding groundwater processes within the deep aquifer.

~~The Rural North Vacaville Water District (RNVWD) was formed in 1996 to address groundwater problems in the rural north Vacaville area, which included a drop in groundwater levels and failing wells. The Tehama Formation is the thickest water-bearing unit underlying the Solano Subbasin, ranging in thickness from 1,500 feet to 2,500 feet (DWR 2004). Two wells that draw from the deep aquifer within the Tehama Formation provide the source of RNVWD's water supply. This supply is limited to a total capacity of approximately 522-33 connections, and includes drilling two deep wells (1,500 feet) with pumps that pump 500 gallons per minute. Only one well is currently in operation. To date there have been no groundwater storage calculations for the Solano Subbasin in the vicinity of Pleasants Valley/Vaca Valley, and the area to the west of this basin is not defined (DWR 2004).~~

Groundwater within the Solano Subbasin is considered to be of generally good quality. Total dissolved solids (TDS) 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. In general, most of the water within the subbasin is classified as hard to very hard. 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 will affect sensitive tree crops). Arsenic concentrations are typically between 0.02 ppm and 0.05 ppm; however, isolated areas with elevated arsenic concentrations of up to 0.17 ppm or 17 parts per billion (ppb) have been reported, with the highest concentrations found along the southeastern margin of the basin. The current primary MCL for arsenic is 10 ppb-0.05 ppm. One of two deep-water wells that are sources for the RNVWD water system have been taken offline because of elevated levels of arsenic at concentrations of 14-17 ppb, which is slightly higher than the 10-ppb MCL for drinking-water supply (Bellem, pers. comm., 2008a). The remaining well yields water with relatively low concentrations of arsenic, between 4 and 7 ppb (Bellem, pers. comm., 2008a). The City of Rio Vista has also reported elevated concentrations of arsenic and is currently blending water from several wells within a storage reservoir to meet MCL requirements (Sieffert, pers. comm., 2008). Elevated concentrations of arsenic have been reported in wells installed in the deeper aquifer of the Tehama Formation. Also, manganese is found at concentrations above the secondary MCL of 0.05 ppm along the Sacramento River along the eastern portion of the subbasin (DWR 2004).

The entire "Water Supply" section on pages 4.5-11 through 4.5-19 of the DEIR has been removed as follows. Please note that this text is replaced by the text inserted into Section 4.9, "Public Services and Utilities," shown below.

## **~~WATER SUPPLY~~**

~~This subsection describes the water supply projects in Solano County and provides a summary of existing water supply and water demand within the county. This subsection also describes projected water demands in the county. This description focuses on water supply projects and supplies of SCWA and the demands of member agencies who receive water supply from SCWA, as well as areas within the county outside of the service area of SCWA (SCWA 2005b, 2005c). Please also refer to the discussion of water supply in Section 4.9, "Public Services and Utilities."~~

## **~~Solano County Water Agency Water Supplies~~**

### **~~Solano Project~~**

~~The Solano Project was conceived in the 1940s and 1950s to meet the water demands of agriculture, municipalities, and military facilities in Solano County. As agriculture developed throughout the county, groundwater use increased substantially. Groundwater overdraft persisted in several parts of the county, providing an impetus for a surface water supply to offset the overdraft. The population of Solano County in the 1940s and 1950s was also expected to grow; however, planners at that time had no way of knowing that the urban population growth in Solano County would increase as dramatically as it has in recent~~

decades. During the planning of the Solano Project, Napa County and Yolo County chose not to participate in a larger Solano Project. The Solano Project was sized to meet only the projected water needs of Solano County.

Congressional authorization was granted for the construction of the Solano Project and the first water was delivered in 1959. The total construction cost for the Solano Project was \$38 million.

The physical facilities of the Solano Project are Monticello Dam, Putah Diversion Dam, and the Putah South Canal (Exhibit 4.5-1). SCWA is responsible for operations and maintenance of 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.

	Monticello Dam— Lake Berryessa	Putah Diversion Dam— Lake Solano	Putah South Canal
Storage Capacity (af)	1,602,000	750	956 cfs (maximum)
Dam Height (feet)	304	29	NA
Dam Crest	1,023	910	NA
Length (miles)	NA	NA	33
Note: af = acre feet; cfs = cubic feet per second; NA = not applicable Sources: SCWA 2004, 2005b			

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.

**Water Supply Contracts**

SCWA uses property taxes to pay for the operations and maintenance of the Solano Project. SCWA has entered into agreements with cities, water districts, and state agencies 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's contracting agencies are the Cities of Fairfield, Suisun City, Vacaville, and Vallejo; SID; MPWD; the University of California, Davis; and California State Prison, Solano.

Contract entitlements for each agency are listed in Table 4.5-2. Reclamation is contractually committed to deliver the full contract amount of water from the Solano Project unless the supply does not physically exist (e.g., the reservoir is empty). All Solano Project contractors, municipal or agricultural, are on an equal basis for Solano Project water supply.

Agency	Annual Entitlement (acre-feet)
City of Fairfield	9,200
City of Suisun City	1,600

<b>Table 4.5-2 Solano Project Water Contracts</b>	
<b>Agency</b>	<b>Annual Entitlement (acre-feet)</b>
City of Vacaville	5,750
City of Vallejo	14,600
Solano Irrigation District	141,000
Maine Prairie Water District	15,000
University of California, Davis	4,000
California State Prison, Solano	1,200
<b>Project Operating Loss (average estimated)</b>	<b>15,000</b>
<b>Total Project</b>	<b>207,350</b>
Source: SCWA 2005b	

### ***Solano Project Water Quality***

Water quality from the Solano Project is excellent for both municipal and agricultural uses.

The watershed of the Lake Berryessa reservoir spans 576 square miles in Lake and Napa Counties. Much of this area is in a natural state, but urban and agricultural development is also located within the watershed. In the Lake County portion of the watershed, the communities of Middletown, Anderson Springs, and Hidden Valley have a collective population of about 13,000. Several small subdivisions and the town of Pope Valley are located near Lake Berryessa in Napa County, with an estimated population of less than 5,000. Recreational visitors seasonally increase the number of people temporarily in the watershed. An estimated 2 million recreational visitors come to the Lake Berryessa area each year.

The primary agricultural land use in the watershed is vineyard production of wine grapes. Cattle graze along the eastern shore of Lake Berryessa. SCWA works with groups in the Lake Berryessa watershed to promote activities that protect water quality. For example, SCWA leads the Lake Berryessa Watershed Partnership, which consists of organizations and public agencies that monitor and improve water quality in the reservoir. The partnership supports projects such as household hazardous waste collection sites, signage to prevent water pollution, and sharing of water quality data.

The large volume of Lake Berryessa provides dilution for any contaminants that may reach the reservoir. Additionally, the Solano Project draws its water supply from the bottom of the reservoir, providing additional decomposition and dilution of contaminants before Solano Project water is released to Putah Creek for delivery to the Putah South Canal.

In compliance with state law, a sanitary survey has been prepared for the Solano Project that analyzes all potential contamination sources and recommends measures to protect water quality. The sanitary survey covers Putah Creek (between Monticello Dam and the Putah Diversion Dam) and the Putah South Canal, in addition to the Lake Berryessa watershed. City water treatment plants (WTPs) regularly test Solano Project water and find it to be of high quality.

### **North Bay Aqueduct**

The North Bay Aqueduct (NBA) is part of the SWP. The SWP exports water from Northern California to parts of the San Francisco Bay Area, San Joaquin Valley, and Southern California. Along with the CVP, the SWP is a major water supplier in the state of California. The SWP contracts with 29 public agencies, including SCWA, for water supplies.

SWP water comes from Lake Oroville and water rights to flows in the Sacramento and San Joaquin River systems. Major facilities of the SWP include the Banks Pumping Plant in the south Delta, the California Aqueduct, Lake Oroville on the Feather River, and San Luis Reservoir located south of the Delta. The NBA is an underground pipeline that runs from Barker Slough in the Delta to Cordelia Forebay, located near Fairfield. From Cordelia Forebay, water is pumped to Napa County, Vallejo, and Benicia. Travis Air Force Base is also served by the NBA. The size of the underground pipeline varies from 72 inches at Barker Slough to 54 inches at Cordelia Forebay.

NBA facilities are shown in Exhibit 4.5-1. The NBA is operated remotely by DWR at the Delta Field Division office near Tracy. DWR has recently found that the NBA cannot deliver 154 cubic feet per second (cfs), the flow for which it was designed. An additional pump, not presently installed, is required to reach the full contract amount of 175 cfs. Pumping tests have shown that the NBA can deliver a maximum of 142 cfs. DWR, SCWA, and Napa County are investigating methods to increase the capacity of the NBA to design levels, and are considering increasing the capacity to as much as 248 cfs.

**North Bay Aqueduct Water Supply Contracts**

SCWA has a contract with DWR for water supply from the SWP. All the water from the NBA supply is currently used for municipal and industrial purposes. The SWP contract runs to the year 2035 and is renewable. SCWA has contracted for 47,756 afy of water from the SWP. The amount of contract water increases each year until it reaches this ultimate entitlement.

Table 4.5-3 shows the annual increases in supply from 2004 to 2015. From 2015 through 2030, the annual supply remains 47,756 afy.

<b>Table 4.5-3 SCWA North Bay Aqueduct Water Supply</b>	
<b>Year</b>	<b>Total Annual Amount (Acre-Feet per Year)</b>
2004	47,206
2005	47,256
2006	47,306
2007	47,356
2008	47,406
2009	47,456
2010	47,506
2011	47,556
2012	47,606
2013	47,656
2014	47,706
2015 and each succeeding year thereafter	47,756
Source: SCWA 2005b	

### ***State Water Project Reliability***

The issue of greatest concern regarding the NBA's water supply is its reliability. When the SWP was first envisioned, water supply was assumed to be very reliable. Additional dams and reservoirs were planned to meet the ultimate contractual demands of SWP contractors of 4.2 million acre-feet (maf) per year. Under current conditions, in dry years and even many normal years, the SWP will not be able to deliver its full contractual amount. Future SWP facilities are not expected to raise the yield of the SWP to 4.2 maf. SWP export pumping is limited by fishery and water quality constraints in the Delta.

The NBA was subject to pumping restrictions because of the Delta smelt, a threatened species listed under the federal Endangered Species Act. This fish resides in sloughs and channels of the Delta. Delta smelt spawn in the slough where the NBA intake is located. In several years since Delta smelt monitoring started in 1993, a temporary pumping restriction of 65 cfs was placed on the NBA to protect young Delta smelt from being entrained (sucked up) by the NBA pumping plants. In 2005, the U.S. Fish and Wildlife Service discontinued Delta smelt monitoring at the NBA intake. Through grant funding, SCWA has also investigated the feasibility of an alternate intake to the NBA located away from Delta smelt habitat and on or near the Sacramento River, which has better water quality. Such a project is feasible from an engineering perspective, but is very expensive.

### ***Non-State Water Project Water***

Two other important water sources use the NBA: Vallejo permit water (VPW) and settlement agreement water.

VPW is derived from a water rights license held by the City of Vallejo. The license allows pumping of 31.52 cfs from the Delta. The service area allowed to use VPW comprises the cities of Vallejo and Benicia, parts of the city of Fairfield, and the American Canyon area of Napa County. In 1990 the three cities filed for SWRCB water rights permits for an appropriation of water under the state's watershed of origin statutes. The permit application was withdrawn after a settlement was reached with DWR that provided an essentially equivalent water supply from the SWP. A settlement agreement and a conveyance agreement with DWR specify the details of the settlement water supply.

Settlement agreement water is available up to the following amounts: Benicia, 10,500 afy; Fairfield, 11,800 afy; Vacaville, 9,320 afy. Settlement agreement water is a major new water source to meet these cities' long term needs. The amount of water requested was based on projected water needs to meet each city's general plan demands. The settlement agreement allows the three cities to apply in the future to the SWRCB for watershed of origin appropriations above settlement agreement amounts, if their demands exceed those upon which the settlement agreement was based. The settlement agreement runs through 2035 and is renewable under the same terms as the DWR/SCWA SWP contract. Settlement agreement water can be considered a permanent supply.

### ***NBA Water Quality***

Another major NBA issue is water quality. Delta water from the NBA is generally of poorer quality and requires more treatment than water from the Solano Project. Statewide water quality studies show that the NBA has the poorest water quality of all SWP contractors for some constituents such as turbidity and organic carbon. City WTPs have been designed to take into consideration the poorer quality and are able to meet current drinking water standards. However, as drinking water standards become more stringent, it will be both more difficult and more expensive to treat water from the NBA. Some city WTPs will switch from NBA water to other sources of water when NBA water quality is poor, but this may be less of an available option as the cities build out. Poor NBA water quality occurs particularly in the winter when runoff from the Barker Slough watershed is pumped into the NBA.

SCWA conducted studies to determine the source of contaminants to the NBA water supply. Studies have shown that winter runoff from the local watershed is the primary source of elevated levels of turbidity and total organic carbon. No point sources were identified. The local watershed is used mostly for livestock grazing.

The organic carbon in NBA water is coming from natural sources, such as soil and decaying plant matter. Studies have shown that it is not possible to effectively control organic carbon in the NBA watershed. Turbidity comes from soil particles that are not settling. Soil types in the Barker Slough watershed do not settle well, and remain in suspension for very long periods. Traditional best management practices (BMPs), such as vegetative buffers and settling ponds, do not reduce turbidity for these types of soils. Studies have determined that eliminating livestock from areas near channels and controlling erosion are the BMPs to reduce turbidity. SCWA has installed fencing and alternate water supplies to prohibit livestock access to many of the waterways in the watershed. Ongoing water quality testing and monitoring is testing the effectiveness of these source control measures. Through grant funding, SCWA is evaluating water treatment technologies to reduce organic carbon in the NBA water.

### **Other Water Purveyors**

SID has entitlements for 141,000 afy of Solano Project water for service to areas in Solano County, including the Dixon Solano Municipal Water Service and Suisun Solano Water Authority (SSWA). SID is also the operator of the Solano Project, which delivers Lake Berryessa water to four cities, and MPWD as well as SID customers. RD 2068 is an agricultural water supplier in Solano and Yolo Counties. California Water Service Company delivers 1 million gallons per day (mgd) of local groundwater to 2,900 customer connections in the city of Dixon, and has a contract to operate the RNVWD water system as well. In addition, an exchange agreement with the Maine Prairie Water District allows SID to exchange irrigation tailwater for 10,000 af of Solano Project water.

### **Cities**

#### ***City of Benicia***

The City of Benicia's water supply contracts are an SWP contract, a 1962 agreement with the City of Vallejo, and a settlement agreement with the State of California as a result of an application for area-of-origin water rights. Benicia's WTP has a treatment capacity of 12 mgd. The transmission system consists of two pump stations and approximately 18 miles of pipeline. The distribution system consists of three pump stations, eight pressure reducing stations, and approximately 150 miles of pipelines. The storage system consists of five treated water reservoirs and Lake Herman, with a capacity of 1,800 af. The City of Benicia's Water Operations Division provides for the negotiation and management of Benicia's water supply contracts and for the operation, maintenance, repair, and capital improvements of the water treatment plant and transmission, distribution, and storage systems (City of Benicia 2008).

The City of Benicia also has a water exchange and banking arrangement with the Mojave Water Agency (Mojave), another SWP contractor, to exchange wet year SWP water for dry year SWP water. In years when SCWA has extra SWP supplies, it can exchange two units of SWP water for a future return of one unit of water to be provided (at the Delta) by Mojave, most likely in a dry year when there are SWP shortages. As of 2004, the City of Benicia had the right to 5,500 af of return water from Mojave, which stores its excess water supply in its groundwater basin (SCWA 2004).

#### ***City of Dixon***

Water is supplied within the Dixon planning area by two water purveyors. A joint agreement between the City of Dixon and SID created the Dixon Solano Municipal Water Service, which currently supplies water within the Dixon planning area. It will eventually supply water to all newly annexing and developing portions of the Dixon planning area. California Water Service Company serves the older

central, developed land within the core of the city, including its downtown area. Future water service by this company is limited to current service boundaries. Irrigation water in the Dixon planning area is supplied by SID. Both suppliers deliver groundwater from naturally occurring aquifers; therefore, neither supplier needs to contract with other water agencies for entitlements. Groundwater quality in the area is very good (City of Dixon 2005).

**City of Fairfield**

Water for the city of Fairfield is supplied by the SWP, the Solano Project, VPW, settlement agreement water, SID agreements, and recycled water (Table 4.5-4). SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the North Bay Regional (NBR) WTP, which is jointly owned by the Cities of Fairfield and Vacaville. Solano Project water is diverted through the Putah South Canal to Fairfield’s Waterman and NBR treatment plants. The “area of origin” water rights settlement with DWR provides Fairfield with 11,800 afy of nonproject (i.e., not SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. Term 91 is declared by the SWRCB when it is determined that the SWP and the CVP are releasing stored water in excess of natural flow (natural flow is the flow that would have been in existence if the dam were not there) to meet in-Delta demands and Delta water standards. Term 91 is declared in the summer of all but very wet years, and is essentially a permanent allocation of water supply. The water is conveyed through the NBA when capacity is available and delivered to Fairfield in the same manner as SWP water (SCWA 2005b).

**Table 4.5-4  
Water Supply and Sources by City**

City	Water Source	Amount (acre-feet per year)
<b>Benicia</b>	State Water Project	17,200
	Settlement Agreement Water	10,500
	Lake Herman	500
	Vallejo Permit Water	5,500
	Mojave Exchange	5,500 <sup>†</sup>
<b>Dixon</b>	State Water Project	1,500
	Groundwater	variable
<b>Fairfield</b>	State Water Project	14,678
	Solano Project	9,200
	Settlement Agreement Water	11,800
	Vallejo Permit Water	variable
	SID Agreements	16,018
	Recycled Water	3,000
<b>Rio Vista</b>	State Water Project <sup>2</sup>	1,500
	Groundwater	variable
<b>Suisun City</b>	State Water Project	1,300
	Solano Project	1,600
	Suisun Solano Water Authority <sup>3</sup>	variable

<b>Table 4.5-4 Water Supply and Sources by City</b>		
<b>City</b>	<b>Water Source</b>	<b>Amount (acre-feet per year)</b>
<b>Vacaville</b>	State Water Project	8,978
	Solano Project	5,750
	Settlement Agreement Water	9,320
	SID Agreement	3,000
	Groundwater	8,000
	Recycled Water	880
<b>Vallejo</b>	State Water Project	5,600
	Solano Project	14,600
	Vallejo Permit Water	17,287
	Lakes System	400
<b>Notes:</b>		
SID – Solano Irrigation District		
<sup>1</sup> — Amount currently available, not annually.		
<sup>2</sup> — State Water Project contract will begin with 300 acre-feet in 2016 and increase by 300 acre-feet annually, reaching a maximum of 1,500 acre-feet by 2020.		
<sup>3</sup> — Suisun Solano Water Authority fulfills total demand as needed.		
Source: SCWA 2005c		

Fairfield has an ongoing water exchange agreement with Vallejo that stipulates that the parties can exchange portions of VPW for Fairfield Solano Project water on a 2:1 basis, respectively, with mutual willingness. The agreement also allows Fairfield to purchase Vallejo’s VPW at a mutually agreeable rate. The agreement can be terminated by either party with a 30-day written notice. Several agreements between SID and the City of Fairfield since 1974 have provided “common boundary” Solano Project water to Fairfield. Amendment No. 2 (2002) to an 1974 agreement between SID and Fairfield adds Fairfield Suisun Sewer District (FSSD) as a party and retitles the agreement the “second amended agreement.” The total amount of Solano Project water available to Fairfield from the second amended agreement is 16,018 afy. Under the second amended agreement, SID and FSSD agree to provide Fairfield with the first 12 mgd (or 13,447 afy) of recycled water from the FSSD Wastewater Treatment Plant (WWTP). If Fairfield is not using the recycled water, the SID may use or sell it (SCWA 2005b).

### **City of Rio Vista**

Rio Vista currently uses groundwater to meet its water demands (SCWA 2005b). The supply system consists of six wells (four of which are currently producing) ranging in depth from 500 feet to 1,000 feet below ground surface. Rio Vista’s SWP surface water contract will begin with 300 af in the year 2016 and gradually increase by 300 af annually, reaching a maximum of 1,500 af by 2020 and remaining at that amount thereafter.

### **Suisun City**

Suisun City receives its water from the Solano Project and the SWP. Suisun’s SWP contract amount is 750 afy as of 2004 and gradually increases by 150 afy to a maximum of 1,300 afy by 2015, and remains at that level each year thereafter (SCWA 2005b). Suisun City currently has no transmission or treatment facilities to utilize water from the NBA. Suisun City has contract rights to up to 1,600 afy of Solano Project water annually, which it receives via the Putah South Canal to the Cement Hill WTP. Suisun and

SID entered into a joint powers authority (JPA) agreement in 1988. The full JPA, called the SSWA, was implemented in 1991. Under the JPA, SID operates the Cement Hill WTP to treat Suisun City's water and delivers it to the city's service area for distribution. A small portion of Suisun Valley is historically part of the service area and still being served. SSWA provides any additional contract water as needed beyond 1,600 af from SID's Solano Project water supply (SCWA 2005b).

### ***City of Vacaville***

Water is supplied to Vacaville from the SWP, Solano Project, DWR water rights settlement, an agreement with SID, groundwater, and recycled water. The SWP water is delivered via the NBA. SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the NBR Water Treatment Plant, which as mentioned previously is jointly owned by the Cities of Vacaville and Fairfield. Solano Project water is diverted through the Putah South Canal to Vacaville's diatomaceous earth plant and the NBR Water Treatment Plant. The "area of origin" water rights settlement with DWR provides Vacaville with nonproject (i.e., non-SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. The water is conveyed through the NBA when capacity is available and delivered to Vacaville in the same manner as SWP water. Vacaville has a system of 10 deep aquifer wells, most of which are located in the Elmira well field. Currently, approximately 6,000 afy is withdrawn. The estimated safe yield of Vacaville's groundwater system is 8,000 afy. The supply in dry years could be increased to 10,000 afy (SCWA 2005b).

### ***City of Vallejo***

SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to Cordelia Forebay, where Vallejo then pumps the water to its Fleming Hill Treatment Plant. The current SWP contract amount to Vallejo could ultimately be reduced by 1,125 af beginning in the year 2016 if Dixon and Rio Vista take their full NBA contract amount (SCWA 2005b). Solano Project water is conveyed to the Terminal Reservoir in Cordelia, where it is pumped by Vallejo to the Fleming Hill Treatment Plant. Vallejo holds Appropriative Water Rights License No. 7848 with the SWRCB, issued August 1966; this license is commonly referred to as VPW. VPW is conveyed to Vallejo through the NBA project facilities governed by Amendment No. 10 to the Water Supply Contract between DWR and SCWA.

Vallejo also holds various appropriative rights to store water in three small local reservoirs: Frey, Madigan, and Curry Lakes, commonly known as the Lakes System. The annual safe yield of Lakes Frey and Madigan is 400 af and Lake Curry's is 3,750 af, although Lake Curry water is currently not available because of conveyance issues (SCWA 2005b).

The following text is added at the end of Section 4.5.1, "Existing Conditions," following the existing Table 4.5-5 on page 4.5-19 of the DEIR:

### **DRAINAGE AND FLOODING**

Five major drainage regions (Suisun, Ulatis, Dixon, Vallejo, and Montezuma Hills) within Solano County have been established for flood control planning purposes. The drainage regions are based on major watersheds and resource conservation district (RCD) jurisdictions so that flooding problems and potential solutions can be addressed on a watershed basis through the representative RCDs. The following presents a brief summary of each region.

### **Suisun Region**

This region is located at the western side of the county and includes the Fairfield Streams Group, Suisun Creek, Green Valley Creek, Hennessey Creek, Jameson Canyon Creek, American Canyon Creek, and Freeborn Creek subareas. It also includes Suisun Marsh.

The Fairfield Streams Group includes five streams: from east to west, McCoy Creek, Laurel Creek, Union Avenue Creek, Pennsylvania Avenue Creek, and Ledgewood Creek. Drainage within this region originates in the Vaca Mountains, flowing through Fairfield and discharging into a tidal channels tributary to Suisun Slough. Major drainage improvements have been completed by USACE and the City of Fairfield, and most areas have a 100-year level of flood protection. The only remaining area that experiences drainage problems is the upper reaches of Ledgewood Creek, above the Fairfield Stream Flood Control Project. The banks have been overtopped with shallow flooding in the vicinity of Ledgewood Road, Mankas Corner Road, and Abernathy Road. The Suisun Creek subarea, located west of Ledgewood Creek, has several problems. Shallow flooding in the upstream reaches is caused by limited capacity and significant vegetation within the channel. South of I-80, channel banks have been reported to overtop. Channel capacity has been reduced because of heavy vegetative growth and siltation.

In 1962, USACE constructed the Green Valley Project and turned it over to SCWA for operation and maintenance. The project consisted of improvements to Green Valley Creek and Dan Wilson Creek. More recently, the City of Fairfield has improved Green Valley Creek from Central Way to Reservoir Road to provide 100-year flood protection within the North Cordelia Improvement District. The Green Valley Country Club Estates, located above the Green Valley Project, lies within the 100-year floodplain. Flood protection for this area and future development downstream in Fairfield is a concern.

Hennessey Creek is a small tributary that enters Green Valley Creek northwest of Mangels Boulevard. The downstream reach of Hennessey Creek has been realigned to the east along Reservoir Lane, eliminating the natural channel within the area. Because of the diversion of Hennessey Creek, through three 72-inch concrete pipes, the areas have experienced significant siltation problems.

Suisun Marsh has many areas that are up to 3 feet higher because of heavy siltation. There has been little or no removal of tules and silt from the creeks in recent years because of environmental regulations. The tules restrict the flow, causing the silt to settle, further decreasing channel capacity. Eventually, the channel is overtopped and sediment is deposited within the adjacent marsh area. The siltation process is amplified during storms.

### **Ulatis Region**

The Ulatis region is drained primarily by Ulatis Creek and its tributaries. The major tributary creeks are Ulatis Creek, Alamo Creek, Horse Creek, Gibson Canyon Creek Sweeney Creek, and McCune Creek. The creek system drains to Cache Slough, which flows into the Sacramento River. Stream channels are generally straight and confined with steep slopes. Natural channels crossing the valley floor were generally sinuous, braided, and poorly defined. Historically, the bulk of runoff within the watershed originated in the mountainous upper watersheds.

In recent years, improvements within this region to the channels in the Ulatis watershed consisted of realigning and widening some existing creek channels, constructing new channels, and building several miles of levees. The improvements were intended to protect the area from the 10-year storm event and maintain a design freeboard of 1.5 to 3.5 feet. The objective was to provide flood protection for the agricultural lands east of Vacaville and to carry some increased flows from the developing city of Vacaville. Increasing development in and around Vacaville has resulted in drainage improvements, including detention storage to reduce downstream flows to predevelopment levels. Rural residences have also developed in the lower portions of the foothills and across the valley floor. Most development has been single homes, and in most cases, no significant drainage improvements were included in the development.

## **Dixon Region**

The Dixon region covers the northeastern section of the county. Most of the natural streams within this area have been filled and the area is now drained by numerous interconnected human-made ditches that traverse the area in a north-to-south and west-to-east pattern. The entire region is relatively flat and the ditches are sized for drainage, not flood control. Runoff from small storms may remain in roadside ditches; however, heavy storm runoff may overtop a road, sheet flow across fields, and then discharge into nearby but separate facilities. Most of the drainage ditches have very limited capacity and also have culvert crossings at frequent intervals. Runoff in excess of the culvert capacity ponds in the upstream channel until the channel is overtopped. Enlarging a culvert or several culverts along a reach of ditch could decrease the ponding in the immediate area but would generally exacerbate downstream ponding. Most of the problems in this region can be characterized as shallow ponding in fields and along roads. Extreme storms can cause extensive flooding over large areas in the southeastern portion of the region, especially when the flow is high in the Yolo Bypass. With increased runoff from more intensive agricultural practices, even small storms now cause widespread local ponding.

## **Vallejo Region**

The Vallejo region is located in the western panhandle of the county. A series of drainage basins have been established in this region to provide for drainage. The current flood control issues in this region center around needs within the city of Vallejo, which is the responsibility of the Vallejo Sanitation and Flood Control District and the City of Benicia.

## **Montezuma Hills Region**

The Montezuma Hills region is located in the southeast portion of the county. The region contains the city of Rio Vista. Flooding within Rio Vista is related to high flows in the Sacramento River that inundate waterfront areas and surcharge the city's storm drain system. The rural areas of the region are sparsely populated and have relatively good drainage. The streams are intermittent with relatively small flows and few problems.

## **Regional Drainage Problems**

Even with the many flood control projects and initiatives in place, numerous rural drainage problems exist within Solano County. The Suisun, Ulatis, and Dixon regions cover the areas where the majority of rural drainage problems have been identified. Three primary factors influence runoff characteristics and contribute to these problems:

- ▶ *Hydrologic patterns.* Rainfall intensities, based on rainfall gauge data, have increased recently compared to earlier records.
- ▶ *Urban development.* Impervious areas such as rooftops, parking areas, driveways, and streets generate greater runoff than natural areas.
- ▶ *More intensive agricultural usage.* With irrigation water available from Lake Berryessa, dryland farming has been displaced by more extensive and intensive cropping patterns. Much of the earlier irrigated pasture and alfalfa is now orchards, croplands, and extensive row crops. Most fields have been leveled and significant increases of runoff from agricultural lands within these areas have been reported.

Solving the existing flood control problems for a problem area or an entire watershed requires a more comprehensive and coordinated planning effort than solving local problems. Typically, additional data must be gathered and studies of the problems and drainage systems must be conducted to determine the

most viable solution and to minimize downstream impacts are necessary. In addition, the solutions may require more complex permitting and funding mechanisms. In addition to a wide range of flooding problems, there is erosion in the upper reaches and siltation throughout the lower reaches of the channel network.

## **LEVEE CONDITIONS**

Solano County's levees define the configuration of the channels and land areas of the Delta and Suisun Marsh. As a result of land subsidence, primarily through microbial oxidation of organic peat soils, most of the Delta islands sit below sea level, some as much as 25 feet.

The old levee system that exists in some Solano County marshlands was constructed initially by hand labor, and later by dredging to hold back river floods and daily tides, to obtain additional lands for grazing and crop growing. Today, these levees remain as embankments, generally 5–6 feet high, with foundations roughly 20–30 feet wide. Roads have been constructed atop a number of these levees, which were generally constructed using weak materials excavated from adjacent water courses, including sands, silts, and peat (USACE 1972).

Constant maintenance is necessary to hold these levees against the high tides and river floods that threaten reclaimed marsh lands. New material must be added to these levees continually to compensate for peat oxidation and erosion. Sand, silt, and peat are weak in shear strength and erode easily. Each year, as farmlands adjacent to levees subside, hydrostatic pressure against the levees increases, adding to the potential for failure. In addition, most of these levees are not maintained to any specific standards, which increases the likelihood of failure and inundation.

Levee failure as a result of liquefaction constitutes a potential hazard in much of the southern half of Solano County. Some enclosed areas, including most of the Delta, lie several feet or more below sea level and are subsiding at a rate of up to 3 inches per year. Most of these diked areas are in agricultural use, and some are so far below sea level that it would be economically infeasible to drain them should they be flooded as a result of levee failure. Roads in the Suisun Marsh and in the east county are constructed almost exclusively on levees; thus levee failures could also disrupt travel through these areas. Although these roads primarily serve local farmers, increasing levels of recreational traffic would also be affected. Failure of levees south of Suisun City could flood parts of that city, causing damage to residential areas. No comprehensive studies have been performed on levee failure because of the difficulty in correctly assessing levee safety. Even inspected levees are prone to failure under certain conditions; an example is the Jones Tract levee that failed in 2004 after having been inspected (Okita, pers. comm., 2006). Undetected problems, such as activity by burrowing animals, can cause levees to fail during normal, nonflood flow periods as was the case for the Jones Tract levee. Water in Delta channels that is accelerated by high winds can also weaken levees by erosion. Wind-driven waves are especially damaging to the unprotected land side of the levees when islands are flooded. Large stormwater flows into the Delta can raise the water surface above the tops of the levees and increase pressure for seepage through and under the levees, which can also cause them to fail.

On February 24, 2006, after sustained heavy rainfall and runoff, Governor Arnold Schwarzenegger declared a state of emergency for California's levee system. Following the emergency declaration, DWR was designated to secure the necessary means to fast-track repairs of critical erosion sites. Levee evaluations in 2005 identified three sites within Solano County, near Steamboat Slough near River Miles 16 and 21, where more than 3,325 linear feet of levees were in need of critical emergency repairs. In 2006, 2,185 feet of levees also needing repairs were identified near Sutter Slough along River Mile 25 and Steamboat Slough along River Mile 19 (DWR 2008). Repairs to these areas have either been completed or are scheduled to be completed in the near future. The repairs are not improvements, but are necessary to maintain the functionality of flood control systems that have deteriorated over time and/or do

not meet current design standards. There are also ongoing levee evaluation efforts to help ensure long-term flood protection for the Delta, Rio Vista, and Collinsville (DWR 2008).

The “National Pollutant Discharge Elimination System Permit Program” section on pages 4.5-20 and 4.5-21 of the DEIR is revised as follows:

### **National Pollutant Discharge Elimination System Permit Program**

As authorized by the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating sources that discharge pollutants into waters of the United States. A discharge from any point source is unlawful unless the discharge is in compliance with an National Pollutant Discharge Elimination System (NPDES) permit. In California, EPA delegates much of the implementation of the CWA to the SWRCB. While the SWRCB has issued a few NPDES permits, the vast majority of NPDES permits are issued by the RWQCB. NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, stormwater associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre of soil, mining operations, and animal feedlots and agricultural facilities above certain thresholds. Typically, NPDES permits are issued for a 5-year term.

The NPDES Phase I rule was issued in 1990 and covered medium and large municipal separate storm sewer systems (MS4s), cities or jurisdictional entities serving populations greater than 100,000. In addition, operators of construction activities disturbing more than 5 acres and 11 categories of industrial activities were required to obtain permit coverage under Phase I. The Phase II rule was issued in 2003 and extended NPDES stormwater permit requirements to small MS4s (i.e., those located in an incorporated city or a county of fewer than 100,000 people) and construction activities disturbing more than 1 acre. Phase II is intended to further reduce adverse impacts on water quality and aquatic habitat by instituting the use of BMPs on previously unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation (EPA 2000).

The General MS4 Permit requires large and small MS4s to develop and implement a stormwater management plan (SWMP) that describes BMPs, measurable goals, and timetables for implementation in the following six program areas (minimum control measures):

- ▶ Public Education—The permittee must educate the public in its permitted jurisdiction about the importance of the stormwater program and the public’s role in the program.
- ▶ Public Participation—The permittee must comply with all state and local notice requirements when implementing a public involvement/participation program.
- ▶ Illicit Discharge Detection and Elimination—The permittee must adopt and enforce ordinances or take equivalent measures that prohibit illicit discharges. The permittee must also implement a program to detect illicit discharges.
- ▶ Construction Site Stormwater Runoff Control—The permittee must develop a program to control the discharge of pollutants from construction sites greater than or equal to 1 acre in size within its permitted jurisdiction. The program must include inspections of construction sites and enforcement actions against violators.
- ▶ Postconstruction Stormwater Management—The permittee must require incorporation of long-term postconstruction BMPs protecting water quality and controlling runoff flow into development and significant redevelopment projects. Postconstruction programs are most efficient when they stress low-impact design, source controls, and treatment controls.

Stormwater discharges from both large and small construction sites are now subject to NPDES requirements. Large construction sites are those that involve 5 or more acres of soil disturbance and small construction sites are those that involve more than 1 acre of soil disturbance. The SWRCB has issued an NPDES general permit for discharges of storm water associated with construction activity under Construction Activities Storm Water General Permit Order No. 99-08-DWQ (General Construction Permit) under the CWA. The permit requires the preparation of a storm water pollution prevention plan (SWPPP) for proposed construction activities of greater than ~~5-1~~ acres in size. A SWPPP is an operational plan that identifies and describes the BMPs to be implemented at the construction site to control pollution of stormwater runoff. ~~Since March 10, 2003, small construction sites (those involving disturbance of less greater than 1.5 acres of soil) have also required an NPDES permit as part of Phase II of EPA's NPDES Storm Water Program. Phase II is intended to further reduce adverse impacts on water quality and aquatic habitat by instituting the use of BMPs on previously unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation (EPA 2000). The Phase II requirements also impose new obligations on municipal separate storm sewer systems (MS4s). Small MS4s (i.e., those located in an incorporated city or a county of less than 100,000 people) that are located within urbanized areas as defined by the U.S. Census must now be covered by a NPDES permit.~~

The County released its ~~Storm Water Management Plan (SWMP)~~ in February 2003 to be consistent with the NPDES Phase II permit procedures that enable the County to comply with the CWA. ~~The plan comprises six major sections:~~

- ~~▶ Section 1, "Background," provides a brief history of water quality regulations.~~
- ~~▶ Section 2, "Administration, Planning and Funding," describes the structure, staff involvement, and funding mechanisms of the program.~~
- ~~▶ Section 3, "Geography and Land Use," provides demographics, maps, and other physical descriptions of Solano County.~~
- ~~▶ Section 4, "Pollutants of Concern," delineates known impaired water bodies and pollutants of concern, as well as actions the program will take to address specific pollutants that are impairing water quality.~~
- ~~▶ Section 5, "Minimum Control Measures," describes elements of the County's program for controlling stormwater quality.~~
- ~~▶ Section 6, "Monitoring and Evaluation," lists and describes Solano County's measurable goals to bring the program into compliance.~~

In 2005, the County's SWMP was modified for the 2004–2005 reporting year to address requirements set forth in the Proposed Small MS4 General Permit issued by the SWRCB on January 9, 2003. ~~As described above, construction activities associated with projects 1 acre or larger are regulated by the SWRCB under Construction Activities Storm Water General Permit Order No. 99-08-DWQ (General Construction Permit). The SWMP sets forth a program that the County implements to ensure compliance with the General MS4 ~~Construction~~ Permit and control the potential for detrimental effects on water quality caused by new development and redevelopment within the unincorporated areas of the county. The County is also required to submit annual reports on the status of its SWMP to the RWQCB. Solano County's current MS4 General Permit expires in August 2008; therefore, the County will be required to submit a permit renewal application and a revised SWMP. Until a new permit is issued by the SWRCB, the County will continue its current level of effort to implement its SWMP. ~~for construction activities carried out by the County, and for construction activities carried out by private interests seeking grading, building, or other development permits from the County. The SWMP is intended to minimize construction impacts.~~~~

~~The SWMP also sets forth a process to be applied to the review of development site plans to address long-term water quality issues and impacts associated with proposed land uses following construction. The SWMP identifies BMPs that are required of all development projects in the Prescribed Base Program of the Design/Construction Storm Water Management Program.~~

The SWRCB has also adopted a General Industrial Storm Water Permit (Order No. 97-03-DWQ), which covers facilities that discharge stormwater as part of industrial activity. The general permit requires industrial dischargers to eliminate illicit discharges to storm drains, develop and implement a SWPPP, and perform monitoring of discharges to stormwater systems. Individual permits are issued for industrial facilities that are not covered by general industrial storm permits and are tailored to a specific type of discharge. The general industrial storm water permit covers the following industries:

- ▶ facilities subject to stormwater effluent limitations guidelines, new-source performance standards, or toxic pollutant effluent standards (40 CFR Subchapter N);
- ▶ manufacturing facilities;
- ▶ mining/oil and gas facilities;
- ▶ hazardous waste treatment, storage, or disposal facilities;
- ▶ landfills, land application sites, and open dumps that receive industrial waste;
- ▶ recycling facilities such as metal scrap yards, battery reclaimers, salvage yards, and automobile yards;
- ▶ steam electric generating facilities;
- ▶ transportation facilities that conduct any type of vehicle maintenance such as fueling, cleaning, or repairing;
- ▶ sewage treatment plants;
- ▶ construction activity (covered by a separate general permit); and
- ▶ certain facilities (often referred to as “light industry”) where industrial materials, equipment, or activities are exposed to stormwater.

NPDES permits are also issued to point-source dischargers of pollutants to surface waters and are issued pursuant to Chapter 5.5 of the California Water Code, which implements the federal CWA. Examples include but are not limited to public wastewater treatment facilities, industries, power plants, and groundwater cleanups discharging to surface waters. In California, adopted waste discharge requirements (WDRs) for discharges to surface waters that are issued by the RWQCB also serve as the NPDES permits for these dischargers. Wastewater discharges from WWTPs are also required to have an NPDES permit. WWTPs are typically required to obtain individual permits from the appropriate RWQCB. The WDRs permits also include findings, discharge prohibitions, effluent limitations, provisions, and self-monitoring requirements. The findings of the NPDES permit process provide information about treatment plant design and operations, beneficial uses to be protected, and applicable standards.

The following text is added at the end of the “Federal Plans, Policies, Regulations, and Laws” section on page 4.5-31 of the DEIR:

## **National Dam Safety Program Act**

The National Dam Safety Program was established in 1972 and is administered by FEMA. The primary purpose of the program is to provide financial assistance to the states for strengthening their dam safety programs.

## **Dam Safety and Security Act**

The Dam Safety and Security Act (Public Law 107-310, 43 United States Code 467) was enacted in 2002 to assist states in improving their dam safety programs, support increased technical training for state dam safety engineers and technicians, provide funding for dam safety research, and maintain the National Inventory of Dams.

The text under “California Department of Water Resources” and “Governor’s Office of Emergency Services” in the “State Plans, Policies, Regulations, and Laws” section on page 4.5-32 of the DEIR is revised and supplemented as follows:

### **California Department of Water Resources**

DWR is responsible for preparation of the California Water Plan, management of the SWP, protection and restoration of the Delta, regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources. These other functions include helping water agencies prepare their UWMPs and reviewing such plans to ensure that they comply with the related Urban Water Management Planning Act. The DWR Division of Safety of Dams has several programs that ensure dam safety. DSOD thoroughly reviews the plans and specifications prepared by the dam owner to ensure that the structure is designed to meet minimum requirements and that the design is appropriate for the known geologic conditions, oversees the construction, and inspects each dam annually to ensure that the dam is safe, is performing as intended, and is not developing problems. Inspections may include in-depth instrumentation reviews of the dam surveillance network data. DSOD also periodically reviews the stability of dams and their major appurtenances in light of improved design approaches and requirements, as well as new findings regarding earthquake hazards and hydrologic estimates in California.

### **Senate Bill 896**

Senate Bill (SB) 896 (Chapter 780, Statutes of 1972) established emergency procedures for the evacuation and control of populated areas below dams that could be used to save lives and reduce injury in the event of a dam failure.

### **Governor’s Office of Emergency Services**

Dam inundation mapping procedures (Title 19, Section 2575 of the California Code of Regulations [19 CCR Section 2575]) are required by the Governor’s Office of Emergency Services (OES) for all dams where human life is potentially endangered by dam flooding inundation. Dam owners are responsible for obtaining recent hydrologic, meteorological, and topological data as well as land surveys denoting the floodplain, to be utilized for the preparation of a dam inundation map. This information is to be submitted to OES 60 days before the filling of any dam. Canal and levee inundation mapping procedures (19 CCR Section 2585) are similar to dam inundation mapping procedures and are required by OES for all canals and levees where human life is potentially endangered by canal or levee flooding inundation. Canal and levee owners are responsible for obtaining recent hydrologic, meteorological, and topological data as well as land surveys denoting the flood plain to be utilized for the preparation of a canal or levee inundation map.

As a result of SB 896, OES established the dam failure inundation mapping and emergency procedure program (Government Code Section 8589.5). This program sets forth regulations that require owners of dams under state jurisdiction to submit inundation maps and studies to OES for review and approval in accordance with guidance issued by OES. Copies of the approved inundation maps are sent to the city and county emergency services coordinators of affected local jurisdictions. Based upon approved inundation maps, or the delineated areas, cities, and counties with territory in the mapped areas are required to adopt emergency procedures for the evacuation and control of populated areas below the dams.

The text from the third paragraph through the end of the “Solano County Grading and Erosion Control Ordinance” subsection on DEIR page 4.5-36 is revised and expanded as follows:

**SCWA Flood Control Master Plan**

SCWA has adopted a master plan governing flood control and flood control improvements within its territory. In February 1997, SCWA staff outlined a two-phased approach to develop the countywide Flood Control Master Plan that would include an analysis of both infrastructure and institutional issues. Phase I of the master plan was completed in November 1997. The Phase I report documented flood-related problems reported by individuals, the Solano County Department of Transportation, the flood control task force working groups, the local resource conservation districts, cities, and site-specific information provided by SCWA. This information was used in Phase II to analyze the problems and establish the basis for their consideration by SCWA in developing an overall master plan. The plan also included an inventory of major drainage systems and identified the agency responsible for maintenance. Table 4.5-7 contains general information for waterways that are partially or entirely maintained by SCWA.

<b>Table 4.5-7 Waterways Maintained by SCWA</b>		
<u>Drainage Region</u>	<u>Channel Name</u>	<u>Receiving Water</u>
<u>Suisun</u>	<u>Dan Wilson Creek</u>	<u>Suisun Creek</u>
	<u>Green Valley Creek</u>	<u>Cordelia Slough</u>
	<u>Putah South Canal</u>	<u>Terminal Reservoir</u>
<u>Ulatis</u>	<u>Alamo Creek</u>	<u>Ulatis Creek</u>
	<u>Gibson Canyon</u>	<u>Creek McCune Creek</u>
	<u>Horse Creek</u>	<u>Ulatis Creek</u>
	<u>Laguna Creek</u>	<u>Alamo Creek</u>
	<u>Lower Alamo Creek</u>	<u>Ulatis Creek</u>
	<u>McCune Creek</u>	<u>Ulatis Creek</u>
	<u>Sweeney Creek</u>	<u>McCune Creek</u>
	<u>Ulatis Creek</u>	<u>Cache Slough</u>
Note: SCWA = Solano County Water Agency Source: Data compiled by EDAW in 2008		

The Flood Control Master Plan also identifies problem drainage areas and potential causes for drainage problems, and ranks problem watersheds to prioritize recommendations for flood control improvements. The majority of identified problem areas are also located within the 100-year floodplain; however, many identified problem areas are within the Dixon and Ulatis regions located outside of the 100-year floodplain. 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 w

been completed; for the Ledgewood, Suisun, Dixon, McCune, Sweeney, Gibson Canyon, and Horse watersheds and many projects are being considered for implementation. The watershed studies evaluate problem areas from the standpoint of all lands that drain into a waterway and identify potential solutions to flooding and drainage problems. The studies also look at potential downstream impacts so that any potential solutions will not adversely affect downstream interests. After the studies are complete, SCWA staff works on implementing solutions. SCWA coordinates with the Flood Control Advisory Committee and local residents to develop projects as recommended in the watershed studies. It is SCWA policy that SCWA will consider funding part of the capital costs of a potential project, but others must fund permanent operations and maintenance. Solutions are usually difficult to implement, as many of the problem areas are rural and it is difficult to find cost-effective solutions and to get operations and maintenance funding.

SCWA has established the following flood control objectives:

- ▶ Manage the Ulatis Flood Control Project to provide the 10-year recurrence level of flood protection for which the project was designed and work with interested agencies and determine responsibility for provision of greater levels of flood protection.
- ▶ Manage the Green Valley Flood Control Project to provide the 40-year recurrence level of flood protection for which the project was designed and work with interested agencies and determine responsibility for provision of greater levels of flood protection.
- ▶ Facilitate communication and coordination of flood control projects in Solano County so that projects and developments within a watershed mitigate their runoff impacts on existing and planned facilities for flood control.
- ▶ Actively pursue adequate protection for Solano County from flooding from the Sacramento River and tributaries by advocating adequate flood protection along the west side of the Yolo Bypass to protect agricultural land.
- ▶ Keep abreast of new regulations and technology in flood control management.
- ▶ Prepare to be able to respond to flood situations.
- ▶ Monitor and assist in planning for flood protection for areas served by unimproved channels.

In addition, SCWA has prepared a flood awareness manual that provides homeowners helpful information about preparing for floods, how homeowners can reduce their flooding risks, what to do if flooding occurs, and cleaning up after a flood event. Included within the manual are county maps that identify FEMA flood zones, FEMA flood probabilities, county water systems, and county watershed basins.

SCWA has also developed a Flood Hazard Warning Program to help ensure that county residents who live in areas with a high probability of flooding have time to prepare and evacuate, if needed.

### **Solano County Stormwater Management Plan**

The County's SWMP describes the ordinances and policies in place to protect stormwater and details the County's actions, through the year 2008, to bring Solano County into full compliance with NPDES Phase II. An SWMP was developed in February 2003 and later revised in 2005 to be consistent with the NPDES Phase II permit procedures that enable the County to comply with the CWA. The plan comprises six major sections:

- ▶ Section 1, "Background," provides a brief history of water quality regulations.

- ▶ Section 2, “Administration, Planning and Funding,” describes the structure, staff involvement, and funding mechanisms of the program.
- ▶ Section 3, “Geography and Land Use,” provides demographics, maps, and other physical descriptions of Solano County.
- ▶ Section 4, “Pollutants of Concern,” delineates known impaired water bodies and pollutants of concern, as well as actions the program will take to address specific pollutants that are impairing water quality.
- ▶ Section 5, “Minimum Control Measures,” describes elements of the County’s program for controlling stormwater quality.
- ▶ Section 6, “Monitoring and Evaluation,” lists and describes Solano County’s measurable goals to bring the program into compliance.

According to the SWMP, the County does not own or operate any storm drain systems other than roadside culverts and bridge piping. The majority of the land in the unincorporated area has relatively flat topography, with grassy swales and creeks as the primary drainage system. The County Department of Transportation constructs and maintains the County rights-of-way and the roadside grassy-swale drainage systems. The County also identified limited sewer systems in only two areas of the county, and each of these is served by and operated through a city sewer service. One service area is the unincorporated town of Elmira, served by the City of Vacaville, and the second is the unincorporated area between Vallejo and Benicia, served by Vallejo Sanitation and Flood Control.

After research on the CWA Section 303(d) listing of impaired water bodies was performed, the SWMP reported that the following water bodies in the unincorporated areas of Solano County had known impairments for the following pollutant(s) of concern:

- ▶ Lake Herman—Mercury
- ▶ Laurel Creek—Diazinon
- ▶ Ledgewood Creek—Diazinon
- ▶ Suisun Bay—Chlordane, dichlorodiphenyltrichloroethane (DDT), diazinon, dieldrin, dioxin compounds, furan compounds, mercury, nickel, polychlorinated biphenyls (PCBs), selenium
- ▶ Suisun Marsh wetlands—metals, nutrients, organic enrichment/low dissolved oxygen, salinity/TDS/chlorides
- ▶ Suisun Slough—Diazinon
- ▶ Lower Putah Creek—Mercury

The SWMP also identifies the following existing County ordinances that provide the backbone for NPDES compliance:

- ▶ Chapter 23, Refuse and Garbage—Provides standards, fees, permitting, and enforcement for garbage storage and collection by the public, commercial facilities, and permitted dump sites.
- ▶ Chapter 23.5, Litter Control Program—Provides standards against and enforcement of littering caused by the public, vehicles, construction, or commercial facilities.

- ▶ Chapter 24, Roads, Streets, and Other Public Property—Provides standards, permitting, and enforcement of encroachments into the County road rights-of-way (including roadside drainage projects), use of prisoner labor on public works projects, and traffic reduction.
- ▶ Chapter 25, Pumping and Sewage Disposal—Provides standards, permitting, and enforcement of chemical toilets, septic tanks and leach fields, waste pumping trucks, biosolids disposal, and industrial wastewater disposal.
- ▶ Chapter 26, Subdivision Ordinance—Provides standards and permitting for the subdivision of land, supplementing the requirements of the *Solano County General Plan* and California’s Subdivision Map Act.
- ▶ Chapter 31, Grading and Erosion Control—Provides standards, permitting, and enforcement for controlling soil erosion, sedimentation, stormwater runoff, and environmental damage associated with construction and maintenance of fills, excavations, and clearing of vegetation, and enforcement of projects that change the topography and drainage of land.
- ▶ Solano County Road Improvement Standards (adopted June 12, 2001)—Provide standards for construction of public and private roads and drainage facilities, conditions applicable to use permitting, and conditions applicable to subdivisions of land.

### **Solano County Grading and Erosion Control Ordinance**

The Solano County Grading and Erosion Control Ordinance (Chapter 31 of the County Code) establishes that it is unlawful for any person to destroy, remove, damage, or interfere with the operation or maintenance of any levee, embankment, channel, dam, reservoir, canal, stream, protective work, access easement, or other water delivery, drainage, or flood control facility constructed, operated, or maintained by any public agency without approval. The purpose of the ~~County Grading and Erosion Control Ordinance (Chapter 31 of the County Code)~~ ordinance is to provide the means for controlling soil erosion, sedimentation, increased rates of water runoff, and related environmental damage by establishing minimum standards and providing 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 protect downstream waterways and wetlands and to promote the safety, public health, convenience and general welfare of the community.

The “Methodology” section on page 4.5-37 of the DEIR is revised as follows:

#### **METHODOLOGY**

The environmental analysis for hydrology and water quality was based largely on the information in SCWA’s *Phase I Integrated Regional Water Resources Plan* (SCWA 2004), *Integrated Regional Water Management Plan and Strategic Plan* (SCWA 2005b), and *Urban Water Management Plan* (SCWA 2005c). The Water Resources, Public Facilities and Services, and Health and Safety background reports prepared for the 2008 Draft General Plan (Solano County 2006a, 2006b, 2006c) were also consulted, along with the local and regional agency information sources listed in Chapter 8, “References,” of this EIR and described more fully in preceding portions of this section. The effects of the 2008 Draft General Plan were compared to environmental baseline conditions (i.e., existing conditions) to determine impacts. There is overlap of some 2008 Draft General Plan policies, regulations, and programs as they pertain to water quality and hydrology. For instance, flooding is addressed in the Land Use, Public Facilities and Services, Transportation and Circulation, and Health and Safety chapters. Where policies, regulations, or programs are utilized for mitigation in more than one impact, their first instance will be described and referred to in subsequent references.

The hydrology and water resources impact analysis focuses primarily on proposed development and land use changes in the 2008 Draft General Plan for lands located within the unincorporated areas of the county outside the boundaries of the MSAs. The cities would be responsible for determining potential impacts of proposed development or land use changes within the MSAs. Environmental impacts associated with proposed land use changes and developments within the MSAs are to be covered within each city's general plan and its associated environmental analysis. Environmental impacts would also be evaluated by each city on a project-level basis. As presented in Policy LU.P-7 of the 2008 Draft General Plan, temporary land uses and uses that are consistent with the current zoning on unincorporated lands within MSAs, and that do not conflict with planned land uses, would be permitted until the property is annexed to a city for urban development. At present, until property located within an MSA is annexed by a city, the only approved land use designation for such a property is agricultural use. Therefore, existing and future uses of agricultural land would be evaluated for portions of the unincorporated county within and outside of the MSAs.

The analysis for Impact 4.5-1a beginning on page 4.5-38 of the DEIR has been expanded as follows. Please note that although only Impact 4.5-1a is presented, this analysis also applies to Impact 4.5-1b.

**IMPACT 4.5-1a** **Violation of Water Quality Standards – Preferred Plan.** *The changes in Public, Residential, Commercial, and Industrial land use designations consistent with the 2008 Draft General Plan under the Preferred Plan would result in additional discharges of pollutants to receiving water bodies from nonpoint and potentially new point sources. Such pollutants would result in adverse changes to the water quality of Solano County. If not properly constructed or maintained, additional septic systems and water supply wells required for new development may result in adverse changes in water quality. However, with adoption and implementation of the proposed goals, policies, and programs in the 2008 Draft General Plan, combined with current land use, stormwater, grading, and erosion control regulations, this impact would be less than significant.*

An increase in the amount of impervious surfaces (e.g., rooftops, sidewalks, driveways, streets, parking lots) within unincorporated areas of the county as a result of implementation of the 2008 Draft General Plan under the Preferred Plan would result in higher rates of runoff during rain events or other forms of irrigation, which can be a source of surface-water pollution. Sediment, organic contaminants, nutrients, trace metals, pathogens (e.g., bacteria and viruses), and oil and grease compounds are common urban runoff pollutants. Urban runoff pollutants may stem from agricultural practices, erosion of disturbed areas, deposition of atmospheric particles derived from automobiles or industrial sources, corrosion or decay of building materials, rainfall contact with toxic substances, and spills of toxic materials on surfaces that receive rainfall and generate runoff. New urban industrial and commercial development can generate urban runoff from parking areas as well as any areas of hazardous materials storage exposed to rainfall.

Sediment sources include construction sites, roads and parking lots, ~~as well as~~ destabilized landscape areas, streambanks, unprotected slopes, and denuded or disturbed areas. Sediments, in addition to being contaminants in their own right, transport other contaminants such as trace metals, nutrients, and hydrocarbons that adsorb to suspended sediment particles. Nutrients include nitrogen, phosphorus, and other organic compounds that can be found in organic litter, fertilizers, food waste, sewage, and sediment. Pet or farm animal wastes, sanitary sewer overflow, improperly sited or functioning septic systems, and landfill areas can contribute bacteria and viruses either to surface waters or to groundwater through percolation. Sources of oil and grease compounds include motor vehicles, food service establishments, and fueling stations.

As a result of implementation of the 2008 Draft General Plan, ~~C~~onstruction activities would occur over large areas, and substantial construction-related alteration of drainages could result in soil erosion and stormwater discharges of suspended solids, increased turbidity, and potential mobilization of other

pollutants from project construction sites, as contaminated runoff to on-site and ultimately off-site drainage channels. ~~This is discussed in Impact 4.5 3a below.~~

Large areas of industrial uses are proposed by the 2008 Draft General Plan west of Suisun City, east and northeast of Dixon, northeast of Vacaville along I-505, and in areas surrounding the community of Collinsville. These designations, in addition to proposed additional commercial land uses within the unincorporated areas, may create new point-source stormwater discharges into the County's MS4 and could result in greater pollutant loads in receiving surface waters. This could contribute to greater pollutant loads within already designated impaired waters within the unincorporated areas of the county, which include Lake Herman, Laurel Creek, LedgeWood Creek, Suisun Bay, Suisun Marsh wetlands, Suisun Slough, and lower Putah Creek.

With increased development, the potential for illicit discharges into the County's MS4 also increases and may contribute to potential water quality violations. Illicit discharges are defined as any discharge to the storm drainage system that is not composed entirely of stormwater, with some exceptions. Illicit discharges enter the storm drainage system either through direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drain) or illegal dumping of materials that contain pollutants. Common sources of illicit discharges include sanitary wastewater, effluent from septic tanks, radiator flushing disposal, laundry wastewater, and improper disposal of auto and household toxics.

New commercial and industrial development may also require the use and storage of hazardous materials. These properties may also generate hazardous waste. If hazardous materials are not properly managed at the sites and hazardous waste is not properly disposed of, the properties could contribute to adverse changes to water quality. Please refer to Section 4.13, "Hazards and Hazardous Materials," for an additional discussion of the regulatory provisions of and potential impacts from hazardous materials.

Proposed new development would also require the installation of additional septic systems and water supply wells. If water supply wells are not properly constructed with an adequate sanitary seal, surface water could migrate along the well casing to underlying groundwater and adversely affect groundwater quality. If septic systems are not properly constructed or maintained, the system could fail and wastewater could enter into nearby waterways or underlying groundwater.

### **Stormwater Pollution, Erosion, and Sediment Control Provisions**

Stormwater discharges within the unincorporated county are regulated by the County's NPDES Phase II general MS4 permit and managed in accordance with the SWMP. The SWMP sets forth a program that the County implements to ensure compliance with the general MS4 permit and reduce and control the potential for detrimental effects on water quality caused by new development and redevelopment within the unincorporated areas of the county. The SWMP also describes the ordinances and policies in place to protect stormwater and details the County's actions to bring Solano County into full compliance with NPDES Phase II.

Solano County is required to describe the sources of the pollutants identified within receiving water bodies, determine whether the County has influence over the sources, and establish BMPs to reduce the pollutants under the County's jurisdiction. The SWMP also requires that the County adopt and enforce ordinances or take equivalent measures that prohibit illicit discharges and implement a program to detect illicit discharges. In accordance with NPDES permit requirements, the County has also developed a program to control the discharge of pollutants from construction sites that includes inspections of construction sites and enforcement actions against violators.

The SWMP also identifies County ordinances that provide the backbone for NPDES compliance, including Chapter 31, Grading and Erosion Control. This ordinance provides standards, permitting, and enforcement for controlling soil erosion, sedimentation, stormwater runoff, and environmental damage

associated with construction and maintenance of fills, excavations, and clearing of vegetation, and enforcement of projects that change the topography and drainage of land.

Most construction, as a result of the implementation of the 2008 Draft General Plan, would require a NPDES general construction permit. New proposed industrial uses would likely require a general industrial storm water permit. Permit requirements would control the pollution of stormwater runoff during project construction or industrial operation.

Please refer to Section 4.13, “Hazards and Hazardous Materials,” for provisions pertaining to regulation and control of potential water quality impacts from new development that would require the use and storage of hazardous materials.

~~Chapter 31 of the County Code addresses erosion and sediment control under the County Grading and Erosion Control Ordinance (see Section 4.5.2, “Regulatory Framework,” above). In addition, the County’s SWMP has been prepared, as directed by the Central Valley RWQCB, to be consistent with the NPDES Phase II permit procedures and was designed to enable the County to meet the mandate of the federal CWA to reduce pollutants to the maximum extent practicable. There are six major sections to the plan:~~

- ~~▶ **Section 1: Background.** This section provides a regulatory setting.~~
- ~~▶ **Section 2: Administration, Planning, and Funding.** This section describes the structure, staff involvement, and funding mechanisms of the SWMP.~~
- ~~▶ **Section 3: Geography and Land Use.** This section provides demography, maps, and other physical descriptions of Solano County.~~
- ~~▶ **Section 4: Pollutants of Concern.** This section delineates known impaired water bodies and pollutants of concern [i.e., the Section 303(d) list], as well as actions the SWMP will take to address specific pollutants that are impairing water quality.~~
- ~~▶ **Section 5: Minimum Control Measures.** This section describes elements of the County’s program for controlling stormwater quality.~~
- ~~▶ **Section 6: Monitoring and Evaluation.** This section includes the County’s measurable goals to bring the program into compliance.~~

### **On-Site Wastewater Treatment Systems and Water Wells**

On-site wastewater treatment systems (OWTS), otherwise known as on-site septic tank and leach field systems, are commonly used in the rural areas of the county not served by municipal wastewater treatment systems. ~~In fact, m~~More than 90% of the properties in the unincorporated county that are not served by the City of Vallejo, the Suisun Fairfield Sewer District, or city municipalities are served by OWTS (Solano County 2006b). With development that would occur in conformance with the 2008 Draft General Plan, the potential exists for contamination of groundwater and surface water resources from several factors: overreliance on OWTS from increased density of OWTS, placement near domestic wells, improperly designed or constructed systems, seasonal or year-round high water tables, or placement in areas with insufficient soil depths or improper soil types.

Existing and new OWTS should conform to standards that protect the underlying groundwater and surface water. New statewide OWTS regulations are currently being promulgated by the state in accordance with AB 885 (Chapter 781, Statutes of 2000). These regulations address concerns about contamination by septic systems of groundwater, which is classified as municipal use (e.g., drinking

water) statewide unless otherwise indicated. These regulations are planned to take effect in 2009. AB 885 will set performance standards that must be met by OWTS and supplemental systems, including types of systems permitted, distance between point of OWTS discharge and groundwater and minimum depth of earthen material, and surface application and percolation rates. Local regulatory requirements for OWTS performance standards will not be superseded if these requirements are at least as stringent as those in the proposed AB 885 regulations.

Chapter 6.4 of the County Code establishes a uniform set of standards for the review and approval of on-site sewage disposal systems for individual lots and subdivisions in Solano County. The primary purpose of these standards is to protect the public health of the citizens and visitors of Solano County and protect the environment from degradation by ensuring the proper treatment and disposal of liquid waste through the appropriate siting, design, installation, and maintenance of on-site sewage disposal systems. In addition, these standards are intended to bring Solano County into compliance with applicable Basin Plan policies adopted by the San Francisco Bay and Central Valley RWQCBs, which have jurisdiction over Solano County.

Chapter 13.10 of the County Code establishes standards for the construction, reconstruction, destruction, and inactivation of water, cathodic protection, and monitoring wells. Although well permit applications may be submitted by homeowners, their agent, or a licensed well driller, only a person possessing a C-57 water well drilling contractor's license can actually perform work on a well.

The County's Environmental Health Services Division conducts or oversees evaluations of the site and soil to determine the best design for a septic system to assure proper disposal of sewage. Site evaluations, plan reviews, permits, and construction and destruction inspections are also conducted for on-site sewage disposal systems and wells pursuant to the California Well Standards and Chapters 13.10 and 6.4 of the County Code.

## **Relevant Goals, Policies, and Programs of the 2008 Draft General Plan**

### ***Water Quality Protection***

#### Land Use Chapter

The Land Use chapter of the 2008 Draft General Plan contains several policies designed to protect water quality in incorporated and unincorporated areas of the county:

- ▶ **Policy LU.P-2:** A cornerstone principle of this General Plan is the direction of new urban development and growth toward municipal areas. In furtherance of this central goal, the people of Solano County, by initiative measure, have adopted and affirmed the following provisions to assure the continued preservation of those lands designated "~~Intensive Agriculture,~~" "~~Extensive Agriculture,~~" Agriculture, Watershed, Marsh, Park & Recreation, or Water Bodies & Courses ~~Development Strategy Policy No. 17; Agricultural chapter Policies AG.P-31, AG.P-32, AG.P-33, AG.P-34, AG.P-35, and AG.P-36. Agricultural Lands Policies Nos. 9, 10, 11, 12 and 13; and Watershed Lands Policy No. 2.~~ The General Plan may be reorganized, and individual goals and policies may be renumbered or reordered in the course of ongoing updates of the General Plan in accord with the requirements of state law, but the provisions enumerated in this paragraph shall continue to be included in the General Plan until December 31, 2010, unless earlier repealed or amended by the voters of the County. *[Note to the reader: Policy LU.P-2 was established as part of the Orderly Growth Initiative. Proposed changes to these policies are subject to voter approval and thus are indicated in strikethrough and underline format.]*

- ▶ **Policy LU.P-14:** Establish rural residential development in a manner that preserves rural character and scenic qualities and protects sensitive resources including agricultural lands, creeks, native trees, open spaces, and views.
- ▶ **Policy LU.P-26:** Locate and develop industrial uses in a manner that does not conflict with adjacent and surrounding agricultural activities and protects water quality and marshland and wetland habitats.
- ▶ **Policy LU.P-32:** Promote patterns of development that encourage physical activity to reduce obesity, cardiovascular disease, asthma, diabetes, or injury; and that contribute to a “sense of place” and emotional well-being.

## Agriculture Chapter

The Agriculture chapter of the 2008 Draft General Plan contains the following policies and programs that would protect water quality as a result of addressing agricultural goals:

- ▶ **Policy AG.P-8:** Maintain water resource quality and quantity for the irrigation of productive farmland so as to prevent the loss of agriculture related to competition from urban water consumption internal or external to the county.
- ▶ **Policy AG.P-9:** Promote efficient management and use of agricultural water resources.
- ▶ **Program AG.I-21:** Promote and assist farmer and rancher participation in federal and state voluntary incentive programs aimed at improving wildlife habitat, wetlands, and environmental quality (e.g., Natural Resources Conservation Service Wildlife Habitat Incentives Program, Wetlands Reserve Program, Environmental Quality Incentives Program). Concentrate efforts in areas where the Agricultural Reserve Overlay and Resource Conservation Overlay coincide.
- ▶ **Program AG.I-22:** Promote sustainable agricultural activities and practices that support and enhance the natural environment. These activities should minimize impacts on soil quality and erosion potential, water quantity and quality, energy use, air quality, and natural habitats. Sustainable agricultural practices should be addressed in the County’s proposed Climate Action Plan to address climate change effects.

## Resources Chapter

The Resources chapter of the 2008 Draft General Plan contains the following goals, policies, and programs designed to protect water quality and hydrology in the county:

- ▶ **Goal RS.G-9:** Protect, monitor, restore and enhance the quality of surface and groundwater resources to meet the needs of all beneficial uses.
- ▶ **Goal RS.G-10:** Foster sound management of the land and water resources in Solano County's watersheds to minimize erosion and protect water quality using best management practices and protect downstream waterways and wetlands.
- ▶ **Policy RS.P-1:** Protect and enhance the County's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections.
- ▶ **Policy RS.P-63:** Identify, promote, and seek funding for the evaluation and remediation of water resource or water quality problems through a watershed management approach. Work with the

regional water quality control board, watershed-focused groups, and stakeholders in the collection, evaluation and use of watershed-specific water resource information.

- ▶ **Policy RS.P-64:** Require the protection of natural water courses.
- ▶ **Policy RS.P-65:** Together with the Solano County Water Agency, monitor and manage the County's groundwater supplies.
- ▶ **Policy RS.P-66:** Encourage new groundwater recharge opportunities.
- ▶ **Policy RS.P-67:** Protect existing open spaces, natural habitat, floodplains, and wetland areas that serve as groundwater recharge areas.
- ▶ **Policy RS.P-68:** Preserve and maintain watershed areas characterized by slope instability, undevelopable steep slopes, high soil erosion potential, and extreme fire hazards in agricultural use. Watershed areas lacking water and public services should also be kept in agricultural use.
- ▶ **Policy RS.P-69:** Protect land surrounding valuable water sources, evaluate watersheds, and preserve open space lands to protect and improve groundwater quality, reduce polluted surface runoff, and minimize erosion.
- ▶ **Policy RS.P-71:** Preserve riparian vegetation along County waterways to maintain water quality.
- ▶ **Policy RS.P-72:** Use watershed planning approaches to resolve water quality problems. Use a comprehensive stormwater management program to limit the quantity and increase the water quality of runoff flowing to the county's streams and rivers.
- ▶ **Policy RS.P-73:** Identify naturally occurring and human-caused contaminants in groundwater in new development projects and develop methods to limit and control contaminants. Work with RWQCB to educate the public on evaluating the quality of groundwater.
- ▶ **Policy RS.P-74:** Require and provide incentives for site plan elements (such as permeable pavement, swales, and filter strips) that limit runoff and increase infiltration and groundwater recharge.
- ▶ **Program RS.I-61:** Establish development standards that maximize retention of runoff and regulate development to avoid pollution of storm water, water bodies, and groundwater.
- ▶ **Program RS.I-62:** Develop an ordinance that establishes a riparian buffer to protect water quality and ecosystem function. The minimum buffer width shall be determined according to existing parcel size. For parcels more than 2 acres in size, a minimum 150-foot development setback shall be provided. For parcels of 0.5–2.0 acres, a minimum 50-foot setback shall be provided. For parcels less than 0.5 acre a minimum 20-foot setback shall be provided. Exceptions to these development setbacks apply to parcels where a parcel is entirely within the riparian buffer setback or development on the parcel entirely outside of the setback is infeasible or would have greater impacts on water quality and wildlife habitat.
- ▶ **Program RS.I-63:** Seek funding opportunities for collaborative watershed planning approaches to water quantity and quality enhancement and protection, where such an approach is the desired method of accomplishing the program objectives.
- ▶ **Program RS.I-64:** Protect natural watercourses through acquisition or dedication of adjacent land in fee or less than fee title during the process of reviewing and approving land development proposals.

- ▶ **Program RS.I-65:** Require site plan elements to limit runoff from new development. These measures might include reduced pavement or site coverage, permeable pavement, vegetation that retains and filters stormwater, and/or drainage features. Limit the construction of extensive impermeable surfaces and promote the use of permeable materials for surfaces such as driveways, streets, parking lots, and sidewalks.
- ▶ **Program RS.I-66:** Require proposed projects located within the Putah Creek and Ulatis Creek watersheds to minimize project-related stormwater runoff and pollution. Stormwater runoff and pollution loads resulting after development of projects shall not exceed predevelopment conditions.
- ▶ **Program RS.I-67:** Seek and secure funding sources for development of countywide water quality assessment, monitoring, remedial and corrective action, awareness/education programs. Provide technical assistance to minimize stormwater pollution, support RWQCB requirements, and manage related County programs. Consider future use of desalinization to supplement water supplies.
- ▶ **Program RS.I-68:** Develop a public education and technical assistance program that provides property owners, applicants, and the general public with information regarding stormwater pollution, efficient water use, public water supplies, water conservation and reuse, and groundwater.
- ▶ **Program RS.I-69:** Continue to require best management land use practices in the Barker Slough watershed.
- ▶ **Program RS.I-71:** Inform the public about practices and programs to minimize water pollution and provide educational and technical assistance to farmers and landowners to reduce sedimentation and increase on-site retention and recharge of storm water.
- ▶ **Program RS.I-72:** Coordinate with federal and state agencies to monitor the extent of endocrine disruptor pollutants (synthetic compounds that mimic certain hormones and effect body functions such as immune and reproductive system) in the County's water supply and water bodies. Create an action plan to reduce such pollutants, if pollutants are found to exist at unacceptable levels.
- ▶ **Program RS.I-73:** Explore a cooperative city/county program to compensate farmers and/or landowners to preserve farmland for watershed preservation and maintenance.

## Public Facilities and Services Chapter

The Public Facilities and Services chapter of the 2008 Draft General Plan contains the following policies and programs that aim to protect the county's water quality standards:

- ▶ **Policy PF.P-9:** Actively support efforts of the Solano County Water Agency, water districts, and regional water suppliers and distributors, to ensure that adequate high-quality water supplies are available to support current and future development projects in Solano County.
- ▶ **Policy PF.P-10:** Maintain an adequate water supply by promoting water conservation and development of additional cost-effective water sources that do not result in environmental damage.
- ▶ **Policy PF.P-11:** Promote and model practices to improve the efficiency of water use, including the use of water-efficient landscaping, beneficial reuse of treated wastewater, rainwater harvesting, and water-conserving appliances and plumbing fixtures.
- ▶ **Policy PF.P-21:** Sewer services for development within the unincorporated area may be provided through private individual on-site sewage disposal systems, or centralized sewage treatment systems

permitted and managed by a public agency utilizing the best systems available that meet tertiary treatment or higher standards.

- ▶ **Policy PF.P-22:** Ensure that new and existing septic systems and sewage treatment systems do not negatively affect groundwater quality.
- ▶ **Policy PF.P-32:** Require development projects to minimize pollution of stormwater, water bodies that receive runoff, and groundwater, and to maximize groundwater recharge potential by:
  - implementing planning and engineering design standards that use low-impact development techniques and approaches to maintain and mimic the natural hydrologic regime;
  - using “infiltration” style low-impact development technologies; and
  - following stormwater BMPs during and after construction, in accordance with relevant state-required stormwater permits.
- ▶ **Program PF.I-19:** Cooperate with the Solano County Water Agency in the implementation of its Integrated Regional Water Management Plan and support the efforts of the Solano County Water Agency to maintain adequate water supply and high water quality. Help the Solano County Water Agency to improve water demand projections and planning. This could include updating the Urban Water Management Plan with population projections as found in the updated general plans of cities and the County.
- ▶ **Program PF.I-20:** Review and revise the County Code to ensure it incorporates current best practices to minimize the impacts of on-site septic systems and sewage treatment systems. This revision should address standards within chapters 6.4, 12.2, 13.10, 26, 28, and 31 of the County code.
- ▶ **Program PF.I-21:** When reviewing development proposals:
  - require septic systems to be located outside of primary groundwater recharge areas, or where that is not possible, require shallow leaching systems for disposal of septic effluent;
  - require new septic systems or leach fields to be installed at least 100 feet away from natural waterways, including perennial or intermittent streams, seasonal water channels, and natural bodies of standing water, but make an exception for the repair of existing systems if the buffer cannot be maintained and if adequate provisions are made for protecting water quality;
  - require the use of alternative wastewater treatment techniques to respond to site characteristics, as determined by the California Department of Public Health (formerly California Department of Health Services) and the RWQCBs; and
  - require new development with septic systems to be designed to prevent nitrates and other pollutants of concern from septic disposal systems from impairing groundwater quality.
- ▶ **Program PF.I-22:** On-site sewage disposal systems for individual lots and subdivisions may be operated by private property owners. A public agency shall permit and manage centralized community sewage disposal systems. If lands proposed for community sewage disposal systems are not within the boundaries of an existing public sewage treatment agency, the Board of Supervisors shall, as a condition of development, designate a public agency to provide and manage the sewer service, which may be contracted to a private entity with oversight by the public entity. Sewer treatment facilities shall be designed to provide sewer service to developed areas and areas designated for future development within the General Plan.

- ▶ **Program PF.I-23:** Continue to enforce the abatement of ailing septic systems that have been demonstrated as causing a health and safety hazard.
- ▶ **Program PF.I-24:** Continue inspection of individual sewage facilities to ensure they are not adversely affecting water quality.
- ▶ **Program PF.I-29:** Design, construct, and maintain County buildings, roads, bridges, drainage, and other facilities to minimize sediment and other pollutants in stormwater flows. Develop and implement best management practices for ongoing maintenance and operation.
- ▶ Prepare and implement a BMP manual for minimizing stormwater pollutants associated with construction and maintenance of County buildings, roads, and other facilities.

## Public Health and Safety Chapter

The Public Health and Safety chapter of the 2008 Draft General Plan contains the following policies that address water quality as part or all of their focus:

- ▶ **Policy HS.P-2:** Restore and maintain the natural functions of riparian corridors and water channels throughout the county to reduce flooding, convey stormwater flows, and improve water quality.
- ▶ **Policy HS.P-10:** Ensure that flood management policies that minimize loss of life and property also balance environmental health considerations of the floodplain and therefore do not cause further erosion, sedimentation, or water quality problems in the floodplain area.
- ▶ **Policy HS.P-16:** Require minimum setbacks for construction along creeks between the creek bank and structure, except for farm structures that are not dwellings or places of work, based on the susceptibility of the bank to lurching caused by seismic shaking.

## ***Protection and Enhancement of Water Resources***

The Resources chapter of the 2008 Draft General Plan contains the following policies and programs to protect and enhance the county's water resources, which would in turn enhance hydrology and water quality:

- ▶ **Policy RS.P-8:** Protect marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands because they are critical habitats for marsh-related wildlife and are essential to the integrity of the marshes.
- ▶ **Policy RS.P-27:** Protect long-term water quality in the Delta in coordination with water agencies at local, state, and federal levels for designated beneficial uses, including agriculture, municipal, water-dependent industrial, water-contact recreation, boating and fish and wildlife habitat.
- ▶ **Program RS.I-35:** Monitor levels of use in the Suisun Marsh to ensure that use intensity is compatible with other recreation activities and with protection of the Suisun Marsh environment.

## **Conclusion**

The above-referenced regulatory requirements and proposed goals, policies, and programs in the 2008 Draft General Plan and provisions presented within Section 4.13, "Hazards and Hazardous Materials," provide adequate provisions to control, reduce, or eliminate potential impacts on water quality from stormwater pollution, illicit discharges, or improperly constructed or maintained water supply wells or septic systems. In addition, provisions are in place that would also regulate and control specific point-

source stormwater or wastewater discharges from potential new industries proposed within the unincorporated areas of the county. With adoption and implementation of the proposed goals, policies, and programs in the 2008 Draft General Plan, combined with compliance with the County’s MS4 NPDES Permit Program, current land use, stormwater, grading, and erosion control regulations, this impact would be less than significant.

The portion of the analysis for Impact 4.5-2a that begins after the impact summary on page 4.5-45 and ends with the second paragraph of “Erosion and Sediment Control Programs” on page 4.5-46 is revised as follows:

~~Solano County cities are each responsible for their own storm drainage and flood control. Flood control improvements are generally funded by the cities through taxes and/or assessments. SCWA is not responsible for city flood control issues, even though it sometimes assists Solano County’s cities in addressing upstream and downstream impacts. SCWA is responsible for operations and maintenance of the Ulatis Flood Control Project and the Green Valley Flood Control Project. Flood control functions for the Delta (from precipitation and tides) rely on levees. Levee protection is addressed in Impact 4.5-6a, “Potential for Failure of a Levee,” below.~~

The Ulatis Flood Control Project is located in the Vacaville Elmira drainage basin. The primary purpose of the Ulatis project is to protect agricultural land downstream of Vacaville. It was designed to control storm drain systems with a capacity to handle a 10-year recurrence level, or a storm that occurs on an average once in every 10 years. About 57 miles of channel in the Ulatis Project is maintained. The Green Valley Flood Control Project is located in the Cordelia area and partially within the city of Fairfield. When the Green Valley Project was first built, the service area was unincorporated and largely undeveloped. It is designed to control a storm with a 40-year recurrence level. A total of 6 miles of channel is located in the Green Valley Project.

~~Both projects include unlined earth channels where some vegetation is allowed to grow for slope protection. As development in the watersheds continues, SCWA must ensure adequate capacity for additional runoff. SCWA works with the cities to ensure that development projects adequately mitigate their stormwater runoff impacts. Part of SCWA’s long-term maintenance program includes monitoring the channels to ensure that they maintain the ability to carry designated flows.~~

An increase in the amount of impervious surfaces (e.g., rooftops, sidewalks, driveways, streets, parking lots) within unincorporated areas of the county as a result of implementation of the 2008 Draft General Plan under the Preferred Plan would result in higher rates of runoff during rain events or other forms of irrigation, which could exacerbate erosion in overland flow and drainage swales and creeks and modify downstream sedimentation or drainage patterns. An increase in flows could also amplify erosion potential and sedimentation rates within established drainage problem areas.

Modification or filling of existing waterways as part of development could also contribute to an increase in downstream erosion and sedimentation. Alteration during construction or placement of structures within the 100-year floodplain could disrupt existing floodways and flow velocities during storm events, causing an increase in scouring and amplifying erosion of exposed soil and sedimentation. Other sources of erosion and sedimentation as a result of proposed development include construction sites, roads and parking lots, destabilized landscape areas, streambanks, unprotected slopes, and denuded or disturbed areas.

## **Erosion and Sediment Control Provisions**

The County does not own or operate any storm drain systems other than roadside culverts and bridge piping. The majority of the land in the unincorporated area has relatively flat topography, with grassy swales and creeks as the primary drainage system. The California Department of Transportation constructs and maintains the County rights-of-way and the roadside grassy swale drainage systems.

Solano County cities are each responsible for their own storm drainage and flood control. Flood control improvements are generally funded by the cities through taxes and/or assessments. SCWA is not responsible for city flood control issues, even though it sometimes assists Solano County's cities in addressing upstream and downstream impacts.

Stormwater discharges within the unincorporated county are regulated by the County's NPDES Phase II general MS4 permit and managed in accordance with the SWMP. The SWMP sets forth a program that the County implements to ensure compliance with the general MS4 permit and reduce the potential for erosion and sedimentation from new development and redevelopment in unincorporated Solano County. In accordance with NPDES permit requirements, the County has also developed a program to control the discharge of pollutants, including sediment, from construction sites. The program includes inspections of construction sites and enforcement actions against violators.

The SWMP also identifies County ordinances that provide the backbone for NPDES compliance, including Chapter 31, "Grading and Erosion Control." This ordinance provides standards, permitting, and enforcement for controlling soil erosion, sedimentation, stormwater runoff, and environmental damage associated with construction and maintenance of fills, excavations, and clearing of vegetation, and enforcement of projects that change the topography and drainage of land.

In 1998, SCWA approved a flood control master plan. The plan identifies the agencies responsible to maintain the major drainages within Solano County. SWCA is responsible for maintaining multiple channel systems within the Suisun and Ulatis regions. SWCA has developed several flood control projects that address these drainages. The plan also recommended the preparation of flood control watershed studies to address the problem areas in Solano County. Watershed studies analyze potential problem areas from a regional view that all lands drain into a single point and that potential downstream impacts could result if not properly maintained. After the studies are complete, SCWA works to implement solutions to flood control problems.

As mentioned above, the Solano County Grading and Erosion Control Ordinance (County Code Chapter 31) establishes minimum design standards and provides regulations to minimize or eliminate on-site and downstream erosion and sedimentation. Specifically, Chapter 31, Article III, Section 31-30 of the County Code requires that development plans identify project-specific mitigation measures that result in no net increase in peak runoff as a result of the project.

In addition, Chapter 12.2, Article V of the County Flood Protection Ordinance provides for provisions for flood hazard reductions and requires new construction and substantial improvements of any structure to have the lowest floor, including the basement, elevated at least 1 foot above the base flood elevation and certified by a registered professional engineer or surveyor, or verified by the building inspector to be properly elevated.

For projects that would alter existing waterways or drainages determined to be waters of the United States, a USACE permit would be required under CWA Sections 401 and 404. The permit would require provisions to control erosion and increased sedimentation as a result of the project.

Most construction, as a result of the implementation of the 2008 Draft General Plan, would require an NPDES general construction permit. The permit requirements would control the potential for erosion and sedimentation during project construction.

The Suisun Marsh Policy Addendum certified by the San Francisco Bay Conservation and Development Commission on November 3, 1982, and amended to the *Solano County General Plan* on February 2, 1999, contains principles and standards for all diking, dredging, filling, and other construction to reduce the potential for erosion and sedimentation in the marsh. No development shall be permitted that would

interfere with existing channel capacity or that would substantially increase erosion, siltation, or other contributors to the deterioration of any marsh watercourse.

The second subsection under “Relevant Policies and Programs of the 2008 Draft General Plan” on page 4.5-46 incorrectly referred to the Agriculture chapter of the 2008 Draft General Plan, rather than the Resources chapter. Therefore, the heading and introductory text in this subsection are corrected as follows:

### ***Agriculture Resources Chapter***

The ~~Agriculture Resources~~ chapter of the 2008 Draft General Plan contains several policies and an implementation program designed to minimize or eliminate on-site and downstream erosion and sedimentation:

The following program on pages 4.5-46 through 4.5-48 of the DEIR, included in the list of policies and programs from the 2008 Draft General Plan that are relevant to Impacts 4.5-2a and 4.5-2b, “On-Site and Downstream Erosion and Sedimentation,” is deleted as follows:

~~► **Program RS.I-48:** During review of wind turbine generator proposals, consider the following:~~

- ~~• Wind turbine generators shall not be located in areas that conflict with the mission of Travis Air Force Base or other air operation facilities.~~
- ~~• Commercial turbines and non-commercial turbines over 100 feet in height or with a total rated power output of more than 100 kilowatts in designated wind resource areas require a public hearing and use permit approval by the Planning Commission.~~
- ~~• Following use permit approval, building permits and grading permits are required. Non-commercial turbines 100 feet or less in height and 100 kilowatts or less in rated power output require only building permits and grading permits.~~
- ~~• Submittal requirements for use permit applications within the wind resource areas include the following:
  - ~~— Permit application~~
  - ~~— Project description form (requires information on size and characteristics of project, physical and performance specifications of equipment, transmission system, certification, project schedule and phasing, circulation, and access).~~
  - ~~— Acoustical analysis~~
  - ~~— Archaeological survey~~
  - ~~— Geotechnical report (must correlate to standard county requirements for geotechnical analysis)~~
  - ~~— Site plan~~
  - ~~— Elevation package (elevation drawings to scale of proposed turbines and accessory uses).~~
  - ~~— Notification of the Federal Aviation Administration of any application with wind turbines over 200 feet in height within 20,000 feet of a runway of any airport.~~~~

- ~~— Notification of the utility and the California Public Utilities Commission of application filing.~~
- ~~— Notification of application filing to microwave communications link owners within 2 miles of the proposed installation.~~
- ~~— Adjacent property owner’s notification package.~~
- ~~— Current aerial photographs or panoramic photographs of the site.~~
- ~~— Evidence of liability and workers compensation insurance.~~
- ~~— Map locating all residences within 2 miles of the proposed project.~~
- ~~— Certification of detailed plans for electrical systems and transmission lines, substation, support towers, generators, and foundations by California licensed professional engineers (electrical, civil, and structural).~~
- ~~— Performance test documentation by a licensed engineer for all proposed turbine types.~~
- ~~— Contribution to escrow account for removal of inoperable or unsafe wind equipment and associated uses, including foundations.~~
- ~~— Following review of the applicant’s site plan by county planning staff, a biological assessment would be required if it is determined that sensitive biological resources identified by the Resource Conservation Overlay (Figure RS-1) [see Exhibit 4.6-2 in Section 4.6, “Biological Resources.”] would be affected by the proposed project. If the proposed wind turbine siting would fall within or near areas of sensitivity, additional biological assessment of the probable impacts of the project would be required as part of the permit application. Findings of the biological assessment would determine need for biological resource monitoring and mitigation for protection of biological resources. For projects proposed in areas of low biological sensitivity, no additional biological information would be required.~~
- Requirements of CEQA shall be met through the public notice and hearing process for negative declarations.
- Submittal requirements for building permit and grading permit applications shall be as follows:
  - ~~— Completed permit application.~~
  - ~~— Detailed plans and specifications for structures, foundations, electrical systems, certified by a California licensed professional engineer. Plans will be checked for compliance with such codes as the Uniform Building Code, the National Electrical Code, and applicable ANSI and IEEE standards.~~
  - ~~— Grading and erosion, sediment, and runoff control plans.~~
  - ~~— A standard set of minimum conditions would apply to every permit approval. These conditions could be modified or added to at the discretion of Resource Management Department staff, Planning commission, or Board of Supervisors.~~
- Additional environmental information beyond that required for permit processing would not be required for projects proposed within the wind resource areas.

- ~~In addition to the required safety setbacks, applicants would be required to demonstrate that the CNEL 50 influence area of proposed wind turbines would not coincide with residential areas or individual dwelling units. No turbines which exhibit high infrasonic noise generation potential would be permitted within one mile of residential uses or land zoned for residential uses.~~
- ~~The zoning ordinance should require a bond or other guarantee, such as a contribution to an escrow account, for removal of inoperable or unsafe wind equipment and associated uses, including foundations, after use permit approval.~~

The conclusion to Impact 4.5-2a and subsequent mitigation measure statement on page 4.5-50 of the DEIR are revised as follows:

### Conclusion

Any proposed new development as a result of implementation of the 2008 Draft General Plan would be required to meet regulatory requirements and strict design requirements set forth by the County to prevent development-related changes in stormwater runoff from causing, or further accelerating, stream channel erosion, sedimentation, or other adverse impacts on beneficial stream uses. Design standards require that projects have no net increase in peak runoff from existing conditions; therefore, any new development would not substantially contribute to existing drainage problems.

With the adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, combined with regulatory requirements and current grading, erosion, and flood control regulations, this impact would be less than significant.

### Mitigation Measure

No mitigation beyond regulatory requirements and the 2008 Draft General Plan policies and programs is required.

The portion of the analysis for Impact 4.5-5a that begins with the impact summary on page 4.5-55 and ends with the second paragraph on page 4.5-56 of the DEIR is expanded as follows:

**IMPACT 4.5-5a**      **Exposure of People or Structures to Flood Hazards – Preferred Plan.** *Development and land use changes consistent with the 2008 Draft General Plan under the Preferred Plan would result in the development of residential or commercial structures in floodplains and existing drainage problem areas, thereby exposing people and structures to flood hazards. Similar exposure could occur in shoreline areas that would be subject to flooding because of extreme high tides or concurrent high tides and watershed flooding. Sea level rise associated with global climate change would exacerbate these risks. However, with implementation of the proposed policies and programs in the 2008 Draft General Plan, ~~combined with~~ as well as flood control regulations, this impact would be **less than significant**.*

Development ~~and~~ that could result from changes in land use ~~changes designations~~ consistent with the 2008 Draft General Plan would result in the development of residential, ~~or~~ commercial, and industrial structures in floodplains, thereby exposing people and structures to flood hazards (Exhibit 4.5-4). Similar exposure could occur in shoreline areas that would be subject to flooding because of extreme high tides or concurrent high tides and watershed flooding. A large portion (30–40%) of developed and undeveloped lands in Solano County is located within the 100-year floodplain and is subject to flooding because of periodic heavy winter rainfall, tidal fluctuations, and the potential for canal, levee, and dam failure from seismic activity (Exhibit 4.5-4). Sea level rise associated with global climate change would exacerbate

these risks (see Section 6.2, “Effects Related to Climate Change,” in Chapter 6, “Other CEQA Considerations”).

Most flood-prone lands in Solano County are subject to inundation because of heavy rainfall and resulting stream overflows. These areas are typically identified as being within the 100-year floodplain. A number of streams in the county have long histories of seasonal flooding, often resulting in significant damage. Such floods can occur anytime during the rainfall months from November 1 to May 1. Flood risk is intensified in the lower stream reaches by the likelihood of coincident high tides and strong offshore winds during heavy rainfall. However, areas outside of the 100-year floodplain have been identified by the County as prone to flooding caused by problems with the regional drainage system. The Suisun, Ulatis, and Dixon drainage regions cover the areas where the majority of rural drainage problems have been identified. New development proposed within drainage problem areas could increase the risk of exposure of people and structures to flood hazards.

The potential for flood damage in the county is further aggravated by spreading urbanization. Urbanization is encroaching upon and reducing floodplain area in the low-lying areas while increasing the rates and volumes of runoff from overlying higher lands (e.g., through construction of structures and paving), thereby restricting natural infiltration. Potential for flood damage is high in the vicinity of Cordelia and Rockville along Green Valley, Dan Wilson, and Suisun Creeks. These streams have a long history of flooding, particularly along the lower reaches of Green Valley Creek, which are influenced by Suisun Bay tides. The most severe flood conditions occur in these areas when heavy rainfall coincides with high tides and offshore winds. Eighteen flood events have occurred in Solano County since 1937, or one every 3–4 years on average. The largest and most damaging flood occurred in 1955 and was estimated to be a 40-year event. Investigations indicate that larger flood-producing storms could be expected in the future (USACE 1967). Recent flood events include the December 31, 2005, storm that caused significant damage in several of the county’s cities and rural areas. The storms of December 13–16, 2002, also caused extensive localized flooding damage (Okita, pers. comm., 2006).

~~As explained in Impact 4.5-2a, the cities in Solano County are each responsible for their flood control projects; SCWA sometimes assists the cities and is also responsible for operations and maintenance of the Ulatis Flood Control Project and the Green Valley Flood Control Project. Flood control functions for the Delta (from precipitation and tides) rely on levees. Levee protection is addressed in Impact 4.5-6a, “Potential for Failure of a Levee.”~~

### **Flood Provisions**

SCWA has approved a flood control master plan. The plan identifies the agencies responsible to maintain the major drainages within Solano County. Solano County cities are each responsible for their own storm drainage and flood control. Flood control improvements are generally funded by the cities through taxes and/or assessments. SCWA is not responsible for city flood control issues, even though it sometimes assists Solano County’s cities in addressing upstream and downstream impacts. SCWA is responsible for maintaining multiple channel systems within the Suisun and Ulatis regions. SCWA has developed several flood control projects that address these drainages. The plan also recommends the preparation of flood control watershed studies to address the problem areas in Solano County. Watershed studies analyze potential problem areas from a regional view that all lands drain into a single point and that potential downstream impacts could result if not properly maintained. After the studies are complete, SCWA works to implement solutions to flood control problems.

The County Flood Damage Prevention Ordinance (Chapter 12 of the County Code) establishes provisions for flood hazard reduction to minimize public and private losses caused by flood conditions in specific areas and requires strict design standards to prevent damage during flood events. The ordinance provides the following methods of reducing flood losses:

- ▶ restricting or prohibiting uses that are dangerous to health, safety, and property because of water hazards, or that result in damaging increases in flood heights or velocities;
- ▶ requiring that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
- ▶ controlling the alteration of natural floodplains, stream channels, and natural protective barriers that help accommodate or channel flood waters;
- ▶ controlling filling, grading, dredging, and other development that may increase flood damage; and
- ▶ preventing or regulating the construction of flood barriers that will unnaturally divert flood waters or that may increase flood hazards in other areas.

Chapter 12.2, Section 50, presents construction standards for any new construction or substantial improvement of any structure requiring that the lowest floor, including the basement, be elevated at least 1 foot above the base flood elevation and certified by a registered professional engineer or surveyor, or verified by the building inspector to be properly elevated. Chapter 12.2, Section 54, prohibits any encroachments, including fill, new construction, substantial improvements, and other development, unless certification is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

SCWA has also prepared a flood awareness manual that provides homeowners helpful information about preparing for floods, reducing flooding risks, taking action if flooding occurs, and cleaning up after a flood event. Included within the manual are county maps that identify FEMA flood zones, FEMA flood probabilities, County water systems, and county watershed basins. SCWA has also developed a Flood Hazard Warning Program to help ensure that county residents living in areas with a high probability of flooding have time to prepare and evacuate, if needed.

The conclusion to Impact 4.5-5a on page 4.5-58 is revised as follows:

## **Conclusion**

~~Adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, combined with flood control regulations, would minimize the exposure of people or structures to flood hazards resulting from development under the 2008 Draft General Plan. Therefore, this impact would be less than significant.~~

Portions of areas proposed for new development as a result of changes in land use designations under the 2008 Draft General Plan would be exposed to periodic flooding. Flood control provisions and policies and programs proposed in the 2008 Draft General Plan are designed to address this issue. Flood control provisions and regulatory requirements would be implemented by development projects allowed under the 2008 Draft General Plan. New development would be subject to strict design standards to reduce flood damage and would be required to install individual stormwater on-site collection systems. The systems would be the responsibility of the individual project developers. Public-awareness programs established by SWCA promote community flood awareness and alert systems to help ensure that county residents living in areas with a high probability of flooding have time to prepare and evacuate in advance of potential flooding. For these reasons, impacts from an increase in runoff or construction within the 100-year floodplain as a result of the 2008 Draft General Plan are considered less than significant.

There are several drainage problem areas where localized flooding occurs within the unincorporated areas of the county that have been identified as part of the development of the *Flood Control Master Plan*. This type of localized flooding is attributable to drainage problems, and not to the location of these areas

within the 100-year floodplain. With the adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, as well as flood control regulations, the risk would remain for exposure of people or structures to flood hazards as a result of new construction within identified drainage problem areas in the unincorporated portions of the county, but the risk would be reduced. This impact would be less than significant. Nonetheless, to further reduce the risk, implementation of Mitigation Measure 4.5-5a is recommended.

Mitigation Measure 4.5-5a: Develop and Use a Drainage Problem Area Overlay during Project Review.

Together with SCWA, the County shall prepare a Drainage Problem Area Overlay for the unincorporated portion of the county that identifies areas subject to flooding caused by existing drainage problems, as identified within the *Flood Control Master Plan* and available WMPs for Solano County. The County shall use the overlay during review of proposed project designs. Where development within existing drainage problem areas is proposed, the County shall require additional project-specific mitigation measures to reduce potential of impacts from localized flooding within these problem areas as necessary before project approval.

Mitigation Measure 4.5-5a would reduce the impact of exposure of people or structures to flood hazards as a result of new construction within identified drainage problem areas. For this reason, the impact would be reduced to a **less-than-significant level**.

~~No mitigation beyond the 2008 Draft General Plan policies and programs is required.~~

Impact 4.5-5b on page 4.5-58 of the DEIR is revised as follows:

**IMPACT**      **Exposure of People or Structures to Flood Hazards – Maximum Development Scenario.**  
**4.5-5b**      *Development and land use changes consistent with the 2008 Draft General Plan under the Maximum Development Scenario would result in the development of residential or commercial structures in floodplains and existing drainage problem areas, thereby exposing people and structures to flood hazards. Similar exposure could occur in shoreline areas that would be subject to flooding because of extreme high tides or concurrent high tides and watershed flooding. Sea level rise associated with global climate change would exacerbate these risks. However, with implementation of the proposed policies and programs in the 2008 Draft General Plan, ~~combined with~~ as well as flood control regulations, this impact would be **less than significant**.*

This impact is similar to Impact 4.5-5a for the Preferred Plan, except that there is the potential for a greater impact because more development would be permitted under the Maximum Development Scenario. Adoption and implementation of the proposed policies and programs in the 2008 Draft General Plan, however, combined with flood control regulations, would minimize the exposure of people or structures to flood hazards resulting from development under the 2008 Draft General Plan. ~~Therefore,~~ €This impact would be less than significant. However, for the same reasons as described under Impact 4.5-5a, implementation of Mitigation Measure 4.5-5b is recommended.

Mitigation Measure 4.5-5b: Develop and Use a Drainage Problem Area Overlay during Project Review.

~~No mitigation beyond the 2008 Draft General Plan policies and programs is required.~~ This measure is the same as Mitigation Measure 4.5-5a above. For the same reasons as described above, implementation of this mitigation measure under the Maximum Development Scenario would reduce the impact to a **less-than-significant level**.

The portion of the discussion of Impact 4.5-6a, “Potential for Failure of a Levee – Preferred Plan,” that begins with the last paragraph of page 4.5-58 and ends with the second paragraph of “Procedures for Protection Against

Threats of Levee Failure,” on page 4.5-59 of the DEIR is revised as follows. Please note that these changes also apply to Impact 4.5-6b for the Maximum Development Scenario.

When levees fail, people and structures are exposed to inundation, and death, injury, or loss of property could result. The Delta includes much of southern, eastern, and southeastern Solano County. For protection against floods and high tides, the Delta relies on a maze of levees to protect land and key infrastructure. In all, more than 1,100 linear miles of levees are located in the Delta, including many built more than a century ago to protect farmland. Were it not for the levees, the Delta would be a 740,000-acre inland sea. The Delta’s aging, fragile levee system protects farmland, highways, a railroad, natural gas and electric transmission facilities, and aqueducts that provide water to parts of the Bay Area. Delta levees also protect the residents of Rio Vista and multiple communities and rural areas in unincorporated Solano County. A Delta levee in Solano County could fail because of earthquake-induced slumping, landslides, and liquefaction. High flood events create large flows into the Delta that can raise the water surface above the tops of the levees and increase pressure for seepage through and under the levees, which could also cause them to fail. Undetected problems, such as activity by burrowing animals, can cause levees to fail during normal, non-flood flow periods. The need to maintain and enhance the Delta levee system is one of the biggest and most urgent flood control concerns in Solano County.

Because levees are vulnerable to peat oxidation as well as sand, silt, and peat erosion, new material is continually added to maintain them. Subsiding farmlands adjacent to levees may increase water pressure against levees, adding to the potential for levee failure. In addition, most levees are not maintained to any specified standard, which can increase the likelihood of failure and inundation. Potential failure of levees as a result of liquefaction constitutes a flood hazard in much of the southern half of Solano County. Some enclosed areas lie several feet below sea level and are subsiding at a rate of up to 3 inches per year. Most of these diked areas are currently used for agriculture, and some lie so far below sea level that it would be economically infeasible to drain them should they be flooded as a result of levee failure.

~~Failure of levees protecting Collinsville could flood parts of that community, causing damage to residential areas. No comprehensive studies have been performed on levee failure because of the difficulty of correctly assessing levee safety. Even inspected levees are prone to failure under certain conditions. Roads in Suisun Marsh and in the east county are constructed almost exclusively on levees. Thus, levee failures could also disrupt travel through these areas.~~

The 2008 Draft General Plan proposes new industrial development along areas protected by levees near Collinsville and Rio Vista and south of Suisun City. Levee failure in these regions could expose people and structures to flooding. The 2008 Draft General Plan does not propose additional rural residential land uses in areas that are protected by levees; however, it is likely that additional residential development would occur within existing lands designated for residential use near Collinsville and Rio Vista.

### **Provisions Procedures for Protection Against Threats of Levee Failure**

As described in Section 4.5.2, “Regulatory Framework,” canal and levee inundation mapping procedures (19 CCR Section 2585) are required by the state OES for all canals and levees where human life is potentially endangered by canal or levee flooding inundation. Canal and levee owners are responsible for obtaining recent hydrologic, meteorological, and topological data, as well as land surveys denoting the floodplain to be utilized for the preparation of a canal or levee inundation map.

Also as described in Section 4.5.2, the County OES provides for the development, establishment, and maintenance of programs and procedures to help protect the lives and property of Solano County residents from the effects of natural or human-caused disasters, including floods from levee failures. The County OES works with the County and individual city departments with disaster exercises and evacuation preparations. Additionally, the County OES conducts emergency preparedness training and awareness presentations for citizens and various organizations so that they will better understand what

they should do before, during, and after a disaster or major emergency, including flooding from failure of a levee.

The Solano County Grading and Erosion Control Ordinance (Chapter 31 of the County Code) prohibits the destruction, removal, or interference with the operation or maintenance of any flood control structure, including levees, before such activity has been approved by and a permit has been obtained from the County.

SCWA has prepared a flood awareness manual that provides homeowners helpful information about preparing for floods, how homeowners can reduce their flooding risks, what to do if flooding occurs, and cleaning up after a flood event. Included within the manual are county maps that identify FEMA flood zones, FEMA flood probabilities, county water systems, and county watershed basins.

SCWA has also developed a Flood Hazard Warning Program to help ensure that county residents who live in areas with a high probability of flooding have time to prepare and evacuate, if needed.

In addition, as shown in Chapter 4 of this FEIR, the impact conclusion for Impact 4.5-6a (and Impact 4.5-6b) on page 4.5-60 of the DEIR is revised as follows:

### **Conclusion**

The proposed land use changes and new development that would occur pursuant to the 2008 Draft General Plan would not contribute to an increase in erosion or otherwise affect the structural integrity of an existing levee; therefore, implementation of the 2008 Draft General Plan, in itself, would not substantially contribute to the risk of levee failure. New industrial development within unincorporated areas protected by levees is proposed as part of the 2008 Draft General Plan. Policies proposed in the plan require that new development include mitigation measures to reduce risk of exposure of inundation caused by levee failure. County ordinance also prohibits any new development in areas identified as subject to potential canal or levee failure unless necessary levee or canal improvements are made or special flood-related site and building design standards are met. In addition, Policies RS.P-26 and HS.P-8 of the 2008 Draft General Plan would ensure that improvements are made to levee systems and that the levees are properly maintained. SCWA has also prepared a flood awareness manual and developed a Flood Hazard Warning Program to help ensure that County residents who live in areas with a high probability of flooding have time to prepare and evacuate, if needed.

Adoption and implementation of ~~the proposed policies~~ Policies and Programs RS.P-23, RS.P-26, HS.P-7, HS.P-8, HS.I-11, SS.I-8, and TC.P-23 in the 2008 Draft General Plan, combined with other relevant state and local regulations, would reduce the potential for effects on Solano County from levee failure. However, even with implementation of these policies and programs, the potential for failure of a Delta levee would remain because of the existing conditions of the levee system. In many portions of the Delta, the levees are only designed to withstand a 10-year flood event. This means that a flood has a 10% chance of being equaled or exceeded in any given year. Such flood frequencies are not considered to be an adequate level of protection for any land uses protected by such levees. Much is currently being done to improve the existing levee system; however, ~~Therefore,~~ this impact would ~~be remain~~ significant because although levees are designed to a specific level of protection from flooding events (e.g., 10-year or 100-year flood event), the same level of protection cannot be guaranteed or the risk of flooding eliminated for any new development within these areas.

### **Mitigation Measure**

No additional feasible mitigation is available to reduce this impact. This impact would remain **significant and unavoidable** because the potential for failure of a Delta levee would remain even with implementation of the policies in the 2008 Draft General Plan and relevant state and local regulations.

The analysis for Impacts 4.5-7a and 4.5-7b beginning on page 4.5-61 of the DEIR is expanded as follows. Please note that although the expansion of the analysis is presented here only under Impact 4.5-7a, it applies to Impact 4.5-7b as well.

**IMPACT 4.5-7a** Potential for Failure of a Dam – Preferred Plan. *Of the 18 dams in Solano County, the state OES has identified 10 dams within Solano County and two dams outside Solano County where dam inundation has the potential to cause human injury or loss of life. In the unlikely event of dam failure, people and structures are exposed to inundation, and death, injury, or loss of property could result. Implementation of the proposed policies and programs in the 2008 Draft General Plan under the Preferred Plan, combined with other relevant state and local regulations, would minimize the potential for effects on the county from dam failure. This impact would be less than significant.*

Dam inundation occurs when a dam is not structurally sound or is unable to withstand damages resulting from seismic activity. In addition, if an increase in runoff during a major storm event were to exceed the capacity of the dam, waters could overtop, cause flooding, or potentially increase the probability of dam failure. The degree and rapidity of dam failure depends on the dam’s structural characteristics.

Of the 18 dams in Solano County, the state OES has identified 10 dams within Solano County and two dams outside Solano County where dam inundation has the potential to cause human injury or loss of life. Each of these 12 dams are regulated under the jurisdiction of the DSOD and are evaluated and inspected on an annual basis. For security reasons, maps showing dam inundation areas are not made available to the public, although the Association of Bay Area Governments (ABAG) found the following for Solano County: 16,766 urban acres are subject to dam inundation; 3,577 miles of roadway are in an area subject to dam inundation; and 23 critical health care facilities, schools, or County-owned facilities are in an area subject to dam inundation (ABAG, 2008a). Staff in the County Department of Resource Management would evaluate projects in dam inundation areas on a case-by-case basis using the current data available to them (Solano County 2006). According to the existing land use data for the unincorporated areas of Solano County for 2005, ABAG reported that approximately 24% of urban areas and 29% of nonurban areas would become inundated as a result of dam failure (ABAG 2008b). New development proposed as part of the 2008 Draft General Plan in northern portions of the unincorporated portion of the county, south of Vallejo, southwest of Fairfield and Suisun City, could be subject to inundation as a result of dam failure.

### **Provisions- Procedures for Protection Against Threats of Dam Failure**

As described in Section 4.5.2, “Regulatory Framework,” dam inundation mapping procedures (19 CCR Section 2575) are required by the state OES for all dams where human life is potentially endangered by dam flooding inundation.

Also as described in Section 4.5.2, the County OES provides for the development, establishment, and maintenance of programs and procedures to help protect the lives and property of Solano County residents from the effects of natural or human-caused disasters, including floods from dam failures. The County OES works with the County and individual city departments with disaster exercises and evacuation preparations. Additionally, the County OES conducts emergency preparedness training and awareness presentations for citizens and various organizations so that they will better understand what they should do before, during, and after a disaster or major emergency, including flooding from failure of a dam.

Staff in the County Department of Resource Management would evaluate projects in dam inundation areas on a case-by-case basis using the current data available to them (Solano County 2006).

DSOD has established strict design requirements for all new dam construction. Dams are required to withstand the largest earthquake and maximum probable flood that could conceivably affect the dam. Specific guidelines have also been developed that require dams, that impound more than 5,000 acre-feet of water, have outlet facilities that are capable of lowering the maximum storage depth by 10% within 10 days, should an unsafe condition at the dam arise. These outlet facilities are also required to be routinely maintained. Required outlet facilities are designed to reduce the severity of inundation should a dam failure occur.

## **Relevant Policies of the 2008 Draft General Plan**

### ***Public Health and Safety Chapter***

The following policies and program from the Public Health and Safety chapter of the 2008 Draft General Plan mitigate potential impacts related to the potential for dam failure:

- ▶ **Policy HS.P-7:** Require new-development proposals in dam, canal, or levee inundation areas to consider risk from failure of these facilities and to include mitigation measures to bring this risk to a reasonable level.
- ▶ **Policy HS.P-8:** Work with responsible parties to ensure dams, levees, and canals throughout the county are properly maintained and/or improved.
- ▶ **Program HS.I-11:** Where new development for human occupancy is proposed within dam, canal, or levee inundation areas, require the applicant to prepare a report describing the results of an inspection of the dam, canal, or levee by a state-registered civil engineer, including the reliability of the facility during a 100-year flood, potential for failure during seismic shaking, likely inundation area, and predicted evacuation times. The report should also include any necessary dam, levee, or canal improvements to protect life and property in the proposed development.

### **Conclusion**

The proposed land use changes and new development that would occur pursuant to the 2008 Draft General Plan would not contribute to a substantial increase in runoff that could result in exceeding dam storage capacities and result in overtopping. Because of strict dam construction standards, the likelihood of catastrophic dam failure is low. Policies of the 2008 Draft General Plan would require new development to include mitigation measures to reduce risk of exposure of inundation caused by dam failure. In addition, SCWA has also prepared a flood awareness manual and developed a Flood Hazard Warning Program to help ensure that county residents living in areas with a high probability of flooding have time to prepare and evacuate, if needed. Because the implementation of the 2008 Draft General Plan would not otherwise affect the structural integrity of an existing dam's structure or substantially add to the risk of dam failure along with the A-adoption and implementation of the proposed policies in the 2008 Draft General Plan and ~~combined with other relevant state and local regulations, would minimize the potential for effects~~-this impact would be less than significant.

### **Mitigation Measure**

No mitigation beyond the 2008 Draft General Plan policies and programs is required.

## **SECTION 4.6, "BIOLOGICAL RESOURCES"**

The second paragraph on page 4.6-1 of the DEIR is revised as follows:

Participants in the Solano HCP are Solano County Water Agency (SCWA), the City of Vacaville, the City of Fairfield, the City of Suisun City, the City of Vallejo, Solano Irrigation District (SID), Maine Prairie Water District (MPWD), the City of Rio Vista, the City of Dixon, Reclamation District 2068, Vallejo Sanitation and Flood Control District, and Fairfield-Suisun Sewer District. Although the County is not an applicant, SCWA gave the County permission to use the data developed for the Solano HCP toward the development of the 2008 Draft General Plan. The Biological Resources Background Report prepared for the 2008 Draft General Plan (Solano County 2006) ~~was an adaptation of~~ is based on the Solano HCP, is publicly available at the Solano County Department of Resource Management, and is hereby incorporated by reference. Similarly, ~~the following description summary~~ of existing conditions within the county is based in large part on the information presented in the Solano HCP and Biological Resources Background Report.

Table 4.6-2 on pages 4.6-18 through 4.6-21 of the DEIR is revised as follows:

<b>Table 4.6-2 Special-Status Wildlife Species Known to Occur or Potentially Occurring in Solano County</b>			
Species	Status <sup>1</sup>		Habitat
	USFWS	DFG	
<b>Invertebrates</b>			
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	E	–	Occurs in ephemeral or temporary pools of somewhat turbid freshwater (vernal pools) that form in the cool, wet months of the year.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T	–	Inhabits pools with clear to tea-colored water, most commonly in grass or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands, but sometimes in sandstone rock outcrops and alkaline vernal pools.
Midvalley fairy shrimp <i>Branchinecta mesovallensis</i>	FSC	–	Inhabits small, shallow, ephemeral, grass-bottomed vernal pools and swales at elevations between approximately 20 meters and 90 meters.
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T	–	Closely associated with blue elderberry ( <i>Sambucus mexicana</i> or <i>S. velutina</i> ), which is an obligate host for beetle larvae. Adult valley elderberry longhorn beetles are usually found upon or flying between elderberry plants.
Delta green ground beetle <i>Elaphrus viridis</i>	T	–	Appears to prefer grassland habitat that is interspersed with vernal pools or playa pools, which are larger vernal pools that typically hold water for long time periods.
Ricksecker's water scavenger beetle <i>Hydrochara rickseckeri</i>	FSC	–	Lives in weedy shallow, open water-associated freshwater seeps, springs, farm ponds, vernal pools, and slow-moving stream habitats.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E	–	Inhabits seasonal vernal pools or swales that form in slight depressions after being inundated following fall and winter rains. The pools contain clear to highly turbid water and have an impervious hardpan, claypan, or basalt layer beneath the soil surface that retains the water for a few months at a time.
<u>Callippe silverspot butterfly</u> <u><i>Speyeria callippe callippe</i></u>	<u>E</u>	<u>=</u>	<u>Habitat requirements are larval food plants (violet or johnny jump-up), adult nectar plants, and hilltops.</u>
<b>Fish</b>			

**Table 4.6-2  
Special-Status Wildlife Species Known to Occur or Potentially Occurring in Solano County**

Species	Status <sup>1</sup>		Habitat
	USFWS	DFG	
Chinook salmon—winter-run <i>Oncorhynchus tshawytscha</i>	E	<u>E</u>	Tends to spawn in the main stems of rivers (or larger tributaries) in areas of gravel and cobble substrate. Primary concerns are for passage/movement and water quality.
Chinook salmon—Central Valley fall/late fall—run ESU <i>Oncorhynchus tshawytscha</i>	Candidate	–	Tends to spawn in the main stems of rivers (or larger tributaries) in areas of gravel and cobble substrate. Some potential breeding habitat. Concerns for water quality, passage, and riparian habitat protection.
Chinook salmon—spring-run <i>Oncorhynchus tshawytscha</i>	T	<u>T</u>	Tends to spawn in the main stems of rivers (or larger tributaries) in areas of gravel and cobble substrate. Primary concerns are for passage/movement and water quality
Steelhead—Central California Coast ESU <i>Oncorhynchus mykiss</i>	T	–	Inhabits riparian, emergent, palustrine habitat. Spawning and rearing habitat is usually characterized by perennial streams with clear, cool to cold, fast-flowing water with a high dissolved-oxygen content and abundant gravels and riffles. Breeding habitat present in county; many streams in county may qualify as critical habitat; concerns for water quality, passage, and riparian habitat protection.
Steelhead—Central Valley ESU <i>Oncorhynchus mykiss</i>	T	<u>CSC</u>	Breeding habitat present; many streams in county may qualify as critical habitat; concerns for water quality, passage, and riparian habitat protection.
Delta smelt <i>Hypomesus transpacificus</i>	T	T	Delta smelt are a euryhaline species (species adapted to living in freshwater and brackish water) that occupies estuarine areas with salinities below 2 grams per liter (2 parts per thousand). It spawns in shallow freshwater or slightly brackish water upstream of the mixing zone, mostly in tidally influenced backwater sloughs and channel-edge waters where solid substrate (cattails, tules, tree roots, and submerged branches) are present for the attachment of eggs.
Sacramento splittail <i>Pogonichtys macrolepidotus</i>	T	<u>CSC</u>	Seems to prefer shallow-water habitat with low salinity (0–10 parts per thousand) and spawns on submerged vegetation in temporarily flooded upland and riparian habitats.
<u>Longfin smelt</u> <u><i>Spirinchus thaleichthys</i></u>	=	<u>SCS</u>	<u>Typically inhabits estuaries with salinities between 15 and 30 practical salinity units. During the fall, the adult longfin smelt expands its range into the upper bays, Delta, and sloughs.</u>
<b>Amphibians</b>			
California tiger salamander <i>Ambystoma californiense</i>	T	<u>CSC</u>	Vernal pools and permanent waters in grasslands.
California red-legged frog <i>Rana aurora draytonii</i>	T	<u>CSC</u>	Utilizes a variety of aquatic, riparian, and upland habitats, including ephemeral ponds, intermittent streams, seasonal wetlands, springs, seeps, permanent ponds, perennial creeks, human-made aquatic features, marshes, dune ponds, lagoons, riparian corridors, blackberry thickets, nonnative annual grasslands, and oak savannas.
Foothill yellow-legged frog <i>Rana boylei</i>	–	CSC	Perennial creeks and streams usually with cobble bottoms.

**Table 4.6-2  
Special-Status Wildlife Species Known to Occur or Potentially Occurring in Solano County**

Species	Status <sup>1</sup>		Habitat
	USFWS	DFG	
<b>Reptiles</b>			
Western pond turtle <i>Emys (=Clemmys) marmorata</i>	FSC	CSC	Uses permanent or nearly permanent water bodies in a variety of habitat types. Can be found in ponds, marshes, rivers, streams, and irrigation ditches within grasslands, woodlands, and open forests.
Giant garter snake <i>Thamnophis gigas</i>	T	T	Found in aquatic, riparian, and upland habitats, including marshes, sloughs, small lakes, low-gradient streams, ponds, agricultural wetlands (irrigation and drainage canals, rice fields), and adjacent uplands.
<b>Birds</b>			
<del>Cooper's hawk <i>Accipiter cooperii</i></del>	<del>-</del>	<del>CSC</del>	<del>Primarily breeds in dense riparian and oak woodlands. Dense canopy cover is a consistent characteristic of Cooper's hawk nest sites throughout its range, and understories are often relatively open.</del>
<del>Sharp-shinned hawk <i>Accipiter striatus</i></del>	<del>-</del>	<del>CSC</del>	<del>Common migrant and winter visitor throughout California. Prefers to nest in stands of dense young conifers or in mixed conifer-deciduous forests.</del>
Tricolored blackbird <i>Agelaius tricolor</i>	FSC	CSC	Nests in dense cattails and tules, riparian scrub, and other low dense vegetation; forages in grasslands and agricultural fields.
<u>Grasshopper sparrow <i>Ammodramus savannarum</i></u>		<u>CSC</u>	<u>Short to middle-height, moderately open grasslands with scattered shrubs, generalized grassland-like habitat, including alfalfa.</u>
Golden eagle <i>Aquila chrysaetos</i>	-	CSC, FPS	Prefers open terrain for hunting, such as grasslands, deserts, savannas, and early successional stages of forest and shrub habitats. Nests in rugged, open habitats with canyons and escarpments, typically on cliffs and rock outcroppings; however, it will also nest in large trees including oaks, sycamores, redwoods, pines, and eucalyptus.
Short-eared owl <i>Asio flammeus</i>	FSC	CSC	Annual and perennial grasslands, prairies, meadows, dunes, irrigated lands, and saline and fresh emergent marshes. Requires dense vegetation for resting and roosting cover, such as tall grasses, brush, ditches, and wetland vegetation.
Burrowing owl <i>Athene cunicularia</i>	-	CSC	Nests in burrows in areas of low-growing vegetation in grasslands and agricultural fields.
Swainson's hawk <i>Buteo swainsoni</i>	-	T	Nests in riparian forest and scattered trees; forages in grasslands and agricultural fields.
<u>Snowy plover <i>Charadrius alexandrinus</i></u>	<u>=</u>	<u>CSC</u>	<u>Breeds on barren to sparsely vegetated flats and along shores of alkaline and saline lakes, reservoirs, ponds, braided river channels, agricultural wastewater ponds, and salt evaporation ponds.</u>
Mountain plover <i>Charadrius montanus</i>	FPT	CSC	Shortgrass plains, plowed fields, arid plains, alkali sink scrub, valley sink scrub, alkali playa, burned and annual grasslands, and open sagebrush areas that are barren or have very sparse vegetation (less than 10% cover).

**Table 4.6-2  
Special-Status Wildlife Species Known to Occur or Potentially Occurring in Solano County**

Species	Status <sup>1</sup>		Habitat
	USFWS	DFG	
Northern harrier <i>Circus cyaneus</i>	–	CSC	Habitat types include brackish and freshwater marshes, alpine meadows, grasslands, prairies, and agricultural lands. Wintering habitat includes fresh and saltwater wetlands, coastal dunes, grasslands, deserts, meadows, and croplands. Breeding habitat includes freshwater wetlands, coastal brackish wetlands, open wet meadows and grasslands, shrub-steppe, desert sinks, areas along rivers and lakes, and crop fields.
<u>Yellow rail</u> <i>Coturnicops noveboracensis</i>	=	<u>CSC</u>	<u>Densely vegetated marshes; breeds in sedge marshes/meadows with moist soil or shallow standing water.</u>
<u>Yellow warbler</u> <i>Dendroica petechia</i>		<u>CSC</u>	<u>Riparian vegetation in close proximity to water along streams and in wet meadows.</u>
White-tailed kite <i>Elanus leucurus</i>	–	FPS	Trees and shrubs in grasslands and savannas.
<u>Prairie falcon</u> <i>Falco mexicanus</i>	=	<u>CSC</u>	<u>Forages in open country and deserts. Nests on cliffs.</u>
<u>American peregrine falcon</u> <i>Falco peregrinus anatum</i>	=	<u>SE and FPS</u>	<u>Nests on cliffs; forages over variety of habitats.</u>
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	FSC	CSC	Freshwater marshes, coastal swales, swampy riparian thickets, brackish marshes, salt marshes, and the edges of disturbed weed fields and grasslands that border soggy habitats.
Yellow-breasted chat <i>Icteria virens</i>	–	CSC	Requires dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground, and the borders of small ponds.
Loggerhead shrike <i>Lanius ludovicianus</i>	–	CSC	Open country for foraging; dense shrubs for nesting.
California black rail <i>Laterallus jamaicensis coturniculus</i>	–	<u>T and FPS</u>	Prefers tidal salt marshes with a heavy canopy of pickleweed ( <i>Salicornia</i> ) and an open structure below the canopy for nesting and accessibility.
Suisun song sparrow <i>Melospiza melodia maxillaries</i>	FSC	CSC	Intermixed stands of bulrush ( <i>Scirpus</i> spp.), cattail ( <i>Typha</i> spp.), and other emergent vegetation provide ideal habitat.
San Pablo song sparrow <i>Melospiza melodia samuelis</i>	–	CSC	Inhabits emergent wetlands.
<del>Osprey</del> <i>Pandion haliaetus</i>	–	<del>CSC</del>	<del>Uses rivers, lakes, reservoirs, bays, estuaries, and surf zones for foraging and large trees, snags, and dead topped trees in open forest habitats for cover and nesting.</del>
Brown pelican <i>Pelecanus occidentalis</i>	–	FPS	Found in estuarine, marine subtidal, and marine pelagic waters.

**Table 4.6-2  
Special-Status Wildlife Species Known to Occur or Potentially Occurring in Solano County**

Species	Status <sup>1</sup>		Habitat
	USFWS	DFG	
California clapper rail <i>Rallus longirostris obsoletus</i>	E	E and FPS	Inhabits tidal salt and brackish marshes. It prefers tall stands of pickleweed ( <i>Salicornia virginica</i> ) and Pacific cordgrass ( <i>Spartina foliosa</i> ) but is also associated with gumplant ( <i>Grindelia</i> spp.), saltgrass ( <i>Distichlis spicata</i> ), alkali heath ( <i>Frankenia grandifolia</i> ), and jaumea ( <i>Jaumea carnosa</i> ) in high marshes and pickleweed, cordgrass, and bulrush ( <i>Scirpus</i> spp.) in the North Bay.
<u>California least tern</u> <i>Sterna artillarum browni</i>	<u>E</u>	=	<u>Prefers sandy beaches close to estuaries and coastal embayments.</u>
<b>Mammals</b>			
Pallid bat <i>Antrozous pallidus</i>	FSC	CSC	Roosts in caves, tunnels, and buildings; forages over a variety of habitats.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	FSC	CSC	Roosts in caves, tunnels, and buildings; forages over a variety of habitats.
Western mastiff bat <i>Eumops perotis</i>	–	CSC	Roosts in crevices of large outcrops; forages over a wide variety of habitats.
Salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	E	E, FPS	Dependent on dense cover of native halophytes (salt-tolerant plants); prefers pickleweed-dominated ( <i>Salicornia virginica</i> ) saline emergent wetlands as its habitat.
Suisun shrew <i>Sorex ornatus sinuosus</i>	FSC	CSC	Inhabits tidal marshes characterized by (in order of decreasing tolerance to inundation) <i>Spartina foliosa</i> (cordgrass), <i>Salicornia ambigua</i> , <i>S. virginica</i> (pickleweed), and <i>Grindelia cuneifolia</i> and <i>humulis</i> (gumplant), and brackish marshes dominated by <i>Scirpus californicus</i> (California bulrush) and <i>Typha latifolia</i> (cattail).
American badger <i>Taxidea taxus</i>	–	CSC	Occurs in a diversity of habitats. The primary requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground in grassland and savanna habitats.
<p>Notes: DFG = California Department of Fish and Game; ESU = Evolutionarily Significant Unit; USFWS = U.S. Fish and Wildlife Service</p> <p><sup>1</sup> <b>Legal Status Definitions</b></p> <p><u>Federal Listing Categories</u></p> <p>E Endangered</p> <p>T Threatened (legally protected)</p> <p><u>FCS Federal Candidate Species</u></p> <p>FSC Federal Species of Concern (no formal protection)</p> <p><u>State Listing Categories</u></p> <p>E Endangered</p> <p>T Threatened (legally protected)</p> <p>CSC California Species of Concern (no formal protection)</p> <p><u>SCS State Candidate Species</u></p> <p>FPS State Fully Protected Species</p> <p>Sources: CNDDB 2000–2004, 2005; CNPS 2005</p>			

The following text has been added after the section on the Oak Woodlands Conservation Act and before the section describing the California Native Plant Society, on page 4.6-27 of the DEIR:

## **Public Resources Code Section 21083.4**

In 2005, Senate Bill (SB) 1334 was passed by the California Legislature, mandating that counties require feasible and proportional habitat mitigation for impacts on oak woodlands as part of the CEQA process. Under Public Resources Code (PRC) Section 21083.4, a county is required to determine whether projects “may result in a conversion of oak woodlands that will have a significant effect on the environment.” The law applies to all oak woodlands except those dominated by black oak. When it is determined that a project may have a significant effect on oak woodlands, mitigation is required. PRC Section 21083.4 institutes a cap on planting oaks for habitat mitigation (it cannot fulfill more than 50% of the required mitigation) and prescribes four mitigation options:

- ▶ conserving oak woodland through the use of conservation easements,
- ▶ contributing funds to the Oak Woodlands Conservation Fund to purchase oak woodlands conservation easements,
- ▶ replanting trees, or
- ▶ implementing other mitigation actions, as outlined or developed by the county.

As shown on page 4-99 of this chapter, Exhibit 4.6-2, “Priority Habitat Areas,” on page 4.6-33 of the DEIR is modified to add a corridor designation linking the hills south of I-80 through the hills between I-80 and SR 12 to the area north of SR 12.

The last bullet under “(1) Preservation of Foraging Habitat” in Mitigation Measure 4.6-1a on page 4.6-36 of the DEIR is revised as follows:

- ▶ provide for permanent preservation under a conservation easement that prohibits all of the following:
  - plantings of orchards and/or vineyards, except in designed farmstead areas;
  - cultivation of perennial vegetable crops, rice, and cotton ~~and annual crops~~;
  - commercial feedlots (defined as any open or enclosed areas where domestic livestock owned by other than the grantor are grouped together for intensive feeding purposes);
  - horticultural specialties, including sod, nursery stock, ornamental shrubs, ornamental trees, and flowers;
  - commercial greenhouses or plant nurseries; ~~and~~
  - commercial aquaculture of aquatic plants and animals and their byproducts; ~~;~~ and
  - commercial wind energy development.

The following text is added to Mitigation Measure 4.6-1a on page 4.6-37 of the DEIR, immediately following the bulleted list that concludes measure (2). Please note that although this text is shown only for Mitigation Measure 4.6-1a, it also applies to Mitigation Measure 4.6-1b.

Based on data presented in the current working draft of the Solano HCP (Solano County Water Agency 2007), Table 4.6-4 illustrates acreages of unprotected habitat within the county potentially available for mitigation purposes.



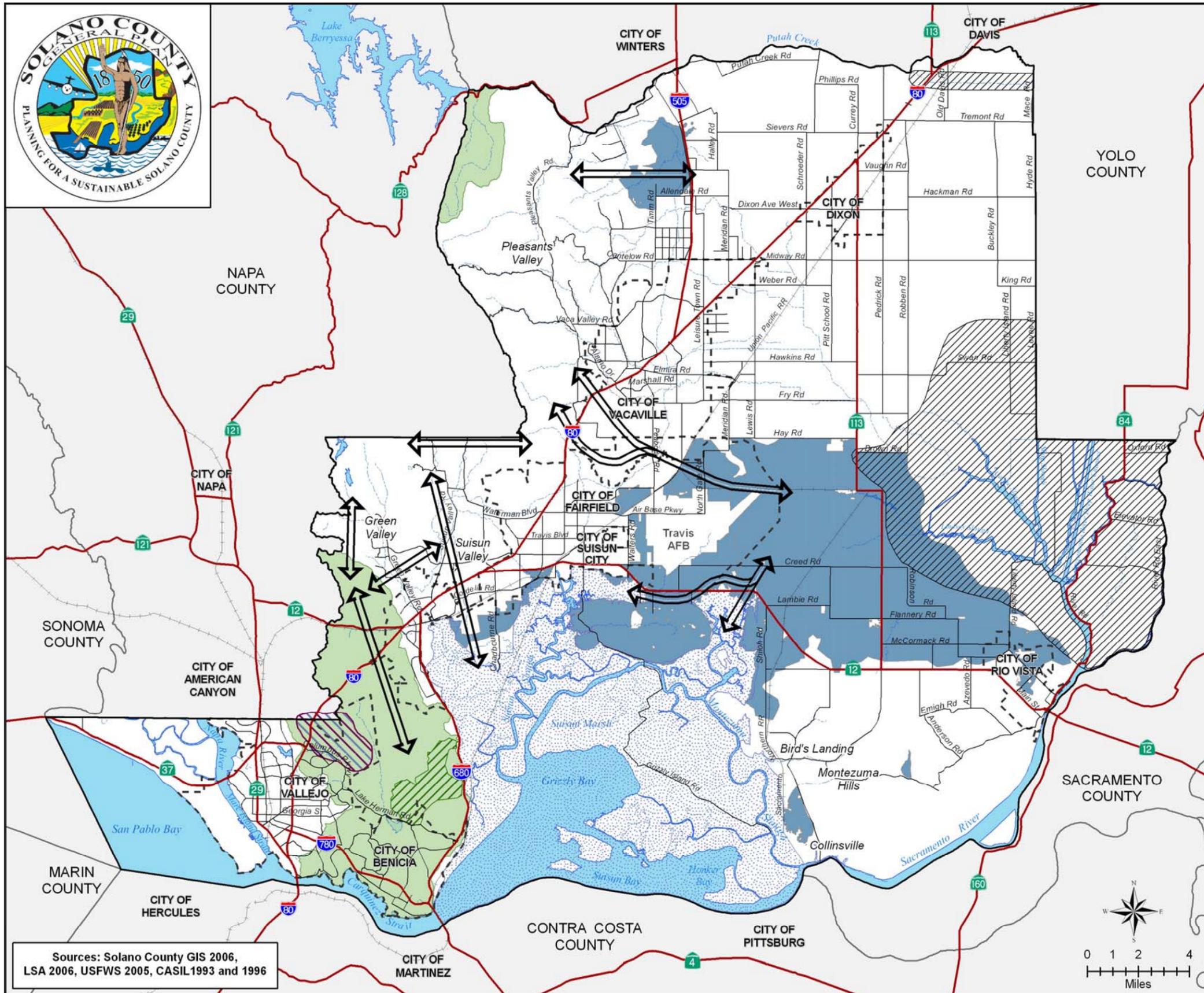
# Solano County General Plan EIR

## Exhibit 4.6-2

### Priority Habitat Areas

#### Legend

- Corridors/Linkages
  - Suisun Marsh Protection Plan (April 1995) Primary Management Area
  - Giant Garter Snake Priority Conservation Area
  - Callippe Silverspot Butterfly Priority Conservation Area
  - High Value Vernal Pool Conservation Areas
  - California Red-legged Frog Final Critical Habitat (USFWS 2005)
  - California Red-legged Frog Core Recovery Area
- Basemap Layers
- Roadways
  - Highways
  - Railroads
  - Streams and Creeks
  - Major Water Features
  - Municipal Service Areas
  - Adjacent Counties



Sources: Solano County GIS 2006, LSA 2006, USFWS 2005, CASIL1993 and 1996



"Planning for a Sustainable Solano County"



**Table 4.6-4  
Acreage of Unprotected Habitat in Solano County  
Potentially Available for Mitigation**

<u>Community Type</u>	<u>Total Acreage</u>	<u>Conserved/ Protected*</u>	<u>Potential Cumulative Mitigation Need for All County Development</u>
<u>Irrigated Agriculture</u>	<u>155,000</u>	<u>5,500 (3%)</u>	<u>11,200 (7%)</u>
<u>Vernal Pool Grassland</u>	<u>35,300</u>	<u>6,400 (18%)</u>	<u>18,000 (51%)</u>
<u>Valley Floor Grassland</u>	<u>74,900</u>	<u>3,980 (5%)</u>	<u>8,000 to 12,000 (11 to 16%)</u>
<u>Oak woodland, savanna, and chaparral/scrub</u>	<u>48,300</u>	<u>6,600 (14%)</u>	<u>3,000 (6%)</u>
<u>Upland grassland</u>	<u>37,180</u>	<u>6,900 (19%)</u>	<u>6,000 (16%)</u>
* Includes land with conservation easements or owned by state or environmental non-governmental organizations. Source: Solano County Water Agency 2007			

Based on this analysis, considerable suitable land is available for preservation and enhancement as mitigation for future development.

The first paragraph of Mitigation Measure 4.6-2a, measure (2), on page 4.6-41 of the DEIR is revised as follows:

**(2) Habitat Mitigation.** Where conversion of upland grasslands, oak woodland, oak savanna, and scrub/chaparral is unavoidable as part of a project’s development, ~~the County shall require the project applicant to compensatory mitigation shall be provided at a minimum 1:1 ratio. The County shall also require the project applicant to~~ prepare and implement mitigation and management plans for mitigation areas, including on-site avoidance and off-site preserves. The County shall develop minimum standards that address management and restoration requirements based on subdivision size, affected communities, presence of other valuable habitats and special-status species, and development in accordance with preserved-area edge ratios.

The second paragraph of Mitigation Measure 4.6-3a on page 4.6-43 of the DEIR is revised as follows:

**(1) Habitat Inventory and Assessment.** The County shall require all future projects to conduct, as a condition of project approval, appropriately timed biological resources inventories designed to assess the presence of wetlands, other unique edaphic substrates, and special-status species and uncommon natural habitats. Survey protocols shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game for review and approval prior to their implementation. Such a survey shall be completed as part of a complete application for a project.

The first sentence in Mitigation Measure 4.6-3a, measure (3), on page 4.6-44 of the DEIR is revised to read as follows:

**(3) Habitat Mitigation.** Compensatory mitigation for the conversion and loss of vernal pool and valley floor grassland habitats shall be provided for no net loss of wetland acreage and overall habitat value at a 1:1 ratio through a combination of preservation of high-quality vernal pool and grassland habitat and the construction and restoration of vernal pool habitat.

The habitat mitigation for the California tiger salamander on page 4.6-45 is revised as follows:

**(6) Habitat Mitigation for California Tiger Salamanders.** Mitigation shall be required for any activities that result in the conversion of upland habitat within 1.3 miles 2,100 feet of California tiger

salamander breeding habitat (excluding lands separated from breeding sites by incompatible land uses) that result in the conversion of upland and/or aquatic breeding habitats for California tiger salamander to incompatible land uses (e.g., development, intensive recreation). Mitigation shall consist of two components: preservation and enhancement of suitable upland habitat, and preservation and construction of new breeding habitat consistent with the mitigation standards specified above.

The second paragraph of Mitigation Measure 4.6-4a on page 4.6-48 of the DEIR is revised as follows:

**(1) Habitat Inventory and Assessment.** The County shall require all future projects, as a condition of project approval, to conduct appropriately timed biological resources inventories designed to assess the presence of special-status species and uncommon natural habitats. Survey protocols should be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game for review and approval prior to their implementation. Such a survey shall be completed as part of a complete application for a project.

The first bulleted item under Mitigation Measure under Mitigation Measure 4.6-4a, measure (4)(a), on page 4.6-50 is revised as follows to incorporate the recommended change in dates:

- (a) For projects that would result in impacts on streams that are known to support or have the potential to support salmonids—Green Valley, Suisun, American Canyon, and Putah Creeks, and to a lesser extent Ulatis, Alamo, Jameson Canyon, and Ledgewood Creeks and their tributaries—the following avoidance and minimization measures apply:
- ▶ Instream work shall be allowed only during specified work windows from June 15 to October 15 during low-flow conditions.

Mitigation Measure 4.6-6 on page 4.6-55 and 4.6-56 of the DEIR is revised as follows (note that this change applies to both Mitigation Measures 4.6-6a and 4.6-6b):

**Mitigation Measure 4.6-6a: Require Surveys for Wetlands and Special-Status Species, Develop an Avoidance and Mitigation Plan, and Replace Affected Habitats at a 2:1 Ratio.**

The County shall require all future projects, as a condition of project approval, to conduct appropriately timed biological resources inventories designed to determine the presence of wetlands (marsh, tidal flat, and channel) and associated special-status species. Survey protocols shall be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game for review and approval prior to their implementation. Such a survey shall be completed as part of a complete application for a project.

Measure 1 of Mitigation Measure 4.6-7a on page 4.6-57 of the DEIR is revised as follows:

(1) A qualified biologist shall conduct surveys for raptor and loggerhead shrike nests before pruning or removal of trees, ground-disturbing activities, or construction activities to locate any active nests on or within ¼ mile of a project site immediately adjacent to the site. The surveys shall be designed and of sufficient intensity to document raptor nesting activity within ¼ mile ~~500 feet~~ of planned work activities. Preconstruction surveys shall be conducted at 15 ~~21~~-day intervals unless construction activities have been initiated in an area. Preconstruction surveys shall be conducted between February 1 and August 31. Locations of active nests shall be described and protective measures implemented. Protective measures shall include establishment of avoidance areas around each nest site. Species-specific ~~A~~avoidance areas shall be clearly delineated (i.e., by orange construction fencing) and shall be a minimum of ¼ mile for golden eagle; 500 feet for Swainson's hawk, northern harrier, and short-eared owl; 250 feet during the breeding season and 160 feet during the nonbreeding season for burrowing owl; 300 feet from the dripline

~~of the nest tree or nest~~ for other raptors, and 100 feet for shrikes. Buffer zones shall be measured from the dripline of the nest tree or nest, whichever is farthest. The active nest sites within an exclusion zone shall be monitored on a weekly basis throughout the nesting season to identify any signs of disturbance. These protection measures shall remain in effect until the young have left the nest and are foraging independently or the nest is no longer active. A report shall be prepared at the end of each construction season detailing the results of the preconstruction surveys. The report shall be submitted to DFG by November 30 of each year. Buffer zones and monitoring requirements may be modified in consultation with and upon approval from DFG.

The text of Mitigation Measure 4.6-9a, measure (b), on page 4.6-62 of the DEIR is revised as follows:

**(b) Avoidance and Minimization.** Policy RS.P-56 encourages the use of technology or siting to minimize adverse impacts from energy production facilities on the environment, including wildlife. This policy shall be expanded to require all project proposals for the development of wind energy to implement the following measures when selecting a project site and turbine layout and developing the facility's infrastructure:

- ▶ Fragmentation and habitat disturbance shall be minimized.
- ▶ Buffer zones shall be established to minimize collision hazards (for example, placement of turbines within 100 meters of a riparian area shall be avoided).
- ▶ Impacts shall be reduced with appropriate turbine design and layout.
- ▶ Artificial habitat for prey at the turbine base area shall be reduced.
- ▶ Lighting that attracts birds and bats shall be avoided.
- ▶ Power line impacts shall be minimized by placing lines under ground whenever possible.
- ▶ Use of structures with guy wires shall be avoided.
- ▶ Nonoperational turbines shall be decommissioned.

The County shall also require project applicants for new wind turbine generator proposals, before and as a condition of project approval, to consult with DFG, USFWS, and species experts in the development of site-specific avoidance and minimization requirements to minimize impacts on sensitive, high-value, or protected habitats.

Mitigation Measure 4.6-9a, measure (d), on page 4.6-63 of the DEIR is revised as follows:

**(d) Postconstruction Monitoring and Contingency Plans.** Accurately assessing the potential for bat and bird mortality from wind resource projects is difficult, and once completed, such a project could have unanticipated fatalities. Therefore, before issuing a permit, the County shall require project applicants for any new wind turbine generator proposals to include a contingency plan to mitigate high levels of unanticipated fatalities. Permit conditions shall explicitly establish a range of compensatory mitigation options to offset unexpected fatalities and the thresholds that will trigger implementation. Applicants shall consult with DFG and USFWS to determine the level of preproject and postproject monitoring required. The need for compensatory mitigation for unexpected impacts shall be determined by postconstruction monitoring. Postconstruction monitoring shall conform to the guidelines outlined in *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development* (CEC and DFG 2007).

## SECTION 4.8, “AGRICULTURAL RESOURCES”

The end of the second paragraph under “Williamson Act” on page 4.8-3 of the DEIR is revised as follows:

The Williamson Act program uses 10-year contracts that renew annually until either party files a notice of nonrenewal. If an owner decides to opt out, the land is still protected for 10 years while the tax liability increases in annual increments up to its full market value. Additionally, existing Williamson Act contracts on lands classified by the California Department of Conservation as Important Farmland can be extended to 20-year Farmland Security Zone contracts (i.e., super Williamson Act contracts), which offer landowners greater property tax savings. The preferred method of contract termination is nonrenewal. Only under limited circumstances may a landowner terminate a contract before the end of the 9-year nonrenewal period (Government Code Section 51280 et seq.). In such cases, contract termination would be approved only if the County makes the required statutory findings, based on substantial evidence (Government Code Section 51282[a]).

The first paragraph of Impact 4.8-1a on page 4.8-5 of the DEIR is revised as follows:

The County has identified that in 2007 existing agricultural land uses totaled 365,651 acres. With implementation of the 2008 Draft General Plan under the Preferred Plan, approximately 21,971 acres of existing agricultural land uses, including ~~4,171~~ 4,131 acres of Important Farmland, would be converted to nonagricultural land uses, which represents an approximate 6% reduction (see Table 3-2 in Chapter 3, “Project Description”). A total of 343,680 acres of agricultural land uses would remain with implementation of the 2008 Draft General Plan.

The impact statement for Impact 4.8-1b on page 4.8-9 of the DEIR is revised as follows:

**IMPACT 4.8-1b**    **Loss of Important Farmland – Maximum Development Scenario.** *Buildout of the 2008 Draft General Plan under the Maximum Development Scenario would result in the conversion of Important Farmland to nonagricultural uses. Approximately ~~32,727~~ 21,971 acres of existing agricultural land uses in Solano County, including approximately 4,131 acres of Important Farmland, would be converted to urban uses. This impact would be *significant*.*

## SECTION 4.9, “PUBLIC SERVICES AND UTILITIES”

The text from “Water Supply Services” on page 4.9-1 through the end of the “Groundwater Use” section on page 4.9-6 of the DEIR is revised as follows:

### **WATER SUPPLY SERVICES**

~~Incorporated areas of the county within municipal service areas (MSAs) obtain water from the Solano County Water Agency (SCWA). SCWA also provides water to unincorporated areas for agriculture and some domestic water use. SCWA relies on two primary water sources, the U.S. Bureau of Reclamation’s (Reclamation’s) Solano Project, which provides surface water through Monticello Dam, and the California Department of Water Resources’ (DWR’s) State Water Project (SWP), which supplies surface water to Solano County through the North Bay Aqueduct. Unincorporated areas of Solano County rely on water from myriad sources. Portions of unincorporated areas are located within MSAs and are served by existing water districts. Unincorporated areas outside of MSAs demand water for agricultural and domestic purposes, with agriculture being the largest water user. The discussion below describes the water sources and supply in Solano County, including surface water supplied through SCWA, groundwater sources, local supplies of surface water provisions through existing water districts, and public and private water wells.~~

Section 4.5, “Hydrology and Water Resources,” provides additional background on water quality and supplies in Solano County.

## Solano County Water Agency Water Supplies

### Solano Project

The Solano Project was sized to meet only the projected water needs of Solano County. The physical facilities of the Solano Project are Monticello Dam, Putah Diversion Dam, and the Putah South Canal (Exhibit 4.5-1 in Section 4.5, “Hydrology and Water Resources”). 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.

### Water Supply Contracts

SCWA has entered into agreements with cities, water districts, and state agencies to provide water from the Solano Project. The contracts with the Solano Project’s member agencies are for the full supply available from the project. The Solano Project’s contracting agencies are the Cities of Fairfield, Suisun City, Vacaville, and Vallejo; Solano Irrigation District (SID); Maine Prairie Water District (MPWD); the University of California, Davis; and California State Prison, Solano.

Contract entitlements for each agency are listed in Table 4.9-1. Reclamation is contractually committed to deliver the full contract amount of water from the Solano Project unless the supply does not physically exist (e.g., the reservoir is empty). All Solano Project contractors, municipal or agricultural, are on an equal basis for Solano Project water supply.

Agency	Annual Entitlement (acre-feet)
City of Fairfield	9,200
City of Suisun City	1,600
City of Vacaville	5,750
City of Vallejo	14,600
Solano Irrigation District	141,000
Maine Prairie Water District	15,000
University of California, Davis	4,000
California State Prison, Solano	1,200
<b>Project Operating Loss (average estimated)</b>	<b>15,000</b>
<b>Total Project</b>	<b>207,350</b>
Source: SCWA 2005a	

SID and the Rural North Vacaville Water District (RNVWD) provide municipal, industrial, and/or agricultural water distribution and treatment services to portions of the unincorporated areas of Solano County. MPWD serves unincorporated areas south of Dixon between service areas of the SID and the reclamation districts. Reclamation Districts (RDs) 2068 and 2098 serve eastern portions of the county and approximately 14 other reclamation districts provide water services throughout unincorporated areas of the

county, largely for agricultural purposes (Hardesty, pers. comm., 2008). Other portions of the county not served by water districts dependent on private and community groundwater wells, as well as surface water obtained from localized tributaries to the Sacramento River. Exhibit 4.5-1 in Section 4.5, “Hydrology and Water Resources,” shows water service areas and facilities in Solano County, and Table 4.9-2 shows the existing water purveyors’ projected available water supply for unincorporated portions of the county.

<b>Table 4.9-2 Water Availability for Unincorporated Areas of Solano County</b>	
Source	Available Water Supply (Acre-Feet per Year)
Rural North Vacaville Water District	545
Solano Irrigation District	161,000
Maine Prairie Water District	25,000
Reclamation District 2068	75,000
Vallejo Lakes System (Suisun Valley and Green Valley)	400
City of Suisun City	1,600
City of Vacaville	5,750
Reclamation District 2098 and Other Reclamation Districts	Unknown <sup>1</sup>
Diversion from Local Waterways	Unknown <sup>1</sup>
Independent Groundwater Wells	Unknown <sup>2</sup>
<b>Total</b>	<b>269,295<sup>3</sup></b>
<p>Notes:</p> <p><sup>1</sup> Water is obtained from local waterways and is utilized almost exclusively for agricultural purposes.</p> <p><sup>2</sup> Independent groundwater wells include small systems and private wells. These systems have no restrictions on amount of water used.</p> <p><sup>3</sup> The available water supply for the unincorporated areas of Solano County would include other sources, such as groundwater and local surface water, that have not currently been quantified.</p> <p>Source: SCWA 2005b</p>	

## ***Agricultural Water***

### **Solano Irrigation District**

SID provides water to agricultural areas as well as urbanized areas in the county. Most of the growers within the SID use surface water from the Solano Project supplied by SID (Table 4.9-3), but SID also operates wells to supplement its surface water supply from the Solano Project. Growers outside of districts that provide surface water rely entirely on groundwater unless they have individual rights to surface water supplies. However, reclaimed water is also used in certain applications.

<b>Table 4.9-3 Solano Irrigation District's Available Water Supply</b>	
Source	Available Water Supply (Acre-Feet per Year)
Solano Irrigation District	141,000
Maine Prairie Water District exchange	10,000
Groundwater	10,000
<b>Total</b>	<b>161,000</b>
Source: SCWA 2005b	

**Maine Prairie Water District**

MPWD has annual contract rights to 15,000 acre feet (af) of Solano Project water. MPWD can purchase additional Solano Project water from SID as needed. On occasion MPWD has sold small amounts of Solano Project water to California State Prison, Solano. MPWD has an irrigation tailwater exchange agreement (1984) with SID that allows MPWD to exchange 10,000 af of its Solano Project water for SID's irrigation tailwater. Under the terms of the agreement, MPWD can receive 2 af of irrigation tailwater for each acre-foot of Solano Project water exchanged to SID. The agreement has officially expired, but the terms have been extended by a letter agreement until further notice. MPWD has surface water rights to local streams that supplement its water supply from the Solano Project and SID. The contribution to MPWD's water supply from local surface water sources is currently not quantified. MPWD's available water supply is shown in Table 4.9.4.

<b>Table 4.9-4 Maine Prairie Water District's Available Water Supply</b>	
Source	Available Water Supply (Acre-Feet per Year)
Solano Project	5,000
Solano Irrigation District Exchange	20,000 (irrigation tailwater)
Local Surface Water Rights	Variable
<b>Total</b>	<b>25,000</b>
Source: SCWA 2005b	

**Reclamation District 2068**

RD 2068 has riparian and appropriative water rights to surface water from the Sacramento-San Joaquin River Delta (Delta). The riparian right is currently exercised but not adjudicated. The appropriative rights consist of two licenses and one permit pending licensing with the oldest dating back to the early 1920s. The licenses are unquantified. The permit stipulates a water right amount of 75,000 af annually as long as the permit is in effect. However, on average RD 2068 provides between 50,000 and 55,000 afy (this figure varies depending on water availability). RD 2068 water is used primarily for agricultural purposes.

**Other Reclamation Districts**

As mentioned, unincorporated areas of the county are served by several other reclamation districts. RD 2098, while primarily responsible for levee maintenance provisions, provides water for irrigation purposes obtained from local surface water. RD 2060 serves areas near Hastings Island, providing irrigation and

pasture water from local surface water sources. RD 2104 provides local surface water to several individual landowners, which is used primarily for agricultural purposes. The aggregate of the four reclamation districts, including RD 2068, provides water for approximately 30,000 acres of irrigated agricultural land. In total, Solano County contains approximately 14 different reclamation districts that provide largely levee, flood, and stormwater services, but also provide local surface water supplies for agricultural activities in their respective regions. However, because the water is obtained from local surface water sources, primarily the Sacramento River tributary system, the amount of water utilized is largely not quantified and varies yearly depending on availability. RD 2068's available water supply is shown in Table 4.9-5.

Source	Available Water Supply (Acre Feet per Year)
Local Surface Water	75,000
<b>Total</b>	<b>75,000</b>
Source: Solano County 2005b	

### ***Surface Water Supplies***

In the eastern Delta part of Solano County, many growers divert water directly from local waterways. Growers hold riparian rights (water rights that derive from land ownership) or appropriative rights. Records do not exist to quantify the amount of this water that is used. MPWD and several reclamation districts provide surface water obtained from tributaries to the Sacramento River to their growers in the eastern portion of the county and do not currently use groundwater underlying their districts (Hardesty, pers. comm., 2008). These supplies are very reliable because water is always available in this part of the Delta (SCWA 2005b).

### **Domestic Water Service**

#### ***Solano Irrigation District***

SID provides domestic water service to several areas of the county and the cities of Dixon, Suisun City, and Vacaville. The primary domestic water service areas are the Gibson Canyon area (treated water), Pleasant Valley area (point of entry systems), Tolenas area (treated water), Peabody Road (treated water for commercial and industrial uses), and Blue Ridge Oaks (treated water). Most of the SID water is derived from surface water from the Solano Project supplied by SID (Table 4.9-3), but SID also operates wells to supplement its surface water supply from the Solano Project.

#### ***City of Vallejo Lakes System***

Currently the City of Vallejo Lakes System provides treated water to the unincorporated communities in Suisun Valley, Old Town Cordelia, Green Valley, and unincorporated islands in Vallejo. As part of the development of the City of Vallejo Lakes System, Vallejo agreed to serve some residents in the area. The largest lake, Lake Curry, has a storage capacity of 10,700 af; the lake's yield is about 3,750 afy (Table 4.9-6). Vallejo is attempting to get permission from Reclamation to transport water from Lake Curry via the Putah South Canal to its water treatment plant in Vallejo. This would more fully utilize the yield from Lake Curry.

<b>Table 4.9-6 City of Vallejo Lakes System's Available Water Supply</b>	
<b>Source</b>	<b>Available Water Supply (Acre-Feet per Year)</b>
Lakes Frey and Madigan	400
Lake Curry	3,750 (currently not available)
Source: Solano County 2005b	

***Suisun City and the City of Vacaville***

Suisun City provides domestic water to portions of the Suisun Valley in unincorporated Solano County. The City of Vacaville provides domestic water to the Vine Street area, located just outside of the Vacaville city limits in the unincorporated county.

***Rural North Vacaville Water District***

RNVWD provides groundwater to domestic water users from two wells that draw from the aquifer found in the Tehama Formation (see Section 4.5, “Hydrology and Water Resources”). This supply is limited to a total capacity of approximately 522 connections and includes two deep wells (1,500 feet). The two pumps are rated to provide approximately 800 af (500 gallons per minute [gpm]). Over the last 3 years the Tehama Formation water table has dropped approximately 30 feet. Because of this drop, under current conditions (2008), the pumps are only allowed to pump approximately 545 af (338 gpm) (Table 4.9-7). In 2007, RNVWD provided approximately 237 af of water. Currently the aquifer where RNVWD obtains its water is being tapped by private entities in rural areas, and by the City of Vacaville, which is installing a deep well pump upstream of the RNVWD facility (Bellem, pers. comm., 2008).

<b>Table 4.9-7 Rural North Vacaville Water District's Available Water Supply</b>	
<b>Source</b>	<b>Available Water Supply (Acre-Feet per Year)</b>
Groundwater	545
<b>Total</b>	<b>545</b>
Source: SCWA 2005b	

***Groundwater Use***

Most rural residential landowners have individual shallow groundwater wells that serve their domestic needs. Some small rural residential water systems also distribute groundwater to their customers. The cities of Rio Vista and Dixon are served exclusively by groundwater from basins underlying the cities. Vacaville obtains approximately one-third of its municipal water supply from groundwater underlying the city.

Public agencies that overlie the Solano Subbasin (see Section 4.5, “Hydrology and Water Resources”) have developed groundwater management plans as specified in Assembly Bill (AB) 3030 (Chapter 947, Statutes of 1992), a state law that authorizes local agencies to prepare groundwater management plans. 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 2005a). However, according to the

County's Department of Resource Management, and as noted above, the Tehama Formation, which is the county's largest notable water aquifer, has experienced a 30 foot drop in recent years, which suggests that overdraft conditions have occurred (Bellem, pers. comm., 2008).

## **WATER SUPPLY**

The discussion below describes the water sources, supply, and demand in Solano County; including surface water supplied through the Solano County Water Agency (SCWA), groundwater sources, and local supplies. The majority of the reported water delivery and consumption information was obtained from the *Integrated Regional Water Management Plan and Strategic Plan* (SCWA 2005a) for the 2002 reporting year. As of July 2008, this information represents the most recent compiled and published data available for surface-water sources in Solano County. It is acknowledged that the overall water consumption rates have likely increased commensurately with new growth within the county since 2002. In addition, because there is no explicit indication that groundwater supplies within the county are in a state of overdraft or that available groundwater supplies could not meet projected future demands, it has been assumed that the short-term and long-term available groundwater supplies are directly proportionate to the short-term and long-term water demand.

### **Solano Water Authority**

The Solano Water Authority (SWA) is a joint powers authority (JPA). As a JPA, SWA has broad authorities under California law. Through joint projects of interest or "project agreements," SWA can finance and own facilities; acquire water; and construct, maintain, and operate water projects. SWA was established in 1987. At that time only the Solano Irrigation District (SID) and the Cities of Fairfield and Vacaville were members of SWA. In 1988, the Cities of Vallejo, Benicia, Suisun City, Dixon, and Rio Vista; the Maine Prairie Water District (MPWD), Reclamation District (RD) 2068, and the County became members of SWA. Four project agreements have been implemented:

- ▶ the transfer of ownership of the Solano Project from federal ownership to local control,
- ▶ a feasibility evaluation of a new Noonan Reservoir impoundment,
- ▶ a new water supply project to evaluate new permanent water supplies for the participants, and
- ▶ a coordinated groundwater analysis project.

The new water-supply project resulted in a settlement agreement with the California Department of Water Resources (DWR) that gave the cities an equivalent water supply. The Cities of Fairfield, Vacaville, and Benicia established a subagreement to participate in an application to the State Water Resources Control Board (SWRCB) for additional water appropriations under the watershed-of-origin provisions in state law. The only active project is ongoing, coordinated groundwater monitoring. This project agreement is to study and monitor the Putah Fan/Tehama Formation Groundwater Basin. The County, SCWA, SID, MPWD, RD 2068, and the Cities of Vacaville and Dixon are the participants in this agreement. SWA prepares monitoring reports on the groundwater basin levels that can be used to determine whether future steps need to be taken.

### **Solano County Water Agency**

SCWA is primarily responsible for providing wholesale, untreated water to cities, districts, and state agencies from the U.S. Bureau of Reclamation's (Reclamation's) Solano Project and DWR's State Water Project (SWP). The SCWA governing board includes the five members of the County Board of Supervisors, the mayors of all seven cities in Solano County, and a board member from each of the three agricultural irrigation districts (SID, MPWD, and RD 2068). Water conservation is an integral part of water management in Solano County. Under the auspices of SCWA, both urban and agricultural water conservation committees deal with countywide water conservation issues.

## Solano Project

Contracts with Solano Project member agencies account for the entire available supply from the Solano Project (Table 4.9-1). Solano Project contracting agencies are the Cities of Fairfield, Suisun City, Vacaville, and Vallejo; SID; MPWD; the University of California, Davis (UC Davis); and California State Prison, Solano. The Solano Project was sized to meet only the projected water needs of Solano County. The physical facilities of the Solano Project are Monticello Dam, Putah Diversion Dam, and the Putah South Canal. The Solano Project is a high-quality water source and provides a very reliable water supply in both wet and dry years. Environmental issues have been addressed in a legal settlement regarding downstream flows from the Solano Project and the settlement has been ratified by the SWRCB. Limits on upstream depletions have been established through a settlement agreement administered by a court appointed water master. The main factor affecting Solano Project reliability is the frequency of long droughts, which could result in major drawdown of Lake Berryessa. In normal water years, the reliability is estimated to be 99%. During multiple dry years (3 or more consecutive dry years), the annual reliability is estimated to be 91% (SCWA 2005b). Contract entitlements and water consumption for each agency are listed in Table 4.9-1. Exchanges and transfers of Solano Project entitlements have also taken place. For example, MPWD has agreed to provide 10,000 afy of its Solano Project entitlement to SID in exchange for receiving a larger amount of SID's agricultural return flows.

<b>Table 4.9-1</b>			
<b>Solano Project Water Deliveries and Entitlements</b>			
<u>Agency</u>	<u>Water Deliveries</u> <u>(2002) (af)</u>	<u>Annual Entitlements (af)</u>	
		<u>Short-Term</u>	<u>Long-Term</u>
<u>City of Fairfield</u>	<u>9,200</u>	<u>9,200</u>	<u>9,200</u>
<u>City of Suisun City</u>	<u>1,584</u>	<u>1,600</u>	<u>1,600</u>
<u>City of Vacaville</u>	<u>4,012</u>	<u>5,750</u>	<u>5,750</u>
<u>City of Vallejo</u>	<u>13,714</u>	<u>14,600</u>	<u>14,600</u>
<u>Solano Irrigation District</u>	<u>129,527</u>	<u>141,000</u>	<u>141,000</u>
<u>Maine Prairie Water District</u>	<u>4,909</u>	<u>15,000</u>	<u>15,000</u>
<u>University of California, Davis</u>	<u>3,098</u>	<u>4,000</u>	<u>4,000</u>
<u>California State Prison, Solano</u>	<u>1,241</u>	<u>1,200</u>	<u>1,200</u>
<b><u>Project Operating Loss (average estimated)</u></b>	<b><u>15,000</u></b>	<b><u>15,000</u></b>	<b><u>15,000</u></b>
<b><u>Totals</u></b>	<b><u>182,285</u></b>	<b><u>207,350</u></b>	<b><u>207,350</u></b>
Notes: af = acre-feet Source: SCWA 2005b			

## **Solano Project Drought Measures Agreement**

As part of the renewal of the water supply contract for the Solano Project, the contracting cities (Fairfield, Vacaville, Vallejo, and Suisun City) entered into an agreement with the two agricultural Solano Project contracting districts (SID and MPWD) for Solano Project water supplies during drought periods in the event one or more of the cities comes up short on actual deliveries to meet its needs. The “Drought Measures Agreement” was executed concurrently with the renewed Solano Project water supply agreements in 1999. The agreement is based on Solano Project storage levels, which trigger specific actions as follows:

- ▶ When Solano Project storage is less than 800,000 acre-feet (af) on December 1, a drought contingency plan is developed. If storage is greater than 1.1 million acre-feet (MAF) by the following April 1, the plan is suspended.
- ▶ When Solano Project storage is between 550,000 and 800,000 af on April 1, each of the parties to the agreement will forgo at least 5% of their contract amount that year. If storage is between 450,000 and 550,000 af on April 1, the parties will forgo at least 10%. These forgone amounts are called “restricted carryover” and are credited to the party forgoing the water. This restricted carryover cannot be withdrawn from storage until Solano Project storage exceeds 800,000 af or is less than 450,000 af on a subsequent April 1. The concept is that the restricted carryover should not be used until conditions improve (storage in excess of 800,000 af) or worsen (storage less than 450,000 af). There is a further restriction for SID and MPWD.
- ▶ If storage is less than 450,000 af, the restricted carryover can be used or sold only for municipal purposes. When April 1 storage is less than 450,000 af, no restricted carryover is accumulated and full contract amounts are available. Restricted carryover cannot exceed 50% of any party’s annual contract amount. Restricted carryover is in addition to any voluntary carryover that is allowed under the Solano Project contracts.
- ▶ If Solano Project storage is less than 400,000 af on April 1, a drought emergency is declared. This will trigger SID’s Drought Impact Reduction Program. Under this program, SID growers will fallow land and provide up to 20,000 afy for voluntary sale to cities (not restricted to those with Solano Project contracts). Such a drought fallowing program was implemented in 1991, creating 15,000 af of SID water that was sold to cities and SCWA.

## **Putah Creek Accord**

The Putah Creek Accord, negotiated in 2000, provides instream flow needs for Putah Creek downstream of the Putah Diversion Dam. The Putah Creek Accord provides flows that benefit anadromous fish (e.g., salmon and steelhead) and calls for SCWA to request assurances from the federal government that improvements to steelhead habitat and the additional flows will not result in a demand for more water releases from the Solano Project. The Condition 12 Settlement Agreement capped future water development in the watershed of Lake Berryessa. Before the settlement, approximately 21,000 afy was released to Putah Creek to meet instream flow needs. The settlement provides for increased flows to Putah Creek, but provides for reduced flows when Lake Berryessa is low in storage and includes a process for addressing illegal diversion of surface water in Putah Creek. In normal hydrologic conditions the additional flows from the settlement amount to about an additional 1,000 afy, for a total of 22,000 afy. In drier years the amount of additional flows increases. The Putah Creek Accord is taken into account in calculating the firm yield described above (SCWA 2005a).

## **State Water Project**

SCWA also provides a wholesale raw-water supply from the North Bay Aqueduct (NBA) of the SWP. The Cities of Vallejo, Benicia, Suisun City, Dixon, Rio Vista, Vacaville, and Fairfield contract with SCWA for

NBA water. Contract entitlements and water consumption for each agency are listed in Table 4.9-2. All the water from the SWP supply is currently used for municipal and industrial purposes.

<b>Table 4.9-2 State Water Project Deliveries and Entitlements</b>			
<u>Agency</u>	<u>Water Deliveries (2002) (af)</u>	<u>Annual Entitlements (af)</u>	
		<u>Short-Term</u>	<u>Long-Term</u>
<u>City of Benicia</u>	<u>11,110</u>	<u>17,200</u>	<u>17,200</u>
<u>City of Dixon</u>	<u>0</u>	<u>0</u>	<u>1,500</u>
<u>City of Fairfield</u>	<u>8,555</u>	<u>14,678</u>	<u>14,678</u>
<u>City of Rio Vista</u>	<u>0</u>	<u>0</u>	<u>1,500</u>
<u>City of Suisun City</u>	<u>0</u>	<u>750</u>	<u>1,300</u>
<u>City of Vacaville</u>	<u>6,296</u>	<u>8,978</u>	<u>8,978</u>
<u>City of Vallejo</u>	<u>5,961</u>	<u>5,600</u>	<u>5,600</u>
<b><u>Totals</u></b>	<b><u>31,922</u></b>	<b><u>47,206</u></b>	<b><u>47,756<sup>a</sup></u></b>
Notes: af = acre-feet <sup>a</sup> Ultimate amounts for Dixon and Rio Vista are not included in the total. If Dixon and/or Rio Vista decide to use the NBA water supply; supplies to Benicia, Fairfield, and Vallejo are reduced commensurately Source: SCWA 2005a			

The issue of greatest concern regarding the SWP’s water supply is its reliability. Several variables affect SWP deliveries: regulatory standards, operating rules, reservoir carryover supplies, demand in service areas, and most importantly, precipitation (SCWA 2005a). In 1991 and 1992, water allocations for SWP urban contractors were reduced to 30% and 45% of contracted supply, respectively, and in 2001 SWP supplies were curtailed to 39% of contracted supply. Because of the poor reliability of the SWP water supply, present water demand exceeds the available water supplies in many normal years. The estimated reliability in normal years is only 86% of the contracted supply. This lack of available supply is amplified in dry years. The long-term average SWP delivery projected by DWR is about 63% of 47,756 afy (as reported in the state’s draft 2007 SWP delivery reliability report [DWR 2007]).

The NBA has also been subject to pumping restrictions because of the Delta smelt, a species listed as threatened under the federal Endangered Species Act. This fish resides in sloughs and channels of the Sacramento–San Joaquin Delta (Delta). Delta smelt spawn in the slough where the NBA intake is located. In several years since Delta smelt monitoring started in 1993, a temporary pumping restriction of 65 cubic feet per second (cfs) was placed on the NBA to protect young Delta smelt from being entrained (sucked up) by the NBA pumping plants. In 2005, the U.S. Fish and Wildlife Service discontinued Delta smelt monitoring at the NBA intake. Through grant funding, SCWA has also investigated the feasibility of an alternate intake to the NBA located away from Delta smelt habitat and on or near the Sacramento River, which has better water quality. Such a project is feasible from an engineering perspective, but would be very expensive. There are currently no pumping restrictions; however, restrictions could be established in the future. Pumping restrictions would further reduce the reliability of the SWP water supply.

**Mojave Exchange Agreement**

SCWA has an agreement with the Mojave Water Agency (Mojave), another SWP contractor, to exchange wet-weather SWP water for dry-year SWP water. In years when SCWA has extra SWP supplies, SCWA

can exchange two units of SWP water for a future return of one unit of water to be provided (at the Delta) by Mojave, most likely in a dry year when there are SWP shortages. SCWA also pays some SWP transportation charges to Mojave when water is delivered to Mojave. So far, only the City of Benicia has taken advantage of this exchange program and currently (as of 2004) has the right to 5,500 af of return water from Mojave. Up to 10,000 af of SCWA SWP supply can be exchanged with Mojave in any given year (resulting in a return obligation of 5,000 af in a future year), with a cumulative limit return obligation of Mojave of 20,000 af at any one time. Mojave stores its excess water supply in its groundwater basin. Mojave and SCWA enter into agreements with DWR to transport the exchange water through SWP facilities. DWR currently requires that the water supply exchanged be returned within 10 years of the initial exchange, but this policy may be changed.

## **Local Water Districts**

### **Solano Irrigation District**

SID, which serves primarily agriculture and some residential, municipal, and industrial customers, uses groundwater conjunctively with surface-water supplies. SID provides domestic water service to several areas of the county and the cities of Dixon, Suisun City, and Vacaville. The primary domestic-water service areas are the Gibson Canyon area (treated water), Pleasant Valley area (point-of-entry systems), Tolenas area (treated water), Peabody Road (treated water for commercial and industrial uses), and Blue Ridge Oaks (treated water). Most of the SID water is derived from surface water from the Solano Project supplied by SID, but SID also operates wells to supplement its surface water supply from the Solano Project (Table 4.9-3). SID's network of groundwater wells consists of 29 wells ranging from 400 to 1,000 feet below ground, located within the Solano and Suisun-Fairfield groundwater subbasins.

<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Solano Project<sup>a</sup></u>	<u>129,527</u>	<u>128,310</u>	<u>128,310</u>
<u>Maine Prairie Water District Exchange<sup>b</sup></u>	<u>4,012</u>	<u>9,100</u>	<u>9,100</u>
<u>Groundwater<sup>c</sup></u>	<u>6,638</u>	<u>10,000</u>	<u>10,000<sup>d</sup></u>
<b><u>Totals</u></b>	<b><u>140,177</u></b>	<b><u>147,410</u></b>	<b><u>147,410</u></b>
<u>Notes:</u> afy = acre-feet per year <sup>a</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information). <sup>b</sup> Solano Project is the water source for the exchange. Available water supply is based on 91% of the 10,000-afy Solano Project annual entitlement to MPWD. <sup>c</sup> Groundwater supply is assumed to be equal to long-term projected demand <sup>d</sup> With improvements to the existing system, yield would be up to 15,000 afy. Source: SCWA 2005a			

### **Rural North Vacaville Water District**

The Rural North Vacaville Water District (RNVWD) provides groundwater to domestic water users within the unincorporated portion of the county from one well that draws from the deep aquifer in the Tehama Formation found within the Solano Subbasin (Table 4.9-4). RNVWD also maintains a second backup well that is used when the main well is offline for maintenance; however, only one well is permitted to be operational at a time.

The water system is limited to a total capacity of approximately 533 connections with a pumping capacity of 500 gallons per minute [gpm]. One of two deep-water wells that are sources for the RNVWD water system has been taken offline because of elevated levels of arsenic. There are some uncertainties associated with the existing water distribution system and the reliability of groundwater quality within the deep aquifer underlying this region. One of the two deep-water wells that are sources for the RNVWD water system have been taken offline because of elevated levels of arsenic at concentrations of 14–17 parts per billion (ppb), which is slightly higher than the 10 ppb maximum contaminant level (MCL) for drinking-water supply (Bellem, pers. comm., 2008a). The remaining well yields water with relatively low concentrations of arsenic between 4 and 7 ppb (Bellem, pers. comm., 2008a).

<b>Table 4.9-4 Rural North Vacaville Water District's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Consumption (2007) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Groundwater<sup>a</sup></u>	<u>237</u>	<u>545</u>	<u>545<sup>b</sup></u>
<b><u>Total</u></b>	<b><u>237</u></b>	<b><u>545</u></b>	<b><u>545<sup>b</sup></u></b>
Notes: afy = acre-feet per year <sup>a</sup> Groundwater supply is assumed to be equal to long-term projected demand. <sup>b</sup> Long-term water supply depends on an expansion of existing system infrastructure beyond 533 connections. The existing system cannot be expanded until 2013. Source: Bellem, pers. comm., 2008b			

As of June 2008, the RNVWD system was servicing a total of 214 connections. The water system is experiencing difficulty meeting the demands of the existing customers because the water demands are far greater than what has been projected. RNVWD has recently implemented water conservation measures for the existing customers to reduce the demands of the water system. As a condition of service on the existing water system, it cannot be expanded until 2013. RNVWD could be able to provide additional water service before 2013 by establishing a new water system and developing a new water source, if necessary.

According to the fall 2007 groundwater elevation monitoring report, water levels within the shallow and deep aquifers in the RNVWD service area experience seasonal fluctuations. Overall groundwater levels in the shallow aquifer have experienced decreases of 18 feet in the shallow aquifer and 30 feet within the shallow aquifer and a 30-foot decrease in the deep aquifer (RNVWD 2008). The report stated that a longer period of data gathering would be required to determine the reason for the decline, whether below-normal rainfall or pumping by RNVWD and others within the region (RNVWD 2008).

### **Maine Prairie Water District**

MPWD has annual contract rights to 15,000 af of Solano Project water. MPWD can purchase additional Solano Project water from SID as needed. On occasion MPWD has sold small amounts of Solano Project water to California State Prison, Solano. MPWD has an irrigation tailwater exchange agreement (1984) with SID that allows MPWD to exchange 10,000 af of its Solano Project water for SID's irrigation tailwater. Under the terms of the agreement, MPWD can receive 2 af of irrigation tailwater for each acre-foot of Solano Project water exchanged to SID. The agreement has officially expired, but the terms have been extended by a letter agreement until further notice. On occasion, MPWD utilizes its full contract amount before irrigation demands end, and sufficient SID tailwater is not available. In such cases, MPWD will purchase supplemental contract water from SID. MPWD also has surface-water rights to local streams that supplement its water supply from the Solano Project and SID. The contribution to MPWD's water supply from local surface-water sources is currently not quantified. MPWD's available water supply is

shown in Table 4.9-5. In addition, MPWD is currently exploring the potential use of groundwater to supplement surface-water supplies.

<b>Table 4.9-5 Maine Prairie Water District's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2007) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
Solano Project <sup>a</sup>	<u>4,909</u>	<u>4,550<sup>b</sup></u>	<u>4,550<sup>b</sup></u>
Solano Irrigation District Exchange <sup>c</sup>	<u>18,985</u>	<u>20,000</u> (irrigation tailwater)	<u>20,000</u> (irrigation tailwater)
Local Surface-Water Rights <sup>d</sup>	<u>Variable</u>	<u>Variable</u>	<u>Variable</u>
Groundwater <sup>e</sup>	<u>0</u>	<u>=<sup>f</sup></u>	<u>=<sup>f</sup></u>
<b>Totals</b>	<b><u>23,894</u></b>	<b><u>24,550</u></b>	<b><u>24,550</u></b>

Notes:  
 afy = acre-feet per year; MPWD = Maine Prairie Water District; SID = Solano Irrigation District  
<sup>a</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).  
<sup>b</sup> Total entitlement is 15,000 afy; however, MPWD exchanges 10,000 afy with SID for irrigation tailwater.  
<sup>c</sup> Assumes 100% reliability of irrigation tailwater  
<sup>d</sup> MPWD has surface-water rights to local streams that supplement its water supply; however, the contribution to MPWD's water supply from local surface-water sources has not been not quantified.  
<sup>e</sup> Groundwater supply is assumed to be equal to long-term projected demand  
<sup>f</sup> Groundwater has been identified as a potential future water supply  
 Source: SCWA 2005a

### **Reclamation District 2068**

RD 2068 has riparian and appropriative water rights to surface water from the Delta. The riparian right is currently exercised but not adjudicated. The appropriative rights consist of two licenses and one permit pending licensing, with the oldest dating back to the early 1920s. The two licenses are unquantified. The permit pending licensing stipulates a water right amount of 75,000 afy as long as the permit is in effect (Table 4.9-6). However, on average RD 2068 provides between 50,000 and 55,000 afy (this figure varies depending on water availability). RD 2068 water is used primarily for agricultural purposes. Like MPWD, RD 2068 is currently exploring the potential for using groundwater to supplement surface-water supplies.

<b>Table 4.9-6 Reclamation District 2068's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2007) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
Local Surface Water Rights <sup>a</sup>	<u>53,956</u>	<u>75,000</u>	<u>75,000</u>
Groundwater <sup>b</sup>	<u>=</u>	<u>=<sup>c</sup></u>	<u>=<sup>c</sup></u>
<b>Total</b>	<b><u>53,956</u></b>	<b><u>75,000</u></b>	<b><u>75,000</u></b>

<sup>a</sup> Assumes 100% reliability of local surface water.  
<sup>b</sup> Groundwater supply is assumed to be equal to long-term projected demand.  
<sup>c</sup> Groundwater has been identified as a potential future water supply.  
 Source: SCWA 2005a

## **Other Reclamation Districts**

As mentioned, unincorporated areas of the county are served by several other reclamation districts. RD 2098, while primarily responsible for levee maintenance provisions, provides water for irrigation purposes obtained from local surface water. RD 2060 serves areas near Hastings Island, providing irrigation and pasture water from local surface-water sources. RD 2104 provides local surface water to several individual landowners, which they use primarily for agricultural purposes. The aggregate of the four reclamation districts, including RD 2068, provides water for approximately 30,000 acres of irrigated agricultural land. In total, Solano County contains approximately 14 different reclamation districts that provide primarily levee maintenance, flood control, and stormwater-related services, but that also provide local surface-water supplies for agricultural activities in their respective regions. However, because the water is obtained from local surface-water sources, primarily the Sacramento River tributary system, the amount of water used is largely not quantified and varies yearly depending on availability. RD 2068's available water supply is shown in Table 4.9-6.

## **Cities**

### **City of Benicia**

The City of Benicia's water supply contracts are an SWP contract, a 1962 agreement with the City of Vallejo, and a settlement agreement with the State of California as a result of an application for area-of-origin water rights. Benicia's water treatment plant (WTP) has a treatment capacity of 12 million gallons per day (mgd). The transmission system consists of two pump stations and approximately 18 miles of pipeline. The distribution system consists of three pump stations, eight pressure-reducing stations, and approximately 150 miles of pipelines. The storage system consists of five treated-water reservoirs and Lake Herman, with a capacity of 1,800 af. The City of Benicia's Water Operations Division provides for the negotiation and management of Benicia's water supply contracts and for the operation, maintenance, repair, and capital improvements of the water treatment plant and transmission, distribution, and storage systems (City of Benicia 2008).

The City of Benicia currently has contract rights up to 17,200 afy for SWP water delivered via the NBA (Table 4.9-7). SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the Cordelia Forebay, from which Benicia then pumps the water to its treatment facility or Lake Herman for storage. The current SWP contract amount to Benicia could ultimately be reduced by 1,125 afy beginning in the year 2016, if Dixon and Rio Vista take their full NBA contract amount. The City of Benicia also has a water exchange and banking arrangement with Mojave, to exchange wet-year SWP water for dry-year SWP water. In years when SCWA has extra SWP supplies, it can exchange two units of SWP water for a future return of one unit of water to be provided (at the Delta) by Mojave, most likely in a dry year when there are SWP shortages. As of 2004, the City of Benicia had the right to 5,500 af of return water from Mojave, which stores its excess water supply in its groundwater basin (SCWA 2004).

The main restriction to settlement water is that it is not available when Standard Water Right Term 91 is in effect, which is in the summer of all but very wet years. Term 91 is declared by the SWRCB when it is determined that the SWP and CVP are releasing stored water in excess of natural flow (natural flow is the flow that would have been in existence if the dam was not there) to meet in-Delta demands and Delta water standards. According to the *Benicia Urban Water Management Plan*, the reliability of the water supply in normal and multiple dry years is approximately 72% and 70%, respectively (City of Benicia 2005).

**Table 4.9-7  
City of Benicia's Projected Water Supply and Demand**

Source	Water Demand (2002) (afy)	Water Supply (afy)	
		Short-Term (2010)	Long-Term (2030)
State Water Project <sup>a</sup>	11,110	10,836 <sup>b</sup>	10,836 <sup>b</sup>
SID Purchase	170	=	=
Water Rights Settlement <sup>c</sup>	0	7,350	7,350
Lake Herman	1,087	500 <sup>d</sup>	500 <sup>d</sup>
Vallejo Agreements <sup>e</sup>	170	5,500 <sup>f</sup>	1,100 <sup>f</sup>
Mojave Exchange <sup>g</sup>	0	5,500 <sup>h</sup>	5,500 <sup>h</sup>
<b>Totals</b>	<b>12,537</b>	<b>23,686<sup>i</sup></b>	<b>19,286<sup>i</sup></b>

Notes:  
 afy = acre-feet per year; SID = Solano Irrigation District  
<sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (Refer to Table 4.9-2 for annual entitlement information).  
<sup>b</sup> Entitlement could decrease by 1,125 afy beginning in the year 2016.  
<sup>c</sup> Settlement water supply is based on 70% of annual settlement amount of 10,500 afy.  
<sup>d</sup> No yield is available in dry years  
<sup>e</sup> Assume 100% reliability of water supply  
<sup>f</sup> The Vallejo Agreements for 4,400 afy expire in 2010; the second amendment, for 1,100 afy, expires in 2025.  
<sup>g</sup> Source of Mojave Exchange Water is the State Water Project  
<sup>h</sup> Total amount available (not annually); therefore, full entitlement is anticipated.  
<sup>i</sup> Total supply is based on available annual supplies from SWP, Water Rights Settlement, and Vallejo Agreements  
 Source: SCWA 2005a

**City of Dixon**

Water is supplied within the Dixon planning area by two water purveyors, the California Water Service Company (Cal Water) and the Dixon-Solano Municipal Water Service (DSMWS). The supply source is groundwater. Cal Water, a private company regulated by the California Public Utilities Commission, serves approximately 3,000 accounts in its service area, which consists primarily of the older portion of the Dixon geographic area. Cal Water supplies customer demand via a network of eight groundwater wells, averaging 500–600 feet below the ground surface, distributed around Dixon. The original supply system was purchased by Cal Water in 1927 from Pacific Gas and Electric Company (PG&E). CSWC was the sole water service provider in Dixon before 1984. In 1984 DSMWS was established through a joint exercise of powers agreement between Dixon and SID. DSMWS currently serves approximately 1,800 accounts outside of Cal Water's service area, primarily new developments built since 1984. DSMWS serves the area from a well network of four wells ranging from 800 to 1,500 feet below the ground surface. The maximum annual yield of the groundwater system is approximately 2,000 af. The DSMWS service area is within SID's service area; therefore, Dixon is eligible to use a share of SID's surface water when necessary. The terms of the joint exercise of powers agreement expire in 2009. Dixon's SWP contract will begin with 300 af in the year 2016 and gradually increase by 300 afy annually until the contract reaches its maximum amount of 1,500 af in 2020. After 2020, the annual contract amount will remain at 1,500 af by 2020 and will remain so each year thereafter (Table 4.9-8). Dixon currently has no transmission or treatment facilities to use water from the NBA but can initiate its SWP contract earlier with a 5-year notice.

<b>Table 4.9-8 City of Dixon's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>State Water Project<sup>a</sup></u>	<u>0</u>	<u>189<sup>b</sup></u>	<u>945<sup>c</sup></u>
<u>Groundwater<sup>d</sup></u>	<u>3,545</u>	<u>11,635<sup>e</sup></u>	<u>11,635<sup>e</sup></u>
<b><u>Totals</u></b>	<b><u>3,545</u></b>	<b><u>11,824</u></b>	<b><u>12,580</u></b>
<u>Notes:</u> <u>afy = acre-feet per year</u> <sup>a</sup> <u>Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information).</u> <sup>b</sup> <u>Entitlement available beginning in the year 2016 is 300 afy.</u> <sup>c</sup> <u>Entitlement available beginning in the year 2020 is 1,500 afy.</u> <sup>d</sup> <u>Groundwater supply is assumed to be equal to long-term projected demand.</u> <sup>e</sup> <u>Based on projected Dixon-Solano Municipal Water Service long-term demand (7,826 afy) (SID 2005) and California Water Service Company long-term demand estimate (3,809 afy) (City of Dixon 2005).</u> <u>Sources: SCWA 2005a, City of Dixon 2005, SID 2005</u>			

### **City of Fairfield**

Water for the city of Fairfield is supplied by the SWP, the Solano Project, Vallejo Permit Water (VPW), settlement agreement water, SID agreements, and recycled water (Table 4.5-9). SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the North Bay Regional (NBR) WTP, which is jointly owned by the Cities of Fairfield and Vacaville. Solano Project water is diverted through the Putah South Canal to Fairfield's Waterman and NBR treatment plants. The "area of origin" water rights settlement with DWR provides Fairfield with 11,800 afy of nonproject (i.e., not SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. Term 91 is declared by the SWRCB when it is determined that the SWP and Reclamation's Central Valley Project (CVP) are releasing stored water in excess of natural flow (i.e., the flow that would have been in existence if the dam were not there) to meet in-Delta demands and Delta water standards. Term 91 is declared in the summer of all but very wet years, and is essentially a permanent allocation of water supply. The water is conveyed through the NBA when capacity is available and delivered to Fairfield in the same manner as SWP water (SCWA 2005b). The reliability of the water supply from the water rights settlement has been estimated to be between 72% and 70% in normal and multiple dry years, respectively (City of Benicia 2005).

<b>Table 4.9-9 City of Fairfield's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>State Water Project<sup>a</sup></u>	<u>8,555</u>	<u>9,247</u>	<u>9,247</u>
<u>Solano Project<sup>b</sup></u>	<u>9,200</u>	<u>8,372</u>	<u>8,372</u>
<u>Settlement Agreement Water<sup>c</sup></u>	<u>0</u>	<u>8,260<sup>d</sup></u>	<u>8,260<sup>d</sup></u>
<u>Vallejo Permit Water</u>	<u>0</u>	<u>variable</u>	<u>variable</u>
<u>SID Agreements<sup>e</sup></u>	<u>6,838</u>	<u>14,576<sup>d</sup></u>	<u>14,576<sup>d</sup></u>
<u>Recycled Water</u>	<u>117</u>	<u>2,400<sup>f</sup></u>	<u>3,000</u>

<b>Table 4.9-9 City of Fairfield's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<b><u>Totals</u></b>	<b><u>24,710</u></b>	<u>42,856</u>	<u>43,456</u>
Notes: afy = acre-feet per year; SID = Solano Irrigation District <sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information). <sup>b</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information). <sup>c</sup> Settlement water supply is based on 70% of annual settlement amount of 11,800 afy. <sup>d</sup> Assume available supply is 91% of contracted amount. <sup>e</sup> Water supply source is Solano Project water. <sup>f</sup> Amount available in 2020. Sources: SCWA 2005a, City of Fairfield 2001			

### **Fairfield-SID Agreement**

Originally executed in 1974, the Fairfield-SID agreement was amended in 2002. This is a complicated agreement that basically promised that Fairfield would not expand its city limits into Suisun Valley, in return for additional water supply from SID. The additional supplies provide a significant amount of Fairfield's overall water supply. The amended 2002 agreement provides for up to 16,018 afy of water from SID.

A separate JPA agreement provides for SID water to serve lands within the common boundaries of the two agencies not covered under the 2002 agreement. Fairfield and SID entered into a JPA agreement in 1987 (now the second amended agreement) that established a basis for SID to provide the water to serve lands within the common boundaries of the two agencies not covered under the 1974 agreement. Water service under this JPA is typically supplied by dual systems, potable water from Fairfield, and nonpotable water from SID. All raw water is supplied by SID or reimbursed to Fairfield. Water supplies are provided under separate "water service subagreements" pursuant to the JPA. Since 1987 the two agencies have entered into three water service subagreements. The three subagreements provide a minimum of 1 afy of raw water per acre or actual-quantity reimbursement to Fairfield from SID for potable water served to specified lands. The current total acreage specified is approximately 450 acres.

In addition, SID provides direct irrigation-water service to a limited number of properties within the Fairfield city limits outside of any agreements between the two agencies. In addition, SID provides water directly to a small number of irrigation customers within the Fairfield city limits based on service that existed before the property was annexed into Fairfield (e.g., Vanden High School, Fairfield High School, Busch Properties) or under subsequent outside-district water service agreements (e.g., B. Gale Wilson Elementary School, historic Waterman Ranch). The supplies provided under the 1987 JPA are technically to meet SID demands.

### **Fairfield-Vallejo Agreements**

The Cities of Vallejo and Fairfield have an agreement in which, when circumstances warrant, Vallejo provides Fairfield with two units of VPW water and gets one unit of Solano Project water from Fairfield in return.

**Other Agreements**

Fairfield also has agreements with other neighboring water agencies to treat and deliver raw water provided by the other agency. These agreements do not yield a new supply to Fairfield because the raw water provided to Fairfield in reimbursement from the other agency matches the amount the other agency uses. Such agreements include the Vallejo “Lakes” system emergency water service agreement; the Suisun-Solano Water Authority (SSWA) seasonal water service agreement (under which SSWA may use water between the months of November through March, and other months with restrictions), and the SID Blue Ridge Oaks and Peabody Road water service agreements (continuous use; facilities not yet in place).

**City of Rio Vista**

Rio Vista currently uses groundwater to meet its water demands (SCWA 2005a). The supply system consists of six wells (four of which are currently producing) ranging in depth from 500 feet to 1,000 feet below ground surface. Rio Vista’s SWP surface-water contract will begin with 300 af in the year 2016 and will gradually increase by 300 afy annually until the contract reaches its maximum amount of 1,500 af in 2020. After 2020, the annual contract amount will remain at 1,500 af (Table 4.9-10). According to the City of Rio Vista, there is no indication of decreased groundwater elevations within Rio Vista’s water system (Sieffert, pers. comm., 2008).

<b>Table 4.9-10 City of Rio Vista’s Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Solano Project<sup>a</sup></u>	<u>0</u>	<u>273<sup>b</sup></u>	<u>1,365<sup>c</sup></u>
<u>Groundwater<sup>d</sup></u>	<u>1,799</u>	<u>7,666<sup>e</sup></u>	<u>7,666<sup>e</sup></u>
<b><u>Total</u></b>	<b><u>1,799</u></b>	<b><u>7,939</u></b>	<b><u>9,031</u></b>
<p>Notes:            afy = acre-feet per year  <sup>a</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).  <sup>b</sup> Amount available beginning in the year 2016.  <sup>c</sup> Amount available beginning in the year 2020.  <sup>d</sup> Groundwater supply is assumed to be equal to long-term projected demand  <sup>e</sup> Estimate from the City of Rio Vista’s <i>Riverwalk Project Environmental Impact Report</i> (City of Rio Vista 2006).            Sources: SCWA 2005a, City of Rio Vista 2006</p>			

**Suisun City**

Suisun City receives its water from the Solano Project and the SWP. Suisun’s SWP contract amount is 750 afy (as of 2004) and gradually increases by 150 afy to a maximum of 1,300 afy by 2015, and will remain at that level each year thereafter (Table 4.9-11). Suisun City currently has no transmission or treatment facilities to use water from the NBA. Suisun City has contract rights to up to 1,600 afy of Solano Project water annually, which it receives via the Putah South Canal to the Cement Hill WTP. Suisun and SID entered into a JPA agreement in 1988. The full JPA, called the SSWA, was implemented in 1991. The JPA uses Suisun City’s Solano Project contract supply and supplements it with SID’s Solano Project supply to meet Suisun City’s water demand along with the unincorporated Tolenas area. Under the JPA, SID operates the Cement Hill WTP to treat Suisun City’s water and delivers it to the city’s service area for distribution. SSWA provides any additional contract water as needed beyond 1,600 af from SID’s Solano Project water supply (SCWA 2005b).

<b>Table 4.9-11</b>			
<b>Suisun City's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
State Water Project <sup>a</sup>	0	662	819
Solano Project <sup>b</sup>	1,584	1,456	1,456
SSWA <sup>c</sup>	3,236	Varies	Varies
<b>Totals</b>	<b>4,820</b>	<b>2,118</b>	<b>2,275</b>
<b>Notes:</b> afy = acre-feet per year; SSWA = Suisun-Solano Water Authority <sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information). <sup>b</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information). <sup>c</sup> Source of water supply is the Solano Project Source: SCWA 2005a			

### **City of Vacaville**

Water is supplied to Vacaville from the SWP, Solano Project, DWR water rights settlement, an agreement with SID, groundwater, and recycled water. The SWP water is delivered via the NBA. SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to the NBR WTP, which as mentioned previously is jointly owned by the Cities of Vacaville and Fairfield. Solano Project water is diverted through the Putah South Canal to Vacaville's diatomaceous earth plant and the NBR WTP. The "area of origin" water rights settlement with DWR provides Vacaville with nonproject (i.e., non-SWP) water. Settlement water is available when the Delta is in excess or balanced conditions and Term 91 is not in effect. The water is conveyed through the NBA when capacity is available and delivered to Vacaville in the same manner as SWP water. The water supply reliability has been estimated in normal and multiple dry years at approximately 72% and 70%, respectively (City of Benicia 2005). Vacaville has a system of 10 deep aquifer wells, most of which are located in the Elmira well field. Currently, approximately 6,000 afy is withdrawn. The estimated safe yield of Vacaville's groundwater system is 8,000 afy (Table 4.9-12). The supply in wet years could be increased to 10,000 afy (SCWA 2005a). The City of Vacaville is considering expanding the current well field and installing deep wells only within the city's sphere of influence. The wells currently planned by the City of Vacaville are near Interstate 505 (I-505) and Midway Road.

<b>Table 4.9-12</b>			
<b>City of Vacaville's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
State Water Project <sup>a</sup>	6,296	5,656	5,656
Solano Project <sup>b</sup>	4,012	5,233	5,233
Water Rights Settlement <sup>c</sup>	0	6,524	6,524
SID Agreement <sup>d</sup>	1,000	7,280 <sup>e,f</sup>	9,550 <sup>e,g</sup>
Groundwater <sup>h</sup>	6,638	8,000	8,000
Recycled Water	=	880 <sup>d</sup>	880
<b>Totals</b>	<b>17,946</b>	<b>33,573</b>	<b>35,848</b>

<b>Table 4.9-12</b>			
<b>City of Vacaville's Projected Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<b>Notes:</b>			
afy = acre-feet per year; SID = Solano Irrigation District			
<sup>a</sup> Available State Water Project water supply is based on 63% of annual entitlement (refer to Table 4.9-2 for annual entitlement information).			
<sup>b</sup> Available Solano Project water supply is based on 91% of annual entitlement (refer to Table 4.9-1 for annual entitlement information).			
<sup>c</sup> Settlement water supply is based on 70% of annual settlement amount of 9,320 afy.			
<sup>d</sup> Water supply source is Solano Project water.			
<sup>e</sup> Groundwater supply is assumed to be equal to long-term projected demand.			
<sup>f</sup> Assume available supply is 91% of contracted amount.			
<sup>g</sup> Amount available at 2010.			
<sup>h</sup> Amount available after 2016.			
<sup>i</sup> Amount available after 2015.			
Source: SCWA 2005a			

The 1995 master water agreement between SID and Vacaville provides Solano Project water to Vacaville from SID. The delivery schedule started at 1,000 afy in 1995 and increases incrementally to a maximum of 10,050 afy in 2016. The amount available under the agreement for 2004 was 2,500 af. The agreement expires in 2045.

### **City of Vallejo**

SWP water is taken from the Delta at the Barker Slough Pumping Plant and conveyed through the NBA to Cordelia Forebay, from which Vallejo then pumps the water to its Fleming Hill Treatment Plant. The current SWP contract amount to Vallejo could ultimately be reduced by 1,125 af beginning in the year 2016 if Dixon and Rio Vista take their full NBA contract amounts (SCWA 2005a). Solano Project water is conveyed to the Terminal Reservoir in Cordelia, from which it is pumped by Vallejo to the Fleming Hill Treatment Plant.

<b>Table 4.9-13</b>			
<b>City of Vallejo Available Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<u>Lakes Frey and Madigana</u>	<u>157</u>	<u>300<sup>b</sup></u>	<u>300<sup>b</sup></u>
<u>Lake Curry<sup>a</sup></u>	<u>1,500<sup>c</sup></u>	<u>2,813<sup>d</sup></u>	<u>2,813<sup>d</sup></u>
<u>State Water Project<sup>e</sup></u>	<u>5,961</u>	<u>3,528</u>	<u>3,528</u>
<u>Solano Project<sup>f</sup></u>	<u>13,714</u>	<u>9,198</u>	<u>13,286</u>
<u>Vallejo Permit Water and Transfers<sup>a</sup></u>	<u>12,971</u>	<u>17,100<sup>g</sup></u>	<u>17,100<sup>g</sup></u>
<b><u>Totals</u></b>	<b><u>34,303</u></b>	<b><u>39,579</u></b>	<b><u>43,667</u></b>

<b>Table 4.9-13</b>			
<b>City of Vallejo Available Water Supply and Demand</b>			
<u>Source</u>	<u>Water Demand (2002) (afy)</u>	<u>Water Supply (afy)</u>	
		<u>Short-Term (2010)</u>	<u>Long-Term (2030)</u>
<b>Notes:</b>			
afy = acre-feet per year			
<sup>a</sup> Available water supply is based on 75% water supply reliability			
<sup>b</sup> Normal year water supply yields are 400 afy			
<sup>c</sup> Water demand to meet instream flow requirements only. Available beginning in 2010; normal year water supply yields are 3,750 afy.			
<sup>d</sup> Normal year water supply			
<sup>e</sup> Available State Water Project water supply is based on 63% of annual entitlement (Refer to Table 4.9-2 for annual entitlement information)			
<sup>f</sup> Available Solano Water Project water supply is based on 91% of annual entitlement (Refer to Table 4.9-1 for annual entitlement information)			
<sup>g</sup> Normal year water supply are 22,800 afy			
Sources: SCWA 2005a, City of Vallejo 2005			

Vallejo holds Appropriative Water Rights License No. 7848 with the SWRCB, issued August 1966, commonly referred to as VPW. The license prescribes a maximum diversion of 31.52 cfs throughout each year, the equivalent of 22,780 afy, from the Sacramento River. VPW is conveyed to Vallejo through the NBA project facilities governed by Amendment No. 10 to the Water Supply Contract between DWR and the Solano County Water Agency. Conveyance of VPW is limited by contract to a maximum of 17,287 af per year. Because the limitation is not based on a physical capacity constraint of the NBA, an additional 5,493 af could be available upon execution of an amendment to the existing agreement between DWR and SCWA. In addition, the Vallejo Permit Water Power Agreement between SCWA and the City of Vallejo, entered into March 2000, stipulates that Vallejo will not incur any charges for VPW used by public agencies within Solano County, including Vallejo itself, to make up deficiencies in SWP contract deliveries in a calendar year. However, Vallejo will pay transportation power costs at the SWP rate for any amount of VPW used above and beyond the collective Solano County SWP contract rights. The Vallejo Permit Water Power Agreement expires December 31, 2035. In normal years, the Vallejo Permit water supply reliability is estimated to be 100%; however, in multiple dry years, the reliability is 75% (City of Vallejo 2005).

Vallejo also holds various appropriative rights to store water in three small local reservoirs: Lakes Frey, Madigan, and Curry, commonly known as the Lakes System. The annual safe yield of Lakes Frey and Madigan is 400 af and Lake Curry's is 3,750 af, although Lake Curry water is currently not available because of conveyance issues (Table 4.9-13). Currently the City of Vallejo's Lakes System provides treated water to the unincorporated communities in Suisun Valley, Old Town Cordelia, Green Valley, and unincorporated islands in Vallejo. As part of the development of the City of Vallejo's Lakes System, Vallejo agreed to serve some residents in the area. The largest lake, Lake Curry, has a storage capacity of 10,700 af; the lake's yield is about 3,750 afy (Table 4.9-13). Vallejo is developing a conveyance system to transport water from Lake Curry via the Putah South Canal to its water treatment plant in Vallejo. This would more fully utilize the yield from Lake Curry. In normal years, the Lakes System's water supply reliability is estimated to be 100%; however, in multiple dry years, the reliability is 75% (City of Vallejo 2005).

Vallejo often has water supplies in excess of its current needs. Vallejo has entered into agreements with Benicia, Napa County, and Fairfield for sales and exchanges.

### **Unincorporated County**

Most rural residential landowners located outside of municipal or local water district service areas have individual shallow groundwater wells that serve their domestic needs. However, there are some larger

agricultural operations in unincorporated areas that have wells installed within the deeper aquifer. Some small rural residential water systems also distribute groundwater to their customers. Because the wells are privately owned, groundwater use is unrestricted and the quantification of groundwater consumption is difficult to estimate.

In the eastern Delta part of Solano County, many growers divert water directly from local waterways. Growers hold riparian rights (water rights that derive from land ownership) or appropriative rights. Records do not exist to quantify the amount of this water that is used. These supplies are very reliable because water is always available in this part of the Delta (SCWA 2005b).

The “Water Demand” section on page 4.9-6 of the DEIR is revised as follows. Please note that all tables that appear after “Water Demand” section in DEIR Section 4.9 are also renumbered.

**2008 Draft General Plan Water Demand**

The population under the Preferred Plan in 2030 is projected to be 39,555—22,312 in what are now unincorporated areas within MSAs and 17,143 in what are now unincorporated areas outside MSAs. Under the Maximum Development Scenario, the projected population is 62,105—33,393 within MSAs and 28,712 outside MSAs (see Table 4.9-14 below). Areas within MSAs are assumed to be annexed to and served by cities. The cities would then be responsible for assuring a sufficient water supply for both existing and future residents living within what are now unincorporated MSAs. Similarly, after MSAs in what is now the unincorporated county are annexed to cities, the cities would be responsible for providing water to meet the demands of commercial and industrial development in those areas.

<u>Land Use Categories</u>	<u>Projected Population under the 2008 Draft General Plan (2030)</u>				<u>ABAG Population Projections for Unincorporated Solano County (2030)</u>
	<u>Preferred Plan</u>		<u>Maximum Development Scenario</u>		
	<u>Areas within MSAs</u>	<u>Areas Outside of MSAs</u>	<u>Areas within MSAs</u>	<u>Areas Outside of MSAs</u>	
<u>Residential</u>	<u>16,272</u>	<u>11,163</u>	<u>25,148</u>	<u>17,805</u>	=
<u>Agriculture</u>	<u>11</u>	<u>4,929</u>	<u>23</u>	<u>9,856</u>	=
<u>Special-purpose Areas</u>	<u>6,029</u>	<u>1,051</u>	<u>8,222</u>	<u>1,051</u>	=
<u>Subtotal</u>	<u>22,312</u>	<u>17,143</u>	<u>33,393</u>	<u>28,712</u>	=
<b><u>Total</u></b>	<b><u>39,455</u></b>		<b><u>62,105</u></b>		<b><u>26,000</u></b>

Note: ABAG = Association of Bay Area Governments; MSA = municipal service area  
Sources: Solano County 2006, data provided by Solano County in 2008

New residential, commercial, or industrial development would not occur within the MSAs until after the land has been annexed to a city. According to Policy LU.P-7 in the 2008 Draft General Plan, temporary land uses and uses that are consistent with the current zoning on incorporated lands within MSAs, and that do not conflict with planned land uses, would be permitted until the property is annexed to a city for urban development. Future demands associated with new development within the MSAs, and water supply to meet those demands, would be reflected within each city’s general plan and analyzed in each city’s general plan EIR and/or any environmental documents associated with annexation and specific development projects.

Tables 4.9-15 through 4.9-23 present water demand estimates through buildout of the 2008 Draft General Plan based on existing land use designations and land use changes proposed under the 2008 Draft General Plan, including those related to residential, commercial, industrial, and agricultural land uses.

### Residential Water Demand

Table 4.9-15 compares the baseline population and estimated water demand in the current unincorporated area to projected population and estimated water demand in the *future* unincorporated area, excluding the city MSAs. The reason for using projected population outside MSAs for projected residential water demand is that areas within MSAs are assumed to be annexed by the cities and developed or reused according to their general plans. Water demands associated with residential population growth within the unincorporated MSAs would be the responsibility of each city.

Population levels are compared by land use category in Table 4.9-15. Under the Preferred Plan, the population of the unincorporated area of the county is projected to decrease in the Residential land use categories but increase in the Agriculture and Special-Purpose Area categories. Most of the projected decrease in the *future* population of the unincorporated area for the Residential land use category is because of the assumed annexation of developed residential areas within city MSAs that are currently served by city water systems. There would be little decrease in future water demand within the *future* unincorporated area (outside MSAs) because of the annexation of these residential areas. For this reason, no reduction in water demand is assumed from the projected decrease in the population of the unincorporated area in the Residential land use category.

In addition, any reduction of water demand within the unincorporated area of the county as a result of annexation of developed residential areas within MSAs would result in an equivalent increase in water demand to those MSAs upon annexation (see Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan”).

It is assumed that existing water demand from residential land uses in the unincorporated area (including MSAs) would not increase in the future. It should be noted that projected population growth within the MSAs after city annexation has taken place would increase residential water demands cumulatively countywide. Please refer to Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan,” for further details regarding the cumulative water demands with Solano County.

<b>Table 4.9-15</b>					
<b>Projected Water Demand Based on Population Increase in the Unincorporated Area of Solano County</b>					
<u>Land Use Categories</u>	<u>Baseline and Projected Population</u>				
	<u>Baseline—Existing Population</u>	<u>Preferred Plan (Outside MSAs)</u>		<u>Maximum Development Scenario (Outside MSAs)</u>	
		<u>Population</u>	<u>Change</u>	<u>Population</u>	<u>Change</u>
<u>Residential</u>	<u>17,719</u>	<u>11,163</u>	<u>-6,556</u>	<u>17,805</u>	<u>86</u>
<u>Agriculture</u>	<u>2,269</u>	<u>4,940</u>	<u>2,671</u>	<u>9,879</u>	<u>7,610</u>
<u>Special-Purpose Areas</u>	<u>0</u>	<u>1,051</u>	<u>1,051</u>	<u>1,051</u>	<u>1,051</u>
<u>Total population</u>	<u>19,988</u>	<u>17,154</u>	<u>-2,834</u>	<u>28,735</u>	<u>8,747</u>
<b>Projected Water Demand (afy)</b>					
<b><u>Projected water demand based on population increase</u></b>	<b><u>13,143</u></b>	<b><u>15,590<sup>a</sup></u></b>	<b><u>2,447<sup>b</sup></u></b>	<b><u>18,895</u></b>	<b><u>5,752</u></b>

**Table 4.9-15  
Projected Water Demand Based on Population Increase  
in the Unincorporated Area of Solano County**

<u>Land Use Categories</u>	<u>Baseline and Projected Population</u>				
	<u>Baseline— Existing Population</u>	<u>Preferred Plan (Outside MSAs)</u>		<u>Maximum Development Scenario (Outside MSAs)</u>	
		<u>Population</u>	<u>Change</u>	<u>Population</u>	<u>Change</u>
<p><u>Note:</u>  <u>MSA = municipal service area</u>  <u>Projection assumes 587 gallons per day per person.</u>  <sup>a</sup><u>Projected water demand is based existing water demand and new population growth in agriculture and special-purpose areas and does not account for the potential decrease in population from incorporation of lands within MSAs.</u>  <sup>b</sup><u>Change in water demand is based on increase in population in Agriculture and Special-Purpose Area land use categories and does not account for the potential decrease in population from incorporation of lands within MSAs.</u>  <u>Source: Rural North Vacaville Water District customer water consumption data for unincorporated Solano County from 2005 through 2008</u></p>					

Maximum water demand for Agriculture, Residential, and Special-Purpose Areas under the Preferred Plan would be an additional 2,447 acre-feet per year (afy), or an increase of 18.6% above existing water demand (Table 4.9-15).

Under the Maximum Development Scenario, projected water demand would increase by 5,752 afy. Residential water demand would increase by approximately 43% above existing water demands (Table 4.9-15). There would still be a reduction in water demand associated with incorporating some currently unincorporated areas of the county, but any reduction would be offset by an increase in demand associated with increased agricultural and residential development.

**Commercial Water Demand**

Commercial water demand under the 2008 Draft General Plan includes water demands associated with existing commercial land uses within the unincorporated county and projected commercial acreage in 2030 under the plan. Because Policy LU.P-7 establishes that new development would not occur within the MSAs until the land is annexed to a city, the cities would be responsible for any future water demands associated with new commercial land uses within the MSAs. It is assumed that existing water demand from commercial land uses in the unincorporated area (including within MSAs) would not increase in the future. However, new commercial land uses designations within these areas would cumulatively contribute to an increase in commercial water demands countywide. Please refer to Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan,” for further details regarding the cumulative water demands with Solano County.

Implementing the 2008 Draft General Plan under either development scenario would result in an approximately 21% net reduction in water demand associated with commercial land uses in the unincorporated portions of Solano County in 2030 (Table 4.9-16). The reduction in commercial land uses associated with this reduction in water demand would be a result of city annexation and changes in land use definitions to reflect actual land uses or to resolve inconsistencies as part of the 2008 Draft General Plan.

Existing commercial water demands are not assumed to change significantly despite the changes in land use designations and MSA annexations. Water demand reduction is also highly uncertain given that the existing commercial water consumption in the unincorporated areas of the county outside MSAs is largely unknown

and the variability of future water demands depends on the type of commercial use. For example, a laundromat or car wash would have a higher water demand than a retail store. The water demand factor used to project future water demands is based on water demand factors used in the City of Vacaville’s SB 610 water supply assessment, which was the most current and reliable relevant source of information for commercial water use in Solano County at the time this FEIR was prepared (City of Vacaville 2004). For these reasons, any water reductions are not considered to be a firm water source for future development.

<b>Table 4.9-16 Projected Water Demand Based on Commercial Acreage in the Unincorporated Areas of Solano County</b>					
<u>Land Use Category</u>	<u>Water Demand (afy)</u>				
	<u>Baseline— Existing Acreage</u>	<u>Preferred Plan (Outside MSAs)</u>		<u>Maximum Development Scenario (Outside MSAs)</u>	
		<u>Acreage</u>	<u>Change</u>	<u>Acreage</u>	<u>Change</u>
<u>Commercial</u>	<u>567 acres</u>	<u>449 acres</u>	<u>-118 acres</u>	<u>449 acres</u>	<u>-118 acres</u>
<b><u>Projected water demand</u></b>	<b><u>1,302 afy</u></b>	<b><u>1,031 afy</u></b>	<b><u>—<sup>a</sup></u></b>	<b><u>1,031 afy</u></b>	<b><u>—<sup>a</sup></u></b>
<p>Note:  afy = acre-feet per year  <sup>a</sup> Assumes that a decrease in existing water demand would not occur  Projection assumes that commercial land use would generate 2,050 gallons per day per acre. This assumption is taken from City of Vacaville Senate Bill (SB) 610 water supply assessment.  Source: City of Vacaville 2004</p>					

### Agricultural Water Demand

Agricultural water demand under the 2008 Draft General Plan includes water demands associated with existing agricultural land use and projected agricultural acreage at 2030 for the unincorporated area of the county (including the portion located within MSAs). Under Policy LU.P-7 of the 2008 Draft General Plan, agricultural land use is considered consistent with the current County zoning for unincorporated lands within MSAs and is not considered to conflict with planned land uses after city annexation. The estimated agricultural water demand in 2030 under the 2008 Draft General Plan would also account for agricultural water demands should proposed city annexation not occur by 2030. This assumption is being used to avoid underestimating future agricultural water demand. The water demand factor used to project future water demands is based on DWR’s Agricultural Water Use Program study on applied water per crop type within Solano County, which was the most comprehensive and reliable relevant source of information for agricultural water use in Solano County at the time this FEIR was prepared (DWR 2001).

Agricultural land conversion would result in a countywide reduction in irrigated cropland in the unincorporated portions of the county (Table 4.9-17). The potential reduction in water demand from the conversion of agricultural lands to developed uses could exceed 54,000 afy, or 6% of current estimated water demand under both the Preferred Plan and the Maximum Development Scenario. This estimate includes land in the unincorporated areas of the county and the MSAs because agricultural uses would continue in the MSAs until annexation. However, most of the lands proposed for agricultural conversion, 17,684 acres, are located outside of the MSAs.

Furthermore, the extent of water reductions resulting from agricultural conversion is uncertain because existing agricultural practices on lands proposed for conversion, such as dry farming, are unknown. In addition, future conversions of existing agricultural land from traditional row crop farming to orchards or vineyards would increase water demand and would therefore reduce the extent of water reductions. In the California Water Plan (DWR 2005), agricultural water is identified as a potential water source to meet new

and increasing water demand for water supply reliability and environmental resource protection. It is anticipated that conversion of agricultural land would create a firm yield of additional groundwater or surface water for unincorporated areas of the county; however, the extent of surplus water supplies is uncertain.

For these reasons, no reduction in projected water demand from conversion of agricultural land is assumed despite the theoretical potential for such a reduction as described above.

<b>Table 4.9-17 Projected Water Demand Based on Agricultural Acreage in the Unincorporated Areas of Solano County</b>					
<u>Land Use Category</u>	<u>Water Demand (afy)</u>				
	<u>Baseline— Existing Acreage</u>	<u>Preferred Plan</u>		<u>Maximum Development Scenario</u>	
		<u>Acreage</u>	<u>Change</u>	<u>Acreage</u>	<u>Change</u>
<u>Agriculture</u>	<u>365,651 acres</u>	<u>343,680 acres</u>	<u>-21,971 acres</u>	<u>343,680 acres</u>	<u>-21,971 acres</u>
<b><u>Projected water demand</u></b>	<b><u>906,814 afy</u></b>	<b><u>852,326 afy</u></b>	<b><u>—<sup>a</sup></u></b>	<b><u>852,326 afy</u></b>	<b><u>—<sup>a</sup></u></b>
<p>Notes:            afy = acre-feet per year; MSA = municipal service area  <sup>a</sup> Assumes that a decrease in existing water demand would not occur.            Projection assumes that agricultural land use would require 2.48 afy. This assumption is based on an average estimated applied water demand from the California Department of Water Resources' Agricultural Water Use Program, which is based on a study of applied water per crop type for Solano County in 2001.            Source: DWR 2001</p>					

### Industrial Water Demand

Industrial water demand under the 2008 Draft General Plan includes water demands associated with existing industrial land use acreage within the unincorporated portions of the county and projected industrial acreage for the unincorporated county in 2030. As stated previously, Policy LU.P-7 in the 2008 Draft General Plan establishes that any new industrial development within the unincorporated portions of the MSAs would not occur until the land is annexed to the city; therefore, any future water demands associated within new industrial land uses within what is now an unincorporated MSA would be the responsibility of the respective city. It is assumed that existing water demand for industrial land use in the unincorporated area (including MSAs) would not increase in the future. Considerations related to cumulative industrial water demand are discussed further in Section 6.1.5, “Cumulative Effects of the 2008 Draft General Plan.”

Implementing the 2008 Draft General Plan would increase the extent of industrial land use in the unincorporated areas of the county by more than 400%. Most of the proposed industrial development in the unincorporated portions of the county under the 2008 Draft General Plan is designated as “water dependent” industrial reserve. This designation is specifically designed to accommodate water-dependent industrial development along the Sacramento River.

Industrial development with this designation may include waterfront storage facilities; waterfront manufacturing or processing facilities; and water-using facilities, such as power plants and desalination plants requiring large quantities of water for intake and waste assimilation. Under both the Preferred Plan and the Maximum Development Scenario, total water demand in the unincorporated portions of the county for proposed industrial uses is approximately 21,251 afy (Table 4.9-18). Water demand for water-dependent

industrial land uses would be highly variable depending on the type of industrial facility. For example, a food-processing facility or power plant would consume a substantially greater amount of water than an industrial warehouse or storage facility. Specific water-dependent industrial facilities for this land use designation have not yet been identified; therefore, actual water demand for industrial land uses is largely uncertain. The water demand factor used to project future water demands is based on water demand factors used in the City of Vacaville’s SB 610 water supply assessment, which was the most current and reliable relevant source of information for industrial water use in Solano County at the time this FEIR was prepared (City of Vacaville 2004).

<b>Table 4.9-18 Projected Water Demand Based on Industrial Acreage in the Unincorporated Areas of Solano County</b>					
<u>Land Use Category</u>	<u>Water Demand (afy)</u>				
	<u>Baseline— Existing Acreage<sup>a</sup></u>	<u>Preferred Plan<sup>b</sup></u>		<u>Maximum Development Scenario<sup>b</sup></u>	
		<u>Acreage (Outside MSAs)</u>	<u>Change</u>	<u>Acreage (Outside MSAs)</u>	<u>Change</u>
<u>Industrial</u>	<u>1,921 acres</u>	<u>7,743 acres</u>	<u>5,822 acres</u>	<u>7,743 acres</u>	<u>5,822 acres</u>
<b><u>Projected water demand<sup>c</sup></u></b>	<b><u>5,272 afy</u></b>	<b><u>21,251 afy</u></b>	<b><u>15,979 afy</u></b>	<b><u>21,251 afy</u></b>	<b><u>15,979 afy</u></b>
Notes: afy = acre-feet per year; MSA = municipal service area <sup>a</sup> Baseline includes acreage located within the unincorporated county. <sup>b</sup> Water demands for the Preferred Plan and the Maximum Development Scenario include acreage projections for the unincorporated County under the 2008 Draft General Plan at 2030. <sup>c</sup> Projection assumes that industrial land use would generate 2,450 gallons per day per acre. This assumption comes from the City of Vacaville’s Senate Bill (SB) 610 water supply assessment. Source: City of Vacaville 2004					

### Public/Quasi-Public Water Demand

Under the 2008 Draft General Plan, approximately 1,405 acres in the unincorporated areas of the county have been designated as Public/Quasi-Public. The Public/Quasi-Public land use category includes sites that serve the community or public need and are owned or operated by government agencies, public utilities, or nonprofit organizations. The land use designation would include airports, schools, solid waste facilities, hazardous waste facilities, and other public and quasi-public facilities. Because no specific public or quasi-public development is planned and the land use designation includes uses that would not require water, a quantitative water demand estimate based on land acreage would be highly speculative and is not included in this FEIR. The water demand requirements would depend on the type of use or facility. For example, schools would require additional water over existing water demands. However, projected per-capita residential water demand would cover water demand needs by students and the school staff. Therefore, the additional water demands for a school would be minimal.

### Environmental Water Demand

Calculating current environmental demand and projecting future demands for protected species requires detailed knowledge of groundwater–surface water interactions, vegetation water consumption, existing habitat, demands by habitat type, and instream flow requirements. Some of this information is not yet available; therefore, rigorous demand calculations are not currently possible. Environmental enhancement, habitat protection, and water supply operating restrictions resulting from endangered or threatened species may result in decreases in the total amount of water supplies available. Limitations to water supply can affect reliability of the water supply, which in turn would affect the ability to support future water demands

as part of the 2008 Draft General Plan. For example, the endangered species Delta smelt spawns in Barker Slough pumping plant intake to the NBA. To protect larval Delta smelt, the U.S. Fish and Wildlife Service had imposed pumping restrictions on the NBA when larval Delta smelt are present. Although the restriction did not significantly affect NBA water supplies (shortages were made up later in the year), as NBA water use increases, a pumping restriction could have a major impact on NBA supplies. This restriction was discontinued in 2005, but could be reinstated in the future. This results in some uncertainty as to the availability of the NBA to be fully utilized in the future. A future restriction on the NBA water supplies could increase the reliance on groundwater use to supplement surface-water supplies.

### Water Demand Summary

Projected water demand is anticipated to increase by 18,428 afy under the Preferred Plan and 21,731 afy under the Maximum Development Scenario. These estimates are conservative because they do not include the theoretical potential for some water demand reductions for the reasons described above.

<b>Table 4.9-19 Total Projected Water Demand based on Land Use in the Unincorporated Areas in Solano County at 2030</b>					
<u>Land Use Category</u>	<u>Water Demand (afy)</u>				
	<u>Existing Demand</u>	<u>Preferred Plan</u>		<u>Maximum Development Scenario</u>	
		<u>Projected Demand</u>	<u>Change</u>	<u>Projected Demand</u>	<u>Change</u>
<u>Residential</u>	<u>13,143</u>	<u>15,590<sup>a</sup></u>	<u>2,447<sup>a</sup></u>	<u>18,895</u>	<u>5,752</u>
<u>Commercial</u>	<u>1,302</u>	<u>1,302<sup>b</sup></u>	<u>-<sup>b</sup></u>	<u>1,302<sup>b</sup></u>	<u>-<sup>b</sup></u>
<u>Agriculture</u>	<u>906,814</u>	<u>906,814<sup>b</sup></u>	<u>-<sup>b</sup></u>	<u>906,814<sup>b</sup></u>	<u>-<sup>b</sup></u>
<u>Industrial</u>	<u>5,272</u>	<u>21,251</u>	<u>15,979<sup>c</sup></u>	<u>21,251</u>	<u>15,979<sup>c</sup></u>
<b><u>Total</u></b>	<b><u>926,531</u></b>	<b><u>944,957</u></b>	<b><u>18,426</u></b>	<b><u>948,262</u></b>	<b><u>21,731</u></b>
Notes: afy = acre-feet per year <sup>a</sup> Change in water demand is based on increase in agriculture and special-purpose area populations and does not account for the potential decrease in population from incorporation of lands within municipal service areas. <sup>b</sup> Increased demand is not anticipated due to a decrease in existing land uses proposed under the 2008 Draft General Plan at 2030. <sup>c</sup> Change in water demand estimate accounts for an increase in industrial land use acreage within the unincorporated area under the 2008 Draft General Plan at 2030. Source: Data compiled by EDAW in 2008					

Table 4.9-20 shows the estimated increase in residential and industrial water demands in 5-year increments, assuming a constant rate of development and water demand increase. These two categories of water demand are highlighted in Table 4.9-20 because they represent the primary land use sectors anticipated to generate significant increases in water demand. Water demand in these two categories of land use is projected to increase by 100% through 2030.

<b>Table 4.9-20 Projected Short-Term and Long-Term Water Demand Based on Increase in Population and Industrial Land Use in the Unincorporated Areas of Solano County under the Preferred Plan</b>						
<u>Land Use Category</u>	<u>Water Demand (afy)</u>					
	<u>Current</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Residential</u>	<u>13,143</u>	<u>13,669</u>	<u>14,215</u>	<u>14,784</u>	<u>15,375</u>	<u>15,590</u>
<u>Industrial</u>	<u>5,272</u>	<u>7,381</u>	<u>10,333</u>	<u>14,466</u>	<u>20,253</u>	<u>21,251</u>

<b>Totals</b>	<b>18,415</b>	<b>21,050</b>	<b>24,549</b>	<b>29,250</b>	<b>35,628</b>	<b>36,841</b>
<b>Percentage increase over existing demand</b>	<b>=</b>	<b>14.3%</b>	<b>33.3%</b>	<b>58.8%</b>	<b>93.5%</b>	<b>100.1%</b>
Notes: afy = acre-feet per year Assumptions: - 1.5% residential water demand increase every 5 years to 2025. - 400% industrial water demand increase every 5 years to 2025. Source: Data compiled by EDAW in 2008						

Table 4.9-21 shows the estimated increase in total water demand in 5-year increments, assuming a constant rate of development and water demand increase. The projected increase is 18,426 afy, 2% greater than the estimated current demand.

Category	Water Demand (afy)					
	Current	2010	2015	2020	2025	2030
Existing Water Demand	926,531	926,531	926,531	926,531	926,531	926,531
2008 General Plan Increased Demand	0	3,685	7,370	11,055	14,740	18,426
<b>Totals</b>	<b>926,531</b>	<b>930,216</b>	<b>933,901</b>	<b>937,586</b>	<b>941,271</b>	<b>944,957</b>
<b>Percentage increase over existing demand</b>	<b>=</b>	<b>0.4%</b>	<b>0.8%</b>	<b>1.2%</b>	<b>1.6%</b>	<b>2%</b>
Notes: afy = acre-feet per year Source: Data compiled by EDAW in 2008						

Under the Maximum Development Scenario, total water demand by residential and industrial users would increase by 40,146 afy (118%) relative to existing water demand (Table 4.9-22). Considering existing water demands and projected long-term demand under the Preferred Plan, total water demand in the unincorporated county would be 966,678 afy under the 2008 Draft General Plan at 2030, an increase of 4.3% from existing water demand (Table 4.9-23). Tables 4.9-22 and 4.9-23 show projected increases in water demand in 5-year increments, assuming a constant rate of development and corresponding increase in water demand.

Land Use Category	Water Demand (afy)					
	Current	2010	2015	2020	2025	2030
Residential	13,143	14,392	15,759	17,256	18,895	18,895
Industrial	5,272	7,381	10,333	14,466	20,253	21,251
<b>Totals</b>	<b>18,415</b>	<b>21,772</b>	<b>26,092</b>	<b>31,722</b>	<b>39,148</b>	<b>40,146</b>

<b><u>Percentage increase over existing demand</u></b>	=	<b><u>18.2%</u></b>	<b><u>41.7%</u></b>	<b><u>72.3%</u></b>	<b><u>112.6%</u></b>	<b><u>118%</u></b>
Notes: <u>afy = acre-feet per year</u> Assumptions: - 9.5% residential water demand increase every 5 years to 2025. - 400% industrial water demand increase every 5 years to 2025. Source: Data compiled by EDAW in 2008						

<u>Land Use</u>	<u>Water Demand (afy)</u>					
	<u>Current</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
<u>Existing Water Demand</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>	<u>926,532</u>
<u>2008 General Plan Increased Demand</u>	<u>0</u>	<u>21,772</u>	<u>26,092</u>	<u>31,722</u>	<u>39,148</u>	<u>40,146</u>
<b><u>Totals</u></b>	<b><u>926,532</u></b>	<b><u>948,304</u></b>	<b><u>952,624</u></b>	<b><u>958,254</u></b>	<b><u>965,680</u></b>	<b><u>966,678</u></b>
<b><u>Percentage increase over existing demand</u></b>	=	<b><u>2.3%</u></b>	<b><u>2.8%</u></b>	<b><u>3.4%</u></b>	<b><u>4.2%</u></b>	<b><u>4.3%</u></b>
Notes: <u>afy = acre-feet per year</u> Source: Data compiled by EDAW in 2008						

The fourth (last) paragraph of the “Individual On-Site Wastewater Treatment Systems” section on page 4.9-7 of the DEIR is revised and the discussion expanded as follows:

The Division of Environmental Health of the County’s Department of Resource Management oversees the permitting, design, and implementation process for the installation of individual on-site waste disposal systems (septic systems and engineered systems), and ensures that projects comply with RWQCB requirements. ~~Because of the largely rural nature of the unincorporated areas, the County relies on existing wastewater treatment systems of municipalities and their existing treatment systems.~~

Based on population and structures in the incorporated areas, the number of septic systems can be estimated to be approximately 6,600 (Schmidtbauer, pers. comm., 2008). Based on Permit Plus, the number of repair permits issued for failing septic systems (where the leach field no longer functions) is as follows (Schmidtbauer, pers. comm., 2008):

<u>2003</u>	<u>19 repairs</u>	<u>0.28% of total</u>
<u>2004</u>	<u>18 repairs</u>	<u>0.27% of total</u>
<u>2005</u>	<u>20 repairs</u>	<u>0.30% of total</u>
<u>2006</u>	<u>21 repairs</u>	<u>0.32% of total</u>
<u>2007</u>	<u>17 repairs</u>	<u>0.26% of total</u>

This provides a known failure rate of septic systems of less than one-third of 1% per year. No significant trend has been noted in the number of failures. Most of the failures are attributed to installation of an older conventional septic system in poor soil conditions. In the long term, the number of septic system repairs is

expected to decrease because the County Code prohibits the installation of conventional septic systems in poor soil conditions (Schmidtbauer, pers. comm., 2008).

These are only the known failures where a permit for repair has been submitted to the County. It is possible that the actual number of failing systems is higher because not all failures are reported so that the repair process is undertaken. Even so, the total number (reported and unreported) of failures would be expected to be low. For example, even a tenfold increase in the number of repairs would be only a 3% failure rate (Schmidtbauer, pers. comm., 2008).

Table 4.9-8 on page 4.9-8 and the text of the “City of Vacaville” and “Fairfield and Suisun” sections on pages 4.9-8 and 4.9-9 of the DEIR are revised as follows:

<b>Table 4.9-8 Municipal Wastewater Disposal in Solano County</b>				
Wastewater Treatment System	Service Area	Capacity (mgd)	Current Use (mgd)	Remaining Capacity (mgd)
<del>Vacaville Diatomaceous Earth Plant</del>	<del>Sewer: Vacaville City Limits and Elmira</del>	40	40	0
Vacaville Easterly Wastewater Treatment Plant	Sewer: Vacaville City Limits and Elmira	15	10	5
Fairfield-Suisun Subregional Wastewater Treatment Plant	Fairfield and Suisun	<del>45.4</del> <u>23.7*</u>	<del>45.4</del> <u>14.7*</u>	<del>0</del> <u>9</u>
Vallejo Sanitation and Flood Control District Treatment Plant	Vallejo Service Area	15.5	12.5	3.0
Rio Vista Beach Drive Plant Wastewater Treatment Plant	Rio Vista Service Area	0.65	0.58	0.07
Rio Vista Northwest Wastewater Treatment Plant	Rio Vista Service Area	2.0	1.0	1.0
City of Dixon Wastewater Treatment Plant	City of Dixon Service Area	1.8	1.4	0.4
City of Benicia Wastewater Treatment Plant	City of Benicia Service Area	4.5 18 peak hour	2.66	1.84
Approximate Remaining Capacity				11.31
Notes:				
mgd = million gallons per day				
* Dry-weather capacity and flow				
Sources: City of Benicia 2005, City of Dixon 2005, City of Fairfield 2003, City of Rio Vista 2006, City of Suisun City 2005, City of Vacaville 2004, City of Vallejo 2005				

### **City of Vacaville**

The City of Vacaville Public Works Department is responsible for the city's wastewater collection and treatment system. The City of Vacaville provides sewer service to development within the city limits. In addition, in accordance with a written agreement dated 1995 between the City of Vacaville and the County, sewer service is provided to certain parcels within the unincorporated community of Elmira. The MSA for Vacaville proposed in the 2008 Draft General Plan includes some areas not currently planned for sewer service. The city is served by three one wastewater treatment facilities: ~~the Vacaville Diatomaceous Earth~~

~~Plant, with a capacity of 10 million gallons per day (mgd); and the Vacaville Easterly WWTP, with a capacity of 15 mgd (City of Vacaville 2004; Galway, pers. comm., 2008).~~

### **Fairfield and Suisun**

The Fairfield-Suisun Subregional WWTP provides tertiary treatment of wastewater generated from domestic, commercial, and industrial sources within the city boundaries of Fairfield and Suisun City. Sewer service is provided to Old Town Cordelia and Suisun Valley Road south of Rockville Road to the Fairfield city limits. Service is also provided to Travis Air Force Base and the Anheuser-Busch brewery. The plant is owned by Fairfield-Suisun Sewer District and is located on Chadbourne Road just southeast of Interstate 80 (I-80). The sewage system is divided into four sewage basins that drain by gravity to four major pump stations. The Cordelia Basin generally covers the Cordelia area, the Inlet Basin covers the western portion of Fairfield, and the Suisun and Central Basins cover the central and eastern portions of Fairfield and all of Suisun City. The Fairfield-Suisun Sewer District is in the midst of a planned program of facilities construction that will increase treatment plant, trunk sewer, and pump station capacities to accommodate future growth within the 2008 Draft General Plan limits of Fairfield and Suisun City. (City of Suisun City 2005.) The Fairfield Subregional Treatment Plant currently has an average wet-weather flow of 23.6 mgd, and after the proposed upgrade would have a wet-weather capacity of 52.3 mgd.

The “Staff Levels” section on pages 4.9-14 and 4.9-15 of the DEIR is revised as follows:

### **Staff Levels**

Staff members in each fire district may consist of full or part-time firefighters, administrative staff, and volunteers. CDF’s Gordon Valley Fire Station is a volunteer station with 15 volunteer firefighters. Cordelia FPD consists of three full-time firefighters and 55 volunteers. The City of Dixon Fire Department serves all of the Dixon FPD by agreement, and has 23 full-time employees and 35 volunteers with six volunteers, and six more volunteers scheduled to be added by July 1, 2008. East Vallejo FPD has six full-time employees. Montezuma FPD has three full-time firefighters and 28 volunteers. Suisun FPD has, on average, 40 volunteers. Vacaville FPD has eight full-time employees, one part-time employee, and approximately 70 volunteers. ~~Vacaville FPD has six full-time employees and about 70 volunteers.~~

The second paragraph of the “Service and Response Standards and Current Performance” section on page 4.9-16 of the DEIR is revised as follows:

All of the unincorporated Solano County fire districts have a rural designation. Because CDF’s Gordon Station is composed of volunteer fighters, there is no response standard. However, the station’s response time is about 4 minutes on average (Bryden, pers. comm., 2006). East Vallejo FPD has a standard of 4 minutes or less and it is estimated that it is achieved 90% of the time (Parker, pers. comm., 2006). Montezuma FPD and Suisun FPD do not report their average response times. Cordelia FPD and Vacaville FPD have achieved their desired response times of 8–10 minutes, with a response time of 10 minutes or less and 9 minutes, 44 seconds, respectively. Dixon FPD’s average response time is 11 minutes, + 22 seconds, exceeding the service level maximum (Solano County 2006).

The bulleted list in the “ISO Ratings” section on page 4.9-16 of the DEIR is revised as follows:

Following are the ISO ratings for each fire district:

- ▶ CDF’s Gordon Valley Station: 6/9
- ▶ Cordelia FPD: 5/9

- ▶ Dixon FPD: 5/9 (the 5 rating is applicable only to the addresses within the Dixon city limits; Dixon FPD’s rating is 9)
- ▶ East Vallejo FPD: 3
- ▶ Montezuma FPD: 9
- ▶ Suisun FPD: 5 at locations with public water supply/9 at locations without public water supply
- ▶ Vacaville FPD: 6/9

The bulleted list in the “Call Statistics” section on page 4.9-17 of the DEIR is revised as follows:

Following is a representative list of the number of response calls received by each fire district over a given year (year shown after the name of each fire district) and, for comparison, the number of calls received during the year that fell 5 years before each respective given year:

- ▶ CDF’s Gordon Valley: 2005—89 (earlier call numbers were not available)
- ▶ Cordelia FPD: 2004—651 (earlier call numbers were not available)
- ▶ Dixon FPD: 2005—1,900; 2000—1,621 2007—708; 2006—636
- ▶ East Vallejo FPD: 2005—527 (earlier call numbers were not available)
- ▶ Montezuma FPD: 2002—199; 1997—Approximately 175–180
- ▶ Suisun FPD: 2003—593 (earlier call numbers were not available)
- ▶ Vacaville FPD: 2003—575; 1998—394

The fourth paragraph under “Emergency Services in the Unincorporated County” on page 4.9-17 of the DEIR is revised as follows:

Twenty-one of Dixon FPD’s paid employees serve the EMS function of the district. Seven of these are paramedics and 14 are emergency medical technicians (EMTs). Of the City’s six volunteers, four assist with EMTs, and one is a paramedic. In addition, 33 volunteers assist with EMS. Of these, 31 are EMTs and two are paramedics. Dixon FPD relies on a private ambulance service to provide emergency service vehicles and related equipment to approximately one-half of the Dixon FPD’s service area, while the City of Vacaville Fire Department’s paramedic ambulances cover additional areas, including areas between the two cities.

The third paragraph on page 4.9-18 of the DEIR, regarding services provided by the Vacaville FPD is revised as follows:

Vacaville FPD has 24 employees, all of whom are paramedics, to assist with the EMS function of the district eight full-time employees and one part-time employee. In addition, approximately 73-70 volunteers assist the district. with this function. Information was not available as to the number of volunteers who are EMTs or paramedics. A private ambulance service is used. The City of Vacaville Fire Department provides all paramedic services to Vacaville FPD. The City of Vacaville Fire Department provides the primary fire protection in Lower Lagoon Valley within the city limits, and provides the paramedic ambulance services to all of Lagoon Valley.

The text between the “Groundwater Management Plans” and “State Drinking Water Quality Regulations” headings on page 4.9-24 of the DEIR is expanded as follows:

## **Groundwater Management Plans**

The 1993 Groundwater Management Act (California Water Code Section 10750), commonly referred to as AB 3030, was designed to provide local public agencies in California with increased management authority over groundwater resources. AB 3030 was developed in response to EPA Comprehensive State Groundwater Protection Programs (Lanferman 2002). Development of a groundwater management plan is voluntary, not mandatory, and may be developed for certain defined local agencies located within DWR-defined groundwater basins (DWR 2008). Cities and counties may cooperate with these providers. The plan can cover groundwater supply quantity management, groundwater quality management, or both. Once the plan has been adopted, rules and regulations must also be developed to implement the groundwater management program called for in the plan. ~~A groundwater management plan was updated for SID in 2006. The regulatory setting for groundwater management is discussed in greater detail in Section 4.5, "Hydrology and Water Resources."~~ Within Solano County, the City of Vacaville, SID, MPWD, and RD 2068 have prepared groundwater management plans. In an effort to assist these agencies, SCWA prepared a technical memorandum *Assessment of AB 3030 Plans for SB 1938 Compliance* (SCWA 2006). In addition to these agencies, other stakeholders in the groundwater basin include the County, RNVWD, the City of Dixon, Dixon-Solano Municipal Water Service (DSMWS), and California Water Service Company (Cal Water). These stakeholders do not have their own groundwater management plans. The City of Davis and UC Davis are jointly developing a groundwater management plan that will be applied within their service areas. These service areas are mostly in the Yolo Groundwater Subbasin (Subbasin 5.21-67 [DWR 2004]), but part of the UC Davis service area is in the Solano Subbasin. Coordination of the City of Davis/UC Davis and RD 2068 planning efforts will be accomplished through SWA. These agencies are seeking to manage the groundwater resources to the benefit of all stakeholders within the county.

### **SB 1938**

SB 1938 (Chapter 603, Statutes of 2002) establishes a revised framework for groundwater management plans with the intent of encouraging local agencies to work cooperatively to manage groundwater resources. SB 1938 became effective on January 1, 2003, through amendments to Section 10750 et seq. of the California Water Code. SB 1938 requires local agencies to do all of the following to be eligible for funding administered by DWR:

1. Make available to the public a written statement describing the manner in which interested parties may participate in development of the plan, which may include appointing a technical advisory committee.
2. Prepare and implement a groundwater management plan that includes basin management objectives (BMOs) for the groundwater basin that is subject to the plan.
3. Include components relating to the monitoring and management of groundwater levels within the groundwater basin, groundwater quality degradation, inelastic land subsidence, and changes in surface-water flow and quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin. Consider additional components listed in Sections 10753.8(a) through 10753.8(l) of the California Water Code.
4. Prepare a plan that involves other agencies and enables the local agency to work cooperatively with other public entities whose service areas or boundaries overlie the groundwater basin.
5. Adopt monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, inelastic subsidence in basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin. The monitoring protocols should be designed to generate information that promotes efficient and effective groundwater management and supports attainment of the BMOs.

6. Prepare a map that details the areas of the groundwater basin as defined in DWR Bulletin 118, the area that will be subject to the plan, and the boundaries of the local agencies overlying the basin.

A seventh component requires agencies not overlying groundwater basins to prepare plans incorporating items 1 through 6 using geologic and hydrologic principles appropriate to those areas. The 2003 update of DWR Bulletin 118 (DWR 2003) contains the complete list of required and recommended components of local groundwater management plans.

The listed requirements apply to DWR-administered funding authorized or appropriated after September 1, 2002, and do not apply to grants from the Local Groundwater Assistance Fund (AB 303).

The “Methodology” section on page 4.9-30 of the DEIR is therefore revised as follows (please note that all subsequent tables in Section 4.9, and text references to these tables, are renumbered to reflect these changes):

## **METHODOLOGY**

### **Water Supply Services**

To determine whether sufficient water supply is available, the environmental analysis for water supply was based largely on information in SCWA’s *Phase I Integrated Regional Water Resources Plan* (SCWA 2004), *Integrated Regional Water Management Plan and Strategic Plan* (SCWA 2005b), and *Urban Water Management Plan* (SCWA 2005c). The Water Resources, Public Facilities and Services, and Health and Safety background reports prepared for the 2008 Draft General Plan (Solano County 2006a, 2006b, 2006c) were also consulted, along with the local and regional agency information sources listed in Chapter 8, “References,” of this DEIR and described more fully in preceding portions of this section. The effects of the 2008 Draft General Plan were compared to environmental baseline conditions (i.e., existing conditions) to determine impacts. There is overlap of some 2008 Draft General Plan policies, regulations, and programs as they pertain to water supply and hydrology in Section 4.5, “Hydrology and Water Resources.” Where policies, regulations, or programs are utilized for mitigation in more than one impact, their first instance will be described and referred to in subsequent references. The water supply and demand impact analysis focuses on proposed development and land use changes under the 2008 Draft General Plan for the unincorporated areas of the county at 2030, relative to existing conditions. The cities would be responsible for determining potential impacts of proposed development or land use changes within the MSAs. Future demands and water supply to meet those demands associated with new development within the unincorporated areas of MSAs would be reflected within each city’s general plan and analyzed in each city’s general plan EIR and/or any environmental documents associated with annexation and specific development projects. As presented in Policy LU.P-7 of the 2008 Draft General Plan, temporary land uses and uses that are consistent with the current zoning on incorporated lands within MSAs, and that do not conflict with planned land uses, would be permitted until the property is annexed to a city for urban development. At present, until property located within an MSA is annexed by a city, the only approved land use designation for such a property is agricultural use. Therefore, existing and future uses of agricultural land is evaluated for portions of the unincorporated county within and outside of the MSAs.

The 2008 Draft General Plan would result in increased residential, commercial, and industrial land uses, and a decrease in agricultural land uses, as a result of increasing population growth. This analysis is based on the following water demand assumptions shown in Table 4.9-11 and Table 4.9-12. The two tables show water demand projections for the Preferred Plan and the Maximum Development Scenario. Water projections are made based on the projected population and amount of commercial land acreage proposed under each development scenario. Projected industrial water use is not projected in this analysis because of the variability of water needs for each individual industrial use, and the net change in water demand by converting agricultural lands to rural residential use is not estimated in Table 4.9-11 because of the variability of agricultural water needs (for example, dryland versus irrigated farming and differences in water needs for different crops). As noted in the analysis following Table 4.9-15 (Impact 4.9-1a), a change

in land use from irrigated agriculture to a developed use would decrease water demand; therefore, the analysis below likely overestimates the net additional water demand and resulting impacts.

<b>Table 4.9-11 Projected Water Demand based on Population Increase in the Unincorporated Areas of Solano County</b>					
Land Use	Water Demand (afy)				
	Baseline— Existing Population	Preferred Plan		Maximum Development Scenario	
		Population	Change	Population	Change
Residential	17,719	27,435	9,716	42,953	25,234
Agriculture	2,269	4,940	2,671	9,879	7,610
Special-Purpose Areas	0	7,081	7,081	9,273	9,273
Total Population	19,988	39,455	19,467	62,105	42,117
<b>Projected Water Demand*</b>	<b>2,240</b>	<b>4,424</b>	<b>2,184</b>	<b>6,955</b>	<b>4,715</b>
Notes: afy – acre-feet per year * Projection assumes 100-gallons-per-day (gpd)-per-person (Marin County 2007). Source: Data provided by Solano County in 2008					

<b>Table 4.9-12 Projected Water Demand based on Commercial Acreage in the Unincorporated Areas of Solano County</b>					
Land Use	Water Demand (afy)				
	Baseline— Existing Acreage	Preferred Plan		Maximum Development Scenario	
		Acreage	Change	Acreage	Change
Commercial	640	1,036	396	1,036	396
<b>Projected Water Demand*</b>	<b>851</b>	<b>1,378</b>	<b>526</b>	<b>1,378</b>	<b>526</b>
Notes: afy – acre-feet per year * Projection assumes that commercial land use would generate 1,185.5-gallons per day per acre. This assumption comes from Marin County based on a study of historical North Marin water use conducted for North Marin Water District (NMWD) and summarized in the Marin CWP Update Draft EIR (Marin County 2007). Source: Solano County 2008					

## Wastewater Services

The 2008 Draft General Plan would result in increased residential, commercial, and industrial land uses, and a decrease in agricultural land uses, as a result of increasing population growth. This analysis is based on the following wastewater demand assumptions shown in Table 4.9-13. The table shows wastewater demand projections for the Preferred Plan and the Maximum Development Scenario in unincorporated areas of the county outside of MSAs that would be annexed and served by the associated city, based on projected population growth for residential, agriculture, and special-purpose areas. Wastewater projections are made based on the projected population growth associated with each development scenario. This analysis quantifies generation of wastewater on a per-capita basis only. Commercial and industrial uses would vary substantially in the amount of wastewater treatment requirements, and ~~based on~~ current background information, an average generation value is not available for projecting commercial and industrial wastewater generation numbers with complete accuracy. However, to provide a rough estimate of wastewater generation from commercial, industrial, and agricultural land uses associated with the 2008 Draft General Plan, the analysis used an estimated-generation multiplier rate of 500 gpd per acre, provided by the City of Vacaville in its municipal service review (City of Vacaville 2004). For residential land uses, the County has estimated that approximately 75 gallons per day (gpd) of wastewater per person would be generated with implementation of the 2008 Draft General Plan.

Land Use	Wastewater Demand (mgd)				
	Baseline— Existing Population	Preferred Plan		Maximum Development Scenario	
		Population	Change	Population	Change
Residential	17,719	<del>27,435</del> <u>11,163</u>	<del>9,716</del> <u>6,556</u>	<del>42,953</del> <u>17,805</u>	<del>25,234</del> <u>86</u>
Agriculture	2,269	4,940	2,671	9,879	7,610
Special Purpose Areas	0	<del>7,081</del> <u>1,051</u>	<del>7,081</del> <u>1,051</u>	<del>7,081</del> <u>1,051</u>	<del>7,081</del> <u>1,051</u>
Total Population	19,988	<del>39,455</del> <u>17,154</u>	<del>19,467</del> <u>2,834</u>	<del>62,105</del> <u>28,735</u>	<del>42,117</del> <u>8,747</u>
<b>Projected Wastewater Demand*</b>	<b>1.5</b>	<b><del>2.51</del> <u>1.3</u></b>	<b><del>1.01</del> <u>0.21</u></b>	<b><del>4.04</del> <u>2.1</u></b>	<b><del>2.70</del> <u>0.65</u></b>

Notes:  
 mgd = million gallons per ~~year~~ day  
 \* Projection assumes 75 gallons per day (gpd) per person (Bell, pers. comm., 2006)  
 Source: Data provided by Solano County in 2008

Table 4.9-14 projects nonresidential generation of wastewater in unincorporated areas of Solano County.

Land Use	Wastewater Demand (mgd)				
	Baseline— Existing Acreage	Preferred Plan		Maximum Development Scenario	
		Acreage	Change	Acreage	Change
<u>Commercial</u>	<u>567</u>	<u>449</u>	<u>-118**</u>	<u>449</u>	<u>-118**</u>
<u>Industrial</u>	<u>1,921</u>	<u>7,743</u>	<u>5,822</u>	<u>7,743</u>	<u>5,822</u>
<u>Total Acreage</u>	<u>2,488</u>	<u>8,192</u>	<u>5,822</u>	<u>8,192</u>	<u>5,822</u>

<b>Table 4.9-14</b>					
<b>Projected Wastewater Demand based on Commercial and Industrial Acreage in the Unincorporated Areas of Solano County</b>					
	Wastewater Demand (mgd)				
		Preferred Plan		Maximum Development Scenario	
<b>Projected Water Demand*</b>	<b><u>1.24</u></b>	<b><u>4.09</u></b>	<b><u>2.90</u></b>	<b><u>4.09</u></b>	<b><u>2.90</u></b>
<p>Notes:</p> <p>mgd = million gallons per day</p> <p>Development within municipal service areas (MSAs) would be facilitated through annexation into the appropriate cities, which would place the responsibility for the provision of services within the MSAs to the city where the annexation takes place. Therefore, this table accounts only for changes of land use in unincorporated areas.</p> <p>* Projection assumes 500 gallons per day (gpd) per acre of new commercial and industrial development (City of Vacaville 2004).</p> <p>Source: Data provided by Solano County in 2008</p>					

The bulleted list of thresholds of significance for wastewater services on page 4.9-31 of the DEIR is revised as follows:

### Wastewater Services

- ▶ exceed wastewater treatment requirements of the applicable RWQCB; or
- ▶ require or result in the construction of new wastewater collection, treatment, and disposal facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

The analysis of Impacts 4.9-1a and 4.9-1b on pages 4.9-32 through 4.9-41 of the DEIR is revised as follows:

**IMPACT 4.9-1a** **Insufficient Water Supplies to Meet the Future Water Demand in Unincorporated Areas Served by the County – Preferred Plan.** *Land uses and development consistent with the Preferred Plan would increase the demand for water. Available water sources would be insufficient to serve some of the unincorporated areas of the county with the buildout of the Preferred Plan. In areas with insufficient water supplies, ~~A~~new methods to obtain water and additional sources of water supply would be required. This impact would be significant.*

Estimates of future short-term and long-term water demand in the unincorporated areas of Solano County indicate that there would be increased water demand for new development under the 2008 Draft General Plan. An increase in water demand for agricultural or commercial land use within the unincorporated areas of the county is not anticipated as a result of the 2008 Draft General Plan because of agricultural conversion and city annexation. This assumes that water demand for existing land uses within the unincorporated areas of the county would not increase. In addition, it is anticipated that overall water demand would decline as a result of the 2008 Draft General Plan as a result of city annexations of existing residential and commercial properties, and agriculture land use conversion; however, the Preferred Plan could require up to an additional 35,085 afy to support new growth that may not be offset by anticipated water reductions. Total water demand would increase by approximately 38% over existing water demand.

The primary water source to serve the increase in residential water demand would be groundwater. This water would be provided by the installation of additional private wells or new service connections that are available within existing local water districts in some portions of the unincorporated county. The majority of new rural residential land designations are located north of Vacaville in the Pleasant Valley area, overlying the Solano Subbasin, and west of the city of Fairfield near Green Valley, overlying the Napa-

Sonoma Volcanic Highlands and the Suisun–Fairfield Valley Subbasins. SID and RVNWD are the main water purveyors within these areas (Exhibit 4.5-1).

New population growth is also anticipated to occur within a special-purpose area located within the unincorporated county associated with the Middle Green Valley Project. This area lies west of the city of Fairfield (Exhibit 3-2). The special-purpose area overlies the Napa-Sonoma Volcanic Highlands and the Suisun–Fairfield Valley Subbasins; portions of this area are also located within the SID service area.

New industrial land uses within the unincorporated areas of the county are proposed east of Dixon, northeast of Vacaville, and in the area surrounding the community of Collinsville. The new industrial land use areas overlie the Solano Subbasin, and the proposed industrial area northeast of Vacaville is also located within the existing SID service area. The remaining new industrial land use areas are located outside of the existing service areas of local districts.

Within the unincorporated portions of the county, groundwater is supplied to some residents by private wells for residential and agricultural purposes. The majority of these private wells are installed within the shallow aquifer of the Solano Subbasin. Levels of groundwater consumption by private residences are largely unknown because there are no restrictions on groundwater use. The uncertainty of existing water demands within the unincorporated county is the factor causing the greatest difficulty in determining whether adequate groundwater supplies are available for new development proposed under the 2008 Draft General Plan.

### **Use of Solano Subbasin Groundwater**

RNVWD obtains its water supply from deep-aquifer groundwater wells installed within the Solano Subbasin. The RNVWD water distribution system has a capacity of 533 service connections. As of June 2008, the RNVWD system was servicing 214 connections. Assuming one connection per three-person household, RNVWD could serve an additional population of 957 persons without an expansion of existing water supplies. Because RNVWD serves areas exclusively within the incorporated portions of the county, this available water supply is considered to be reasonably foreseeable for new development; however, there are some uncertainties associated with the existing water distribution system and the reliability of groundwater quality within the deep aquifer underlying this region. One of two deep-water wells that are sources for the RNVWD water system have been taken offline because of elevated levels of arsenic. Groundwater monitoring within the RNVWD service area has indicated that groundwater levels in the shallow aquifer have experienced decreases of 18 feet within the shallow aquifer and 30 feet in the deep aquifer. The cause for the groundwater level decrease is not fully understood and additional monitoring is required.

SID serves primarily agriculture and some residential, municipal, and industrial customers and uses groundwater conjunctively with surface-water supplies. SID has a groundwater well network consisting of 29 wells ranging from 400 to 1,000 feet below the ground located within the Solano and Suisun-Fairfield Subbasins. Groundwater is used primarily to supplement irrigation demands in an area constrained by conveyance capacity for surface-water deliveries. The historical yield of the groundwater system is 15,000 afy. The current annual system yield is approximately 10,000 afy; however, the failures of a few wells have rendered them inoperative pending repair or replacement. SID has also reported an overall regional drop in groundwater elevations of 20–30 feet that is indicative of drought-like conditions (Markinson, pers. comm., 2008).

The Cities of Vacaville, Rio Vista, and Dixon also rely on groundwater from the Solano Subbasin for water supplies. The City of Vacaville has 12 wells, 11 of which withdraw water from the deep aquifer. Vacaville is proposing to expand the existing well field within the deep aquifer. The City of Vacaville did not report problems with elevated arsenic concentrations above applicable standards (City of Vacaville 2005). Vacaville could require up to 10,000 afy for long-term water demand (SCWA 2005a).

The city of Dixon has very high groundwater quality with low levels of arsenic (Cal Water 2008). Water is supplied within the Dixon planning area by DSMWS and Cal Water. DSMWS currently operates four wells with four additional wells reported to be planned for construction in 2005, while Cal Water operates eight wells with a ninth well reported to be under construction in 2005 (City of Dixon 2005). DSMWS estimates that its long-term water demand would be approximately 7,826 afy (SID 2005). Cal Water estimates that up to 3,809 afy would be required for long-term supplies (City of Dixon 2005).

The City of Rio Vista has a water supply system consisting of six wells at depths ranging between 500 and 1,000 feet, four of which are currently producing water supply. In 2002, annual groundwater consumption for Rio Vista was 1,799 afy (SCWA 2005a). A significant increase in pumping to meet long-term water demands is anticipated for Rio Vista. Groundwater elevation monitoring by the City of Rio Vista has not indicated a decrease in water elevation. There is some uncertainty about groundwater quality. Elevated concentrations of arsenic have been detected within some of the supply wells. The city is currently blending water from several groundwater sources in a storage reservoir to achieve drinking-water standards.

Other water purveyors in the county are likely to rely more on groundwater supplies in the future because of decreasing reliability of SWP water supplies. Groundwater demands also increase during dry years because surface-water supplies are less available. RD 2068 and MPWD prepared groundwater management plans and are considering the feasibility of implementing a conjunctive-use program that could include the future use of groundwater (RD2068 2005, MPWD 1995).

Substantial groundwater supplies are located within the Solano Subbasin within both the shallow and deep aquifers. According to the *North Solano Groundwater Resources Report* (Solano Water Authority 1995), the volume of water within the deep aquifer of the Solano Subbasin in Solano County northerly and easterly of the city of Vacaville (approximately 143 square miles) is estimated to be more than 2.7 MAF. The report also indicated that current pumping within the aquifer in 1995 was less than 10,000 afy. Assuming similar pumping today combined with the estimated long-term water demand associated with the 2008 Draft General Plan, estimated annual long-term water demand would be approximately 1.7% of the total estimated 2.7-MAF capacity of the underlying deep aquifer. The total long-term estimated pumping within this aquifer from other agencies, combined with estimated long-term annual demands as part of the 2008 Draft General Plan, would be well under 100,000 afy, or approximately 3.7% of the total estimated 2.7-MAF capacity of the underlying deep aquifer. The estimated storage capacity of the shallow aquifer was not identified in available reports.

An important consideration in identifying adequate water supply is considering the safe yield of the groundwater aquifer, which is usually defined as the annual draft of water that can be withdrawn without producing some detrimental results. Specific yields within portions of the Solano Subbasin have been calculated and reported (Solano Water Authority 1995). Within the Putah Creek fan region of the Solano Subbasin near Dixon, the safe average yield was determined to be 40,000 afy in 1955, based on assumptions and conditions present at that time, which was before the construction of the Solano Project and during times of heavy groundwater use for irrigation (Solano Water Authority 1995). Based on available reports, an aquifer-wide specific yield for the shallow or deep aquifers has not been calculated. For this reason, it is difficult to predict whether underlying groundwater would yield sufficient supplies to meet long-term water demands for new development proposed within the Solano Subbasin. Because there is no indication that groundwater within the county is in a permanent state of overdraft, short-term groundwater supplies to serve the new development within the unincorporated county are reasonably foreseeable; however, it is unknown whether there would be sufficient aquifer-wide yields to serve long-term water demands.

There are concerns that increased groundwater pumping would result in permanent overdraft of the underlying Tehama Formation aquifer. The aquifer was once subject to overdraft from heavy pumping from agriculture irrigation before the Solano Project was established. Overdraft of an entire aquifer could occur as a result of pumping exceeding the recharge of the aquifer, or in isolated areas of the aquifer where wells

are placed too close together. Sustained depletion of groundwater storage can diminish the productivity of wells altogether, induce or inhibit migration of water from one area of the subbasin to another, or redistribute supply. Overdraft could also contribute to land subsidence or loss of valuable Delta and riparian habitat. Because the main source of water supply for the 2008 Draft General Plan would be groundwater, there is also concern that overpumping of shallow-water wells could contribute to surface-water depletions, lead to habitat degradation, and potentially affect sensitive species located within the Delta and the creek systems within the county.

Extreme overdraft could occur when wells pump from aquifers that have no present source of recharge and are considered to be a nonrenewable resource. The source of groundwater recharge of the deep aquifer is largely unknown, and there are concerns that the deep aquifer receives very little recharge. As groundwater pumping increases within the deep aquifer, groundwater will need to be monitored more closely. Existing groundwater levels have been generally stable with typical seasonal and wet year–dry year fluctuations as a result of usage. One unconfirmed source of future recharge to the deep aquifer was reported from percolation of precipitation and stream seepage from foothill areas in the Sierra Nevada (Solano Water Authority 1995).

According to the *North Solano Groundwater Resources Report* and the groundwater management plans of SID and the City of Vacaville, the Solano Subbasin is in a current state of equilibrium, where groundwater levels are stable and at levels that preceded overdraft of the basin from the intense agricultural use of groundwater in the 1930s, before the establishment of the Solano Project. Decreases in groundwater levels within the shallow and deep aquifers have been reported within the RNVWD and SID service areas; however, the reason for the decreased water elevations is not fully understood and additional monitoring is required. SCWA has recently implemented a groundwater monitoring program to gather additional data on the deep aquifer. Three of the four deep-aquifer wells have been installed as part of the monitoring program. Monitoring data will provide better understanding of groundwater conditions within the deep aquifer.

### **Uses of Groundwater from the Napa-Sonoma Volcanic Highlands and the Suisun–Fairfield Valley Subbasins**

Surface water is the main water supply within areas overlying the Napa-Sonoma Volcanic Highlands and the Suisun–Fairfield Valley Subbasins. The City of Vallejo currently provides water service to unincorporated communities in the Green Valley/Suisun Valley areas.

A groundwater supply assessment of the Fairfield–Suisun Valley aquifer, conducted as part of the Rockville Trails Estates Residential Subdivision Project, identified studies indicating that 3,500–4,500 af of groundwater could be pumped annually from the Suisun-Fairfield area without overdraft (Creegan + D’Angelo 2005). The study was conducted before the Solano Project, and irrigation of the valley was provided by wells at that time. Since the Solano Project, those wells have been abandoned and irrigation water is now supplied from Lake Berryessa, through the Putah South Canal distribution system; therefore, estimated yields are considered to be conservative (Creegan + D’Angelo 2005). The assessment also reported that SID had estimated that current pumping in 2005 was approximately 400–1,000 afy, almost entirely from domestic wells. Based on the SID estimated consumption rates and the 185-afy annual demand from the Rockville Trails Estates Residential Subdivision (Creegan + D’Angelo 2005), up to approximately 2,316 afy of groundwater is considered to be a reasonably foreseeable water supply to serve the proposed new development within the Green Valley area. Based on these estimates, sufficient water supplies are reasonably foreseeable and would be able to meet the projected water demand for the additional 1,051 residents of the Middle Green Valley Special Project Area. However, there are some uncertainties about the groundwater within this subbasin, including poor water yield and elevated concentrations of boron and chloride (SID 1995).

The Napa-Sonoma Volcanic Highlands is a groundwater-bearing volcanic area. The southeast extent of the main formation surrounds the community of Green Valley in the northwest corner of Solano County. A

small, isolated pocket of the Napa-Sonoma Volcanic Highlands formation is also located along I-680 west of Grizzly Bay. Little is known about the water supply within this formation. No groundwater management plans cover water-bearing formations of the Napa-Sonoma Volcanic Highlands. Existing and potential beneficial uses of groundwater within this formation have not been established. This groundwater basin was added to the 2007 groundwater quality control plan for the San Francisco Bay Basin and beneficial use designation will be determined at a later date; for the interim, a site-by-site determinations will be made (San Francisco Bay RWQCB 2007). Until more information is obtained and beneficial use designations have been made for the Napa-Sonoma Volcanic Highlands; water from this formation is not considered to be a reasonably foreseeable water supply for proposed new development under the 2008 Draft General Plan.

### **Uses of Yolo Subbasin Groundwater**

Only a very small portion of the Yolo Subbasin is located in Solano County—the area directly south of the city of Davis and north of Putah Creek. The Yolo County Flood Control and Water Conservation District, RD 108, RD 2035, and RD 2068 have adopted groundwater management plans pursuant to AB 3030 for the Yolo Subbasin. UC Davis is also preparing a groundwater management plan. DWR’s Bulletin 118 reported studies that have estimated groundwater storage within the Yolo Subbasin to be more than 6 MAF, with yields ranging between 6.5% and 9.7% (DWR 2004). According to DWR’s Bulletin 118, long-term trends do not indicate any significant decline in water levels, with the exception of localized pumping depressions in the vicinity of the Davis, Woodland, and Dunnigan/Zamora areas. The portion of the Yolo Subbasin that is located within Solano County is located near the city of Davis. It is unknown whether groundwater levels in the Yolo Subbasin within the unincorporated portions of Solano County are influenced by the pumping depression associated with groundwater extraction by the City of Davis. No land use changes have been proposed under the 2008 Draft General Plan for the portion of the overlying the Yolo Subbasin; however, it is possible that infill agricultural residential development may occur. Groundwater supplies for areas of new development overlying the Yolo Subbasin are reasonably foreseeable based on long-term evaluations of the aquifer; however, there is some uncertainty about future availability of groundwater within in these areas because of the pumping depression associated with the City of Davis. Additional hydrologic evaluations would be required to determine the long-term availability of the groundwater supply.

### **Surface-Water Supplies**

The City of Vallejo currently provides water service to unincorporated communities in the Green Valley/Suisun Valley areas. In 2002, approximately 157 afy of the identified 400-afy safe yield from the Lakes System was used (SCWA 2005a). Up to a remaining 243 afy is considered to be a reasonably foreseeable water supply in normal years to serve the proposed new development within the Green Valley area, assuming that inflow stream needs will be continually provided from Lake Curry. In dry years approximately 70% of the 243 afy, or 170 afy, is reasonably foreseeable.

### **New Water Supplies**

Additional water supplies may be available from local water districts or cities that serve or could potentially serve areas within the unincorporated areas of the county. These water supplies would be available through new service connections from local water districts or agreements through SCWA or the County Board of Supervisors. Such agreements or new service connections would need to be developed. The County could also obtain new water supplies through area-of-origin water right appropriations or purchase water from outside of Solano County. New water supplies are considered a reasonably foreseeable water supply; however, the amount of new water supply is uncertain.

The most accessible new water sources to serve the unincorporated areas of Solano County are water from agriculture conversion, conservation and efficiency, gray water collection and reuse, water recycling, and desalination. These new water sources are most appropriate for nonpotable uses like irrigation. These new

water sources would then offset the use of high-quality water for demands that would not require high-quality water supplies.

It is anticipated that conversion of agricultural land would create a firm yield of additional groundwater or surface-water availability for unincorporated areas of the county; however, the extent of surplus water supplies is uncertain. The projected future water demand for the 2008 Draft General Plan does not assume that water conservation would reduce rates of water usage over time. It is likely that there would be some water reduction over the projected water demands for residential and agricultural land uses as a result of the many water conservation initiatives established by the County and local water districts. Because specific water conservation goals or efficiency projects for the unincorporated portion of the county have not been established, a specific water reduction cannot be quantified or considered to be a firm or reasonably foreseeable water source for the 2008 Draft General Plan.

Potential opportunities for development of desalinated water in Solano County, including waters from San Francisco Bay and treated wastewater, have been identified (SCWA 2005b). California currently allows only subsurface irrigation for gray water use. Some wastewater in Solano County has a high salt content, which makes recycling and reuse difficult and could contribute to groundwater degradation. Although these new water sources are possible, specific projects have not been established within the county; therefore, development of desalinated water is not considered a reasonably foreseeable water source.

As mentioned in Section 4.9.1, “Existing Conditions,” above, water provided in Solano County is derived from myriad sources. Unincorporated areas of the county are located both within and outside of existing MSAs. For this analysis, water provisions are divided into two categories: agricultural water service and domestic water service. The primary suppliers for agricultural water services include SID; MPWD; RDs 2068, 2098, 2060, and 2104; other reclamation districts; and local surface water. The primary suppliers for domestic water service include SID, the City of Vallejo, the City of Suisun City, the City of Vacaville, and RNVWD. Independent groundwater wells and local waterway diversions are utilized in areas where no service provider is available. The water districts mentioned rely on water largely from surface water sources, including primarily SCWA and the Solano Project, and the North Bay Aqueduct.

**Population versus Demand for Water**

The Association of Bay Area Governments’ regional population forecast projects that the population of unincorporated Solano County would be 26,000 by 2030. However, implementation of the 2008 Draft General Plan could result in an estimated population of 39,455 by 2030 if buildout of all residential designated land were to occur at average historic densities (Table 4.9-15).

<b>Table 4.9-15 Population Forecast for Buildout of the 2008 Draft General Plan</b>			
Existing Population (2000)	Projected Population with the 2008 Draft General Plan (2030)		ABAG Projections for Unincorporated Solano County (2030)
	Growth under the Preferred Plan	Growth with Total Buildout (Maximum Development Scenario)	
19,988	39,455	59,443	26,000
<small>Note: ABAG – Association of Bay Area Governments Sources: Solano County 2006, data provided by Solano County in 2008</small>			

As shown in Table 4.9-11 above, conservatively estimating an increase in demand for potable water of 100 gallons per person per day (Marin County 2007) would correspond to an additional demand for high-quality potable water of 2,184 afy with the Preferred Plan, based on population increase. As shown in Table 4.9-12

above, assuming that commercial land use generates 1,185.5 gpd per acre (Marin County 2007), the 2008 Draft General Plan would correspond to an additional demand for high quality potable water of 526 afy based on commercial acreage. The total projected water needs with the Preferred Plan would be 2,710 afy.

### **Agricultural Conversion and Rural Residential Land Uses**

Increases in land designated for residential, industrial, and commercial uses would result in conversions of irrigated agricultural acreage. Intensive irrigation of agricultural row crops typically consumes more water per acre than other land uses. According to DWR, irrigated agricultural crops typically consume 1 afy to 2.3 afy per acre, while suburban and urban residential uses typically consume 0.3 afy to 0.4 afy. Combined with effective water conservation, water recycling, and recharge practices, conversion of intensely irrigated agricultural land to typical urban uses can often result in a net decrease in water use.

Increases in rural residential land uses are largely proposed north of Vacaville, in the Pleasant Valley Area, and in Green Valley and Suisun Valley. The proposed residential land uses are located in currently developing areas and urban areas, to cluster new development corresponding to population growth near existing development, which would also encourage the use of existing water services, and would reduce the need for new infrastructure improvements. As mentioned in Section 4.9.1, "Existing Conditions," above, many of these areas are within existing MSAs. Areas north of Vacaville are served by the City of Vacaville, the Pleasant Valley area is within SID's service area, and Green Valley and Suisun Valley are within the service areas of the City of Vallejo and Suisun City. However, development would occur outside of MSAs, in which case water would be provided through annexation of additional properties into existing MSA boundaries associated with new development.

Projected population growth that would occur under the 2008 Draft General Plan would result in increases in water demand; however, the amount of increase would vary depending on future water use and management practices and the intensity and distribution of future land uses with future development. New development within the MSAs would rely on expansion of existing infrastructure; however, outside of existing MSAs, infrastructure would be limited to the existing providers' existing infrastructure with infill development.

Most new development would rely on groundwater wells. Groundwater and local supplies of surface water, which are the major water sources for areas outside of existing MSAs, are generally consistent but can fluctuate depending on factors such as well reliability, aquifer depletion, and water availability.

The Division of Environmental Health of the County's Department of Resource Management is responsible for permitting personal water wells and is ensuring that existing regulations are met in regard to water quality and supply. Long term sustainability of county water supplies depends on both natural conditions (e.g., climate, soil permeability, topography, hydrogeology) and water supply management practices (distribution, conservation, reuse, and enhancement of supplies).

### **Water Conservation Measures**

Water conservation measures are and would continue to be implemented to help reduce per capita water demands (SCWA 2005a). In Solano County, cities and special wastewater districts are responsible for wastewater treatment. Each of the cities and wastewater special districts has its own individual plan for water recycling. These efforts would be outlined in the individual cities' UWMPs. Water recycling is recognized as an important part in the Solano agencies' *Integrated Regional Water Management Plan* (IRWMP), but cities and districts are responsible for implementation (SCWA 2005a).

Environmental enhancement, habitat protection, and water supply operating restrictions resulting from endangered or threatened species may result in decreases in the total amount of water supplies available.

Limitations to water supply can affect reliability of the water supply, which in turn would affect the ability to support future population growth in Solano County cities and unincorporated areas.

SWP supplies are limited in dry years, resulting in concern about water supply reliability in such years. SWP contracts specify that all SWP contractors be reduced proportionally when there is a water shortage. Most SWP contractors are developing their own projects to augment SWP supplies, such as local facilities for surface water storage and groundwater banks. Many of the methods used to increase SWP supply are tied to statewide water issues. The California Bay-Delta Authority (i.e., the CALFED program) is implementing plans to enhance ecosystem restoration, increase water supply, promote efficient water use, improve water quality, and improve Delta levees. One of the main tenets of the authority is to seek improvements simultaneously in all of the facets of its programs.

SCWA, the primary water purveyor in the county, actively participates in planning to ensure that reliable water supplies are available to meet customers' needs and the growing current and future needs of the county. SCWA recently developed an IRWMP that identifies and prioritizes all the water resource-related actions for the Solano agencies, and prioritizes SCWA actions to maintain a continued water supply. SCWA prepares an UWMP every 5 years, consistent with the requirements set forth in the California Water Code. Furthermore, approval of specific plans and large-scale development projects located within the county would continue to require preparation of a WSA pursuant to the California Water Code to analyze the ability of water supplies to meet the needs of the project, in the context of existing and planned future water demands. State general plan law requires that the 2008 Draft General Plan incorporate these provisions.

Because water supply sources are not always contained within jurisdictional boundaries, cooperation and coordination between all relevant regulatory agencies, municipalities, public and private water suppliers, and other stakeholders is critical.

Significant improvements in water use efficiency, water reuse and reclamation, and water conservation are critical to the long-term viability of the county's water supplies. Several policies and programs contained in the 2008 Draft General Plan would encourage an increase in the role of water conservation and the role of safe, beneficial reuse of secondary- or tertiary-treated wastewater in meeting the water supply needs of both urban and rural users. However, although the policies below would encourage public water suppliers to act in accordance with county desires, they cannot be compelled to do so. As a result, these policies may not be effective in reducing water supply impacts.

### **Supply for Population Growth in the Unincorporated County**

Unincorporated areas of the county currently have access to approximately 263,445 afy of known water supply, which would continue to be utilized for agriculture, residential, commercial and industrial uses.

The County currently has permitted private groundwater wells within the Tehama Formation, the largest notable water aquifer, which has experienced a 30-foot drop in recent years. Demand for high-quality potable water under the Preferred Plan would be approximately 2,710 afy. Because the unincorporated areas currently have access to more than 263,445 afy of water, supply should be sufficient to provide for the proposed population growth in the unincorporated areas of the county. Portions of this increase in commercial and residential development would be a result of conversion of agricultural lands, which is known to use more water per acre than these other land uses. However, a large portion of the area that is being proposed for development in the 2008 Draft General Plan is currently nonirrigated land, outside of an existing service area of a water agency that could supply water. Consequently, most of the new development proposed in the 2008 Draft General Plan would require individual groundwater wells.

It should be noted that water supplies from other water sources, including groundwater wells, the various reclamation districts, and individual diversions from local waterways are largely not quantified in Solano County. The County began recording groundwater well installations in the late 1980s, and many wells were

established before this time. No record exists of those wells, and no projection can be made as to how much water they are using (Bell, pers. comm., 2006). Furthermore, agriculture is one of the largest consumers of water in the unincorporated county, and sources of water supply for agricultural properties include a large number of personal wells and surface water diversions from nearby waterways. Many of these diversions of surface water are not quantified, and it is currently unknown how much water is being used for agricultural purposes.

Conservation or reuse and reclamation practices, and acquisition of new water sources for additional water supply would continue to be required to support an IRWMP. Policies included in the 2008 Draft General Plan provide a framework for the County to pursue both avenues to ensure a sufficient water supply consistency for the county's growing population. Proposed policies encourage new developments in previously urbanized areas and the use of cluster developments to minimize sprawl and to limit the need for new infrastructure. Existing regulations requiring preparation of WSAs would ensure that larger projects proposed in unincorporated areas of the county prove that existing water capacity is available. These regulations, policies, and programs as well as those contained in Section 4.5, "Hydrology and Water Resources," would reduce the onset and severity of water supply deficiencies, which are presently unknown.

All lands outside of the jurisdictional boundaries of the seven incorporated cities compose unincorporated Solano County and constitute the geography to which the 2008 Draft General Plan would apply. As shown in Table 3-2 in Chapter 3, "Project Description," buildout of the 2008 Draft General Plan would result in a total (i.e., long term buildout to 2030) of 39,455 people, or an increase of approximately 19,467 people over the population of the existing land use (as of 2006). "Short term" is not specifically quantified or defined in either the SB 610/SB 221 regulations or in the decision in *Vineyard Citizens for Responsible Growth v. City of Rancho Cordova* (described in Section 4.5, "Hydrology and Water Resources"). "Short term" is therefore defined here as buildout to 2010. Using the total population projections of Table 4.5-5 to extrapolate the short term population change in the unincorporated areas results in a population of 22,585, an increase of 3,118 people compared with the population of the existing (2006) land use.

The water demands necessary to serve buildout of the 2008 Draft General Plan are shown in Tables 4.9-11 and 4.9-12. SCWA's water supply sources were calculated for all of Solano County, both the MSAs and the unincorporated areas that constitute buildout of the 2008 Draft General Plan. These water supply sources are shown in Tables 4.9-1 and 4.9-2.

### State Water Project Water Supply and Demand

The short term and long term water yield of the SWP North Bay Aqueduct is shown in Table 4.5-3. The County has contractual water through 2035 from the SWP. Although the total annual amount of SWP water for Solano County shown in Table 4.5-3 is the "Table A" allocation (i.e., the official SWP contractual amount) running to 2035 and renewable thereafter, the SWP will not be able to deliver its full contractual amount. For example, in 1991 and 1992, water allocations for SWP urban contractors were reduced to 30% and 45% of contracted supply, respectively, and in 2001 SWP supplies were curtailed to 39% of contracted supply. Several variables affect SWP deliveries: regulatory standards, operating rules, reservoir carryover supplies, demand in service areas, and most importantly, precipitation (SCWA 2005b). Table 4.9-16 shows the projected supplies and demands for Solano County under normal, single dry, and multiple dry years.

	Supply and Demand (afy)				
	2010	2015	2020	2025	2030
<b>Normal Water Year</b>					
Supply <sup>†</sup>	40,855	41,070	41,070	41,070	41,070

<b>Table 4.9-16</b>					
<b>SWP Water Supply and Demand for Solano County, 2010–2030</b>					
	Supply and Demand (afy)				
	2010	2015	2020	2025	2030
Demand <sup>2</sup>	47,506	47,756	47,756	47,756	47,756
<i>Difference (Supply minus Demand)</i>	(6,651)	(6,686)	(6,686)	(6,686)	(6,686)
<b>Single Dry Year</b>					
Supply <sup>3</sup>	29,929	30,086	30,086	30,086	30,086
Demand <sup>2</sup>	47,506	47,756	47,756	47,756	47,756
<i>Difference (Supply minus Demand)</i>	(17,577)	(17,670)	(17,670)	(17,670)	(17,670)
<b>Multiple Dry Years</b>					
Supply <sup>4</sup>	19,477	19,580	19,580	19,580	–
Demand <sup>2</sup>	47,506	47,756	47,756	47,756	–
<i>Difference (Supply minus Demand)</i>	(28,029)	(28,176)	(28,176)	(28,176)	
<b>Notes:</b>					
SWP – State Water Project					
<sup>1</sup> Assumes normal year supply is 86% of SWP contract amount.					
<sup>2</sup> Assumes demand is equal to contract amounts					
<sup>3</sup> Assumes single dry year supply is 63% of SWP contract.					
<sup>4</sup> Assumes multiple dry year supply is 41% of SWP contract.					
Source: SCWA 2005a					

Table 4.9-16 does not include Article 21 water, which is water that is available in excess of Table A contract amounts when there is water available in the Delta in excess of what can be pumped and stored in the SWP system. For North Bay Aqueduct water contractors, Article 21 water is available whenever the Delta is in excess conditions. Excess conditions in the Delta occur when the SWP and Reclamation's Central Valley Project are pumping the maximum amount allowed, all Delta standards are met, and water is still available for export. Although SCWA has not used its full SWP contract amount in many years, a simplifying conservative assumption for demand estimation in the UWMP was that users would utilize the full contractual amounts of SWP water. SWP contractors are allowed to carry over unused water to the next calendar year. "Carryover water" becomes the first water used in the following year (SCWA 2005a).

### **Putah Creek Accord**

Water rights to Solano Project water are solely for Solano County water users (SCWA 2005b). The Condition 12 Settlement Agreement placed a cap on future water development in the watershed of Lake Berryessa. The Putah Creek Accord, negotiated in 2000, provides instream flow needs for Putah Creek downstream of the Putah Diversion Dam. The settlement provides for increased flows to Putah Creek, but includes reduced flows when Lake Berryessa is low in storage and includes a process for addressing illegal diversion of surface water in Putah Creek. Before the settlement, approximately 21,000 afy was released to Putah Creek to meet instream flow needs. The settlement requires the previous release amount as a baseline, with additional flows at specified times. Additionally, set flows were required at specified downstream flow locations. In normal hydrologic conditions the additional flows from the settlement amount to about an additional 1,000 afy, or 22,000 afy. In drier years the amount of additional flows increases. The Putah Creek Accord is taken into account in calculating the firm yield described above in this chapter (SCWA 2005b).

### **Solano Project Drought Measures Agreement**

As part of the renewal of the water supply contract for the Solano Project, the contracting cities (Fairfield, Vacaville, Vallejo, and Suisun City) entered into an agreement with the two agricultural Solano Project

contracting districts (SID and MPWD) to share water supplies during drought periods. The “Drought Measures Agreement” was executed concurrently with the renewed Solano Project water supply agreements in 1999. The agreement is based on Solano Project storage levels, which trigger specific actions as follows:

- ▶ ~~When Solano Project storage is less than 800,000 af on December 1, a drought contingency plan is developed. If storage is greater than 1.1 million af by the following April 1, the plan is suspended.~~
- ▶ ~~When Solano Project storage is between 550,000 and 800,000 af on April 1, each of the parties to the agreement will forgo at least 5% of their contract amount that year. If storage is between 450,000 and 550,000 af on April 1, the parties forgo at least 10%. These forgone amounts are called “restricted carryover” and are credited to the party forgoing the water. This restricted carryover cannot be withdrawn from storage until Solano Project storage exceeds 800,000 af or is less than 450,000 af on a subsequent April 1. The concept is that the restricted carryover should not be used until conditions improve (storage in excess of 800,000 af) or worsen (storage less than 450,000 af). There is a further restriction for SID and MPWD.~~
- ▶ ~~If storage is less than 450,000 af, the restricted carryover can be used or sold only for municipal purposes. When April 1 storage is below 450,000 af, no restricted carryover is accumulated, and full contract amounts are available. Restricted carryover cannot exceed 50% of any party’s annual contract amount. Restricted carryover is in addition to any voluntary carryover that is allowed under the Solano Project contracts.~~
- ▶ ~~If Solano Project storage is less than 400,000 af on April 1, a drought emergency is declared. This will trigger the Solano Irrigation District Drought Impact Reduction Program. Under this program, SID growers will fallow land and provide up to 20,000 afy for voluntary sale to cities (not restricted only to those with Solano Project contracts). Such a drought fallowing program was implemented in 1991, creating 15,000 af of SID water that was sold to cities and SCWA.~~

## **Vallejo Agreements**

Vallejo often has water supplies in excess of its current needs. Vallejo has entered into agreements with Benicia, Napa County, and Fairfield for sales and exchanges. Other city water exchange and banking agreements are described in Section 4.5, “Hydrology and Water Resources.”

## **Relevant Goals, Policies, and Programs of the 2008 Draft General Plan**

Implementation of the following goals, policies, and implementation programs in the Resources and Public Facilities and Services chapters of the 2008 Draft General Plan would ensure that steps are taken to promote sufficient water supply and the distribution of water to users through adequate infrastructure and public facilities appropriately located to meet projected needs.

### **Resources Chapter**

- ▶ **Policy RS.P-65:** Together with the Solano County Water Agency, monitor and manage the County’s groundwater supplies.
- ▶ **Program RS.I-70:** Together with the SCWA and the cities, create and maintain a comprehensive database of information regarding groundwater supply and quality. Seek funding to complete a countywide groundwater study that fills the gaps among aquifer-specific studies. Coordinate with the SCWA to get more information on its groundwater study and subsequent groundwater management programs.

## ***Public Facilities and Services Chapter***

- ▶ **Goal PF.G-1:** Provide adequate public services and facilities to accommodate the level of development planned by the County.
- ▶ **Goal PF.G-2:** Ensure that residents throughout Solano County have access to essential public facilities and services.
- ▶ **Policy PF.P-1:** Provide public facilities and services essential for health, safety, and welfare in locations to serve local needs.
- ▶ **Policy PF.P-2:** Require new development and redevelopment to pay its fair share of infrastructure and public service costs.
- ▶ **Policy PF.P-3:** Increase efficiency of water, wastewater, stormwater, and energy use through integrated and cost-effective design and technology standards for new development and redevelopment.
- ▶ **Policy PF.P-4:** Ensure that adequate land is set aside within the unincorporated county for public facilities to support future needs.
- ▶ **Policy PF.P-5:** Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.
- ▶ **Policy PF.P-6:** Guide development requiring urban services to locations within and adjacent to cities.
- ▶ **Policy PF.P-7:** Coordinate with the cities to strongly encourage compact urban development within city urban growth areas to avoid unnecessary extension or reconstruction of roads, water mains, and services and to reduce the need for increased school, police, fire, and other public facilities and services.
- ▶ **Policy PF.P-8:** Notify the appropriate agencies (e.g., school districts, public safety, water) of new development applications within their service area early in the review process to allow sufficient time to assess impacts on facilities.
- ▶ **Policy PF.P-9:** Actively support efforts of the Solano County Water Agency, water districts, and regional water suppliers and distributors, to ensure that adequate high-quality water supplies are available to support current and future development projects in Solano County.
- ▶ **Policy PF.P-10:** Maintain an adequate water supply by promoting water conservation and development of additional cost-effective water sources that do not result in environmental damage.
- ▶ **Policy PF.P-11:** Promote and model practices to improve the efficiency of water use, including the use of water-efficient landscaping, beneficial reuse of treated wastewater, rainwater harvesting, and water-conserving appliances and plumbing fixtures.
- ▶ **Policy PF.P-12:** Protect the county's public water supply and delivery infrastructure from natural disasters or acts of terrorism.
- ▶ **Policy PF.P-13:** Support efforts by irrigation districts and others to expand Solano County's irrigated agricultural areas.
- ▶ **Policy PF.P-14:** In areas identified with marginal water supplies, require appropriate evidence of adequate water supply and recharge to support proposed development and water recharge.

- ▶ **Policy PF.P-15:** Domestic water for rural development shall be provided through the use of on-site individual wells or through public water service.
- ▶ **Policy PF.P-16:** Provide and manage public water service through public water agencies.
- ▶ **Policy PF.P-17:** Limit public water infrastructure to developed areas or those designated for future development to prevent growth-inducing impacts on adjoining agricultural or open space lands.
- ▶ **Policy PF.P-18:** The minimum lot size for properties to be served by individual on-site wells and individual on-site sewage disposal systems shall be 5 acres. Where cluster development is proposed with on-site wells and sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Policy PF.P-19:** The minimum lot size for properties to be served by public water service with individual on-site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on-site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater 2.5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Program PF.I-6:** Implement the recommendations from the *English Hills Specific Plan Groundwater Investigation* establishing minimum parcel sizes to ensure adequate groundwater supply and recharge for the English Hills area.
- ▶ **Program PF.I-9:** Continue to require preparation of a water supply assessment pursuant to the California Water Code to analyze the ability of water supplies to meet the needs of regulated projects, in the context of existing and planned future water demands. Review the availability of water to serve new developments in the unincorporated area before permitting such developments and ensure that the approval of new developments will not have a substantial adverse impact on water supplies for existing water users.
- ▶ **Program PF.I-11:** Require new development proposing on-site water supplies in areas identified with marginal water supplies to perform a hydrologic assessment to determine whether project plans meet the County's hydrologic standards.
- ▶ **Program PF.I-13:** Investigate the potential for innovative recycled water systems in Solano County, such as the use of greywater for domestic and agricultural purposes, and identify sources of funding for implementation of these systems.
- ▶ **Program PF.I-14:** Work with local partners and water agencies to educate the public about water conservation options, including landscaping, irrigation, low-water appliances, and other measures the public can take to reduce water use. Encourage water purveyors to provide incentives for customers that use water more efficiently.
- ▶ **Program PF.I-17:** Develop an information sharing program in cooperation with public water suppliers as necessary to make appropriate data available to the public pertaining to water supply and water use in each supplier's jurisdiction.

## Conclusion

~~Because of the relatively small increase in water demand of 2,710 afy with the population growth proposed under the Preferred Plan and the expected increase in available water supplies from the conversion of agricultural lands to other uses, current water supplies should be sufficient to serve the proposed growth in the unincorporated areas. However, incorporated areas of Solano County are expected to experience much~~

greater population growth through the planning period of the 2008 Draft General Plan. The entire county is projected to increase from a population of approximately 421,657 in 2005 to 677,628 by 2030 (SCWA 2005a). Because the population of unincorporated areas is projected to increase by 39,455, incorporated areas would experience an increase of approximately 216,500 persons.

Independent groundwater wells, including small systems and private wells, have no restrictions on the amount of water used and have not been currently quantified. The majority of water users in rural areas of the county would continue to be dependent on groundwater to meet their water needs. Uncertainty about long-term availability of water supplies and facilities and the lack of direct County jurisdiction over public water supplies in the region results in a level of uncertainty about the adequacy of future supplies in unincorporated areas. Further, recent depletion of the Tehama Formation aquifer would suggest that groundwater availability may also be compromised in the future. Therefore, this impact would be significant.

Short-term groundwater supplies are a reasonably foreseeable water supply for new development under the 2008 Draft General Plan. However, there is some uncertainty about the availability and adequacy of long-term groundwater supplies in Solano County because such supplies have not been adequately quantified. Because of this uncertainty, the availability of long-term water supplies for proposed new development and potential impacts as a result of insufficient supplies are also uncertain. The above-referenced regulatory requirements and proposed goals, policies, and programs in the 2008 Draft General Plan provide direction to successfully manage existing water supplies through coordination with other water agencies and groundwater users within Solano County. New water conservation and recycling programs established under the 2008 Draft General Plan would also promote the future availability of new water supplies. Program PF.I-11 would require new development proposing on-site water supplies in areas identified with marginal water supplies to perform a hydrologic assessment to determine whether project plans would meet the County's hydrologic standards. Policy PF.P-14 would also require appropriate evidence of adequate water supply and recharge to support proposed development, and water recharge would be required in areas identified with marginal water supplies. Implementation of these policies and programs would reduce the level of uncertainty about short-term water supply availability in areas where groundwater has already been established to be marginal.

Policy RS.P-65 and Program RS.I-70 call for the coordination of monitoring and management of the county's groundwater supplies, maintenance of a comprehensive database of information regarding groundwater supply and quality, efforts to obtain funding to complete a countywide groundwater study that fills the gaps among aquifer-specific studies, and coordination with SCWA to get more information on its groundwater study and subsequent groundwater management programs. These programs and policies would reduce the impacts of insufficient long-term water supplies by providing for collaboration with other groundwater users within the county to manage and obtain needed information to assess the condition of countywide groundwater resources. However, implementing the policies and programs of the 2008 Draft General Plan and fulfilling regulatory requirements would not completely avoid the uncertainty about whether sufficient long-term groundwater supplies would be available for proposed new development, or about the impacts of new water demands on long-term groundwater supplies. Therefore, this impact would be significant.

#### **Mitigation Measure 4.9-1a(1): Implement Measures to Ensure Sufficient Water Supplies for Development Projects.**

The County shall implement the following measures to ensure sufficient water supplies for land development projects in the unincorporated county under the 2008 Draft General Plan:

- ▶ Before approval of any project as defined in Part 2.10 of the California Water Code, the lead water supply agency shall comply with SB 610 requirements to ensure that adequate water supply is available and is sufficient to meet current and future demands.

- ▶ Before approval of any tentative small-lot subdivision map for a proposed residential project of more than 500 dwelling units (this requirement also applies to increases of 10% or more in service connections for public water systems with fewer than 500 service connections), the County shall comply with SB 221 requirements for verification of sufficient subdivision water supplies, as specified in Section 66473.7 of the Government Code.
- ▶ Before approval of any tentative small-lot subdivision map for a proposed residential project of 500 or fewer units, the County need not comply with Section 66473.7 or formally consult with the public water system that would provide water to a proposed subdivision, but shall nevertheless make a factual showing or impose conditions similar to those required by Section 66473.7 to ensure an adequate water supply for development authorized by the map.
- ▶ Before recordation of any final small-lot subdivision map, or before County approval of any project-specific discretionary approval or entitlement required for nonresidential land uses, the County or the project applicant shall demonstrate, based on substantial evidence, the availability of a long-term, reliable water supply from a public water system for the amount of development that would be authorized by the final subdivision map or project-specific discretionary nonresidential approval or entitlement. Such a demonstration shall consist of a written verification that existing sources are or will be available and that needed physical improvements for treating and delivering water to the project site will be in place before occupancy.
- ▶ The County shall comply with SB 221 requirements for verification of sufficient water supplies as specified in Section 66473.7 of the Government Code.
- ▶ Before County approval of any project-specific for industrial, special-purpose area, or public/quasi-public land use development, the County or the project applicant shall conduct a water supply assessment to demonstrate that there are sufficient projected water supplies to meet the projected demands of the project. The water supply assessment shall include the following components:
  - estimation of the safe yield from the underlying aquifer;
  - short-term and long-term water demands of the project for at least the next 20 years;
  - short-term and long-term available water supplies for at least the next 20 years;
  - comparison of short-term and long-term supply and demand;
  - comparison of the safe yield with the existing and future yields from the aquifer; and
  - disclosure of cumulative demands on the water source and disclosure of any shortcomings.

**Mitigation Measure 4.9-1a(2): Implement a Countywide Groundwater Balance Budget and Monitoring Program.**

Ongoing groundwater monitoring is critical for evaluating existing conditions and comparing groundwater extractions against projected sustainable yields on a countywide basis. To achieve this, a countywide groundwater balance budget shall be developed that incorporates the provisions of Policy RS.P-65, which calls for coordination with SCWA to monitor and manage the county’s groundwater supplies, and Program RS.I-70, which requires the County Department of Resource Management, together with SCWA and the cities, to create and maintain a comprehensive database of information about groundwater supply and quality, and to complete a countywide groundwater study that fills the gaps among disparate aquifer-specific studies in the county. The groundwater balance budget shall also address any potential groundwater supplies that may be required to maintain wetland features or wildlife habitat. This groundwater balance budget and monitoring program shall be implemented to facilitate evaluation of current groundwater conditions. It shall also provide evaluation of the effectiveness of the 2008 Draft General Plan goal, policies, and programs associated with Impact 4.5-4a in Section 4.5, “Hydrology and Water Resources,” that pertain to groundwater-recharge efforts and sustainable groundwater levels.

Mitigation Measure 4.9-1a(3): Comply with the Recommendations of the *North Solano Groundwater Resources Report* for a Staged Mitigation Plan.

The County, in coordination with SCWA, shall require certain new development projects, as specified below, to implement the following recommended principles of a “staged mitigation” monitoring plan from the *North Solano Groundwater Resources Report*:

1. Conduct a monitoring period of at least 5 years to establish a baseline condition of the aquifer.
2. If during this 5-year period static groundwater levels are observed to be dropping relative to historical levels or set thresholds, then invoke a 2-year cautionary period and increase monitoring.
3. If water levels do not recover or continue to drop during the cautionary period, then reduce groundwater dependency until groundwater levels stabilize.

The County shall apply this requirement specifically to new development projects within areas designated Water-Dependent Industrial that will demand a large amount of water (e.g., power plants) and within special-purpose areas, and to development projects requiring new community water systems that are subject to a permit from the County or DPH. Implementation of the above principles shall be required in order to enable the groundwater resources of the north central Solano County area to be safely managed and maintained into the future.

~~Although Mitigation Measure 4.9-1a(1) may work to reduce some portion of the impact associated with water supply, it would not reduce this impact to a less than significant level. Similarly, implementation of Mitigation Measure 4.9-1a(2) would partially reduce the impact of insufficient water supplies associated with uncertain future availability of groundwater. However, the ability of groundwater supplies to meet the increased water demand resulting from the implementation of the 2008 Draft General Plan would remain uncertain. For this reason, the impact would remain **significant and unavoidable**.~~

Mitigation Measure 4.9-1a(1) would reduce the impact associated with the uncertainty of long-term water supply by requiring that a water supply assessment demonstrate that long-term water supply is available before new industrial, public/quasi-public, or special-purpose areas are developed. The possibility of curtailing development would not need to be evaluated because project approval would depend on demonstrating that adequate water supplies would be available.

Mitigation Measure 4.9-1a(2) would reduce the level of uncertainty about availability of long-term water supplies countywide and would allow the county’s groundwater purveyors to better manage groundwater. A groundwater balance budget would also lead to better understanding of existing groundwater consumption by users of private wells and any groundwater demands necessary to ensure quality of wildlife habitat and wetland features. Mitigation Measure 4.9-1a(2) would also help to quantify the amount of groundwater stored within the aquifers underlying Solano County. Coordinated groundwater monitoring would identify whether increased water consumption would have an adverse impact on groundwater supplies.

Mitigation Measure 4.9-1a(3) would require that additional groundwater monitoring be performed for large water users. It would require that a staged mitigation plan be implemented to reduce the potential impacts on long-term water supplies from water consumption by new development proposed under the 2008 Draft General Plan. Implementing policies of the 2008 Draft General Plan along with the above-referenced mitigation measures would reduce the level of uncertainty about whether sufficient long-term water supplies would be available for new development. The policies and mitigation measures would establish monitoring protocols to evaluate the sufficiency of water supplies and would identify whether potential overdraft of the aquifer is occurring. Mitigation Measure 4.9-1a(3) would then require that reliance on groundwater be reduced until groundwater levels stabilize. Monitoring and staged mitigation would reduce the impact of new water demands on long-term water demands, should an unforeseeable overdraft occur.

For these reasons, with the implementation of Mitigation Measures 4.9-1a(1) through 4.9-1a(3) in conjunction with the policies and programs contained in the 2008 Draft General Plan, impacts associated with insufficient water supplies would be reduced to a less-than-significant level.

**IMPACT 4.9-1b** **Insufficient Water Supplies to Meet the Future Water Demand in Unincorporated Areas Served by the County – Maximum Development Scenario.** *Land uses and development consistent with the Maximum Development Scenario would increase the demand for water. Available water sources would be insufficient to serve some of the unincorporated areas of the county with the buildout of the Maximum Development Scenario. In areas with insufficient water supplies, new methods to obtain water and additional sources of supply would be required. This impact would be significant.*

This impact is similar to Impact 4.9-1a described above; however, the increased density of buildout for the Maximum Development Scenario would require additional water supply of ~~5,061~~ ~~2,531~~ afy over the Preferred Plan, for a total of ~~40,146~~ ~~5,241~~ afy (see Tables 4.9-11 and 4.9-12). For the same reasons as described above, this impact would be significant.

**Mitigation Measure 4.9-1b(1): Implement Measures to Ensure Sufficient Water Supplies for Development Projects.**

This mitigation measure is the same as Mitigation Measure 4.9-1a(1) for the Preferred Plan.

**Mitigation Measure 4.9-1b(2): Implement a Countywide Groundwater Balance Budget and Monitoring Program.**

This mitigation measure is the same as Mitigation Measure 4.9-1a(2) for the Preferred Plan.

**Mitigation Measure 4.9-1b(3): Comply with the Recommendations of the North Solano Groundwater Resources Report for a Staged Mitigation Plan.**

This mitigation measure is the same as Mitigation Measure 4.9-1a(3) for the Preferred Plan.

For the same reasons as described for the Preferred Plan, implementation of these mitigation measures would reduce the impact, but not to a **less-than-significant level**. ~~This impact would remain significant and unavoidable.~~

Impacts 4.9-2a and 4.9-2b on page 4.19-41 through 4.9-43 of the DEIR are revised as follows:

**IMPACT 4.9-2a** **New or Expanded Water Supply Facilities – Preferred Plan.** *Expansion and extension of water supply and distribution facilities is required for buildout of the 2008 Draft General Plan under the Preferred Plan. Although goals and policies have been identified to reduce impacts, construction of these facilities could result in significant effects on the environment. This impact would be significant.*

Demand for water would continue to increase with the population and job growth projected under the 2008 Draft General Plan, and the need for additional water supply facilities could increase. Increased density of development in unincorporated areas of the county would require provision of additional water. Portions of the unincorporated county where future growth could be expected would be located within existing MSAs, and would obtain services from those districts. Areas outside of MSA boundaries would be served through annexation of additional properties into existing MSA boundaries or would require individual water wells. Consequently, most of the new development would be expected to require individual wells.

Because groundwater would be the main source of future water supplies serving new residential populations and industrial land uses within the unincorporated areas of the county, new wells would be installed and

additional infrastructure may be required to provide operational, fire, and emergency storage for new development to ensure consistent groundwater supply. Infrastructure needs may include water distribution systems, treatment systems, or water storage facilities; however, these infrastructure needs would be evaluated on a project-by-project basis. Identifying specific infrastructure needs in this EIR would be speculative.

For unincorporated areas of the county also located within the service areas of local water districts, an expansion of service connections to local water agencies could include additional groundwater wells, water treatment facilities, pipelines, pump houses, and conveyance facilities to obtain, convey, and store groundwater or surface-water supplies. Facilities required to serve projected population growth and development could include additional groundwater wells, water treatment facilities within various service districts, pipelines, pump houses, and wells. As water reuse increases, facilities that recycle used water may also be needed, depending on the needs of each public water purveyor. The site-specific impacts of these facilities cannot be determined until such facilities are proposed and subjected to environmental review.

Typical impacts related to new or expanded facilities may include the following:

- ▶ exposure of soils to erosion and loss of topsoil,
- ▶ cumulative surface-water quality impacts,
- ▶ conversion of existing agricultural lands or resources,
- ▶ construction-related air emissions,
- ▶ construction-related and operational noise impacts,
- ▶ visual and/or light and glare impacts,
- ▶ increased energy use associated with pumps and other mechanical equipment, and
- ▶ loss of protected species and their habitats.

In addition, if local water districts expand to supply new customers that are currently outside the districts' existing service-area boundaries, a reduction of service levels could occur for existing customers. The development of new sources of groundwater and surface water and reductions in service levels could also cause adverse social and economic impacts such as an increase in water rates to cover new infrastructure and more frequent water use restrictions, and perhaps losses of agricultural yield or production at affected businesses.

The County would be responsible for determining project-specific impacts of new development that would require individual water wells or water systems within the unincorporated portions of the county. It would be the responsibility of those service districts where expansion is proposed to determine impacts as a result of water service expansion. ~~but would likely consist of impacts from construction related noise, dust, and grading. The fact that water facilities may be located near streams or water bodies would mean that impacts on fish and wildlife, erosion, and streamflow may also occur.~~

### **Relevant Policies and Programs of the 2008 Draft General Plan**

To meet the demands related to increased water facility and supply, several policies and programs in the 2008 Draft General Plan would reduce some of the environmental impacts related to the demand for new or expanded water facilities:

- ▶ **Policy PF.P-5:** Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.
- ▶ **Policy PF.P-6:** Guide development requiring urban services to locations within and adjacent to cities.

- ▶ **Policy PF.P-7:** Coordinate with the cities to strongly encourage compact urban development within city urban growth areas to avoid unnecessary extension or reconstruction of roads, water mains, and services and to reduce the need for increased school, police, fire, and other public facilities and services.
- ▶ **Policy PF.P-9:** Actively support efforts of the Solano County Water Agency, water districts, and regional water suppliers and distributors, to ensure that adequate high-quality water supplies are available to support current and future development projects in Solano County.
- ▶ **Policy PF.P-11:** Promote and model practices to improve the efficiency of water use, including the use of water-efficient landscaping, beneficial reuse of treated wastewater, rainwater harvesting, and water-conserving appliances and plumbing fixtures.
- ▶ **Policy PF.P-14:** In areas identified with marginal water supplies, require appropriate evidence of adequate water supply and recharge to support proposed development and water recharge.
- ▶ **Policy PF.P-16:** Limit public water infrastructure to developed areas or those designated for future development to prevent growth-inducing impacts on adjoining agricultural or open space lands.
- ▶ **Policy PF.P-19:** The minimum lot size for properties to be served by public water service with individual on site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater 2.5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Program PF.I-13:** Investigate the potential for innovative recycled water systems in Solano County, such as the use of greywater for domestic and agricultural purposes, and identify sources of funding for implementation of these systems.
- ▶ **Program PF.I-14:** Work with local partners and water agencies to educate the public about water conservation options, including landscaping, irrigation, low-water appliances, and other measures the public can take to reduce water use. Encourage water purveyors to provide incentives for customers that use water more efficiently.
- ▶ **Program PF.I-18:** Develop an information sharing program in cooperation with public water suppliers as necessary to make appropriate data available to the public pertaining to water supply and water use in each supplier's jurisdiction.

## Conclusion

Although the policies described above may reduce some of the adverse environmental impacts associated with the construction and operation of new or expanded water supply facilities, an analysis of site-specific impacts would be speculative ~~beyond the scope of this EIR~~. Such impacts would be evaluated as part of a separate environmental review for the individual project. This impact would be significant.

## Mitigation Measure

No mitigation is available beyond the updated 2008 Draft General Plan policies and programs discussed in the impact analysis above. This impact would remain **significant and unavoidable**.

**IMPACT 4.9-2b** **New or Expanded Water Supply Facilities – Maximum Development Scenario.** *Expansion and extension of water supply and distribution facilities is required for buildout of the 2008 Draft General Plan under the Maximum Development Scenario. Although goals and policies have been identified to reduce impacts, construction of these facilities that could result in significant effects on the environment. Although goals and policies have been identified to reduce impacts, construction of these facilities could result in significant effects on the environment. This impact would be significant.*

This impact is similar to Impact 4.9-2a described above; however, the increased density of buildout for the Maximum Development Scenario would increase demand for water facilities more than under the Preferred Plan. Although the policies described above may reduce some of the adverse environmental impacts associated with the construction and operation of new or expanded water supply facilities, analysis of site-specific impacts is beyond the scope of this EIR. Such impacts would be evaluated as part of a separate environmental review for the individual project. For the same reasons as described above, this impact would be significant.

#### Mitigation Measure

No mitigation is available beyond the updated 2008 Draft General Plan policies and programs discussed under Impact 4.9-2a above. This impact would remain **significant and unavoidable**.

The portion of the impact analysis for Impact 4.9-3a, “Increased Wastewater Treatment Demand – Preferred Plan,” included in the first two paragraphs of page 4.9-44 of the DEIR is revised as follows:

Buildout of the 2008 Draft General Plan under the Preferred Plan would result in increased urban development in unincorporated areas that would generate additional wastewater. Portions of new development would occur within MSAs, which would be provided wastewater services by those municipalities. The majority of new development approved by the County would occur outside MSAs and would be served by individual septic systems and a small number of centralized treatment systems. Development occurring within MSAs would be approved by cities through annexation, and the cities would be responsible for providing wastewater services.

According to the Preferred Plan buildout scenario, development requiring municipal services would be encouraged near existing developed and urbanized areas within MSAs, where existing infrastructure is currently available. Such development would be approved by cities through annexation. The County anticipates additional residential development and some agricultural industrial development occurring in rural portions of the county. Population projections used in this analysis to estimate wastewater generated as a result of anticipated future growth include only areas outside of existing MSAs, which would rely on individual on-site wastewater systems; larger developments that would generate the equivalent wastewater to 200 or more units may be served by centralized systems. As shown in Table 4.9-12 above, the Preferred Plan would generate an additional 1.46 mgd of wastewater related to residential developments. As shown in Table 4.9-13 above, the Preferred Plan would result in 0.21 mgd of generated wastewater related to residential developments in unincorporated areas outside MSAs, while the Maximum Development Scenario would result in the generation of 0.65 mgd of residential wastewater. As shown in Table 4.9-14, nonresidential land uses would result in a generation of 2.9 mgd of wastewater under the Preferred Plan and the Maximum Development Scenario.

The list of policies and programs of the 2008 Draft General Plan relevant to Impact 4.9-3a (and Impact 4.9-3b) on pages 4.9-44 and 4.9-45 of the DEIR is revised as follows:

## Relevant Policies and Programs of the 2008 Draft General Plan

The following policies and programs in the 2008 Draft General Plan address wastewater and provide a framework to ensure that sufficient wastewater capacity is provided:

- ▶ **Policy PF.P-2:** Require new development and redevelopment to pay its fair share of infrastructure and public service costs.
- ▶ **Policy PF.P-4:** Ensure that adequate land is set aside within the unincorporated county for public facilities to support future needs.
- ▶ **Policy PF.P-5:** Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.
- ▶ **Policy PF.P-6:** Guide development requiring urban services to locations within and adjacent to cities.
- ▶ **Policy PF.P-7:** Coordinate with the cities to strongly encourage compact urban development within city urban growth areas to avoid unnecessary extension or reconstruction of roads, water mains, and services and to reduce the need for increased school, police, fire, and other public facilities and services.
- ▶ **Policy PF.P-17:** The minimum lot size for properties to be served by individual on-site wells and individual on-site sewage disposal systems shall be 5 acres. Where cluster development is proposed with on site wells and sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Policy PF.P-18:** The minimum size for properties to be served by public water service with individual on site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 2.5 acres per parcel and that no individual parcel is less than on acre in size.
- ▶ **Policy PF.P-19:** The minimum size for properties to be served by public water service with individual on-site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 2.5 acres per parcel and that no individual parcel is less than 1 acre in size.
- ▶ **Program PF.I-1:** Use the County's Capital Improvement Program to identify, plan, and provide for future public facilities and improvements. Capital Improvement Program projects shall be reviewed annually for consistency with General Plan policies and coordinated with current and future development.
- ▶ **Program PF.I-4:** Coordinate with the cities and the Solano County Local Agency Formation Commission to ensure that urban development in areas included within the cities' municipal service areas are served by a full range of urban services (e.g., public water and sewer, public transit, safety and emergency response services, parks, trails, open spaces) through city annexation.
- ▶ **Program PF.I-5:** Maintain the zoning ordinance to specify minimum lot sizes for properties with on-site sewage and on-site wells.
- ▶ **Program PF.I-21:** When reviewing development proposals,

- Require septic systems to be located outside of primary groundwater recharge areas, or where that is not possible, require shallow leaching systems for disposal of septic effluent.
  - Require new septic systems or leach fields to be installed at least 100 feet away from natural waterways, including perennial or intermittent streams, seasonal water channels, and natural bodies of standing water. Make an exception for the repair of existing systems if the 100-foot setback area cannot be maintained and if adequate provisions are made for protecting water quality.
  - Require the use of alternative wastewater treatment techniques to respond to site characteristics, as determined by the California Department of Health Services and regional water quality control boards.
  - Require new development with septic systems to be designed so as to prevent nitrates and other pollutants of concern from septic disposal systems from impairing groundwater quality.
- ▶ **Program PF.I-22:** On-site sewage disposal systems for individual lots and subdivisions may be operated by private property owners. A public agency shall permit and manage centralized community sewage disposal systems. If lands proposed for community sewage disposal systems are not within the boundaries of an existing public sewage treatment agency, the Board of Supervisors shall, as a condition of development, designate a public agency to provide and manage the sewer service, which may be contracted to a private entity with oversight by the public entity. Sewer treatment facilities shall be designed to provide sewer service to developed areas and areas designated for future development within the General Plan.

Mitigation Measures 4.9-3a and 4.9-3b on pages 4.9-45 and 4.9-46 of the DEIR are revised as follows. (Please note that although only Mitigation Measure 4.9-3a is shown here, the changes apply to Mitigation Measure 4.9-3b as well.)

**Mitigation Measure 4.9-3a: Implement Measures to Ensure Sufficient Wastewater Collection and Removal Systems for Development Projects.**

The County shall implement the following measures to ensure the availability of adequate wastewater collection, treatment, and removal systems for land development projects in the unincorporated county under the 2008 Draft General Plan:

- ▶ Before approval of any tentative subdivision map for a proposed residential project, the County shall formally consult with the wastewater system provider that would serve the proposed subdivision to make a factual showing or impose conditions to ensure the availability of an adequate wastewater removal system for the proposed development, including provisions for collection, treatment, and disposal of the contents of septic systems.
- ▶ Before recordation of any final small-lot subdivision map, or before County approval of any project-specific discretionary approval or entitlement for nonresidential land uses, the County or the project applicant shall demonstrate, based on substantial evidence, the availability of a long-term, reliable wastewater collection system for the amount of development that would be authorized by the final subdivision map or project-specific discretionary nonresidential approval or entitlement. Such a demonstration shall consist of a written verification that existing treatment capacity is or will be available and that needed physical improvements for treating wastewater from the project site will be in place before occupancy and permitted under applicable regulatory programs.

Although implementation of Mitigation Measure 4.9-3a would assist the County in ensuring that sufficient service capacity is available to serve future growth projected in the 2008 Draft General Plan it

would not reduce this impact to a less-than-significant level. For this reason, the impact would remain **significant and unavoidable**.

The list of policies and programs of the 2008 Draft General Plan relevant to Impact 4.9-4a (and Impact 4.9-4b) on pages 4.9-47 and 4.9-48 of the DEIR is revised as follows:

### ***Public Facilities and Services Chapter***

- ▶ **Policy PF.P-2:** Require new development and redevelopment to pay its fair share of infrastructure and public service costs.
- ▶ **Policy PF.P-3:** Increase efficiency of water, wastewater, stormwater, and energy use through integrated and cost-effective design and technology standards for new development and redevelopment.
- ▶ **Policy PF.P-5:** Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.
- ▶ **Policy PF.P-17:** The minimum lot size for properties to be served by individual on site wells and individual on site sewage disposal systems shall be 5 acres. Where cluster development is proposed with on site wells and sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 5 acres per parcel and that no individual parcel is less than one acre in size.
- ▶ **Policy PF.P-18:** The minimum size for properties to be served by public water service with individual on site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than 2.5 acres per parcel and that no individual parcel is less than one acre in size.
- ▶ **Policy PF.I-21:** When reviewing development proposals,
  - Require septic systems to be located outside of primary groundwater recharge areas, or where that is not possible, require shallow leaching systems for disposal of septic effluent.
  - Require new septic systems or leach fields to be installed at least 100 feet away from natural waterways, including perennial or intermittent streams, seasonal water channels, and natural bodies of standing water. Make an exception for the repair of existing systems if the 100-foot setback area cannot be maintained and if adequate provisions are made for protecting water quality.
  - Require the use of alternative wastewater treatment techniques to respond to site characteristics, as determined by the California Department of Health Services and regional water quality control boards.
  - Require new development with septic systems to be designed so as to prevent nitrates and other pollutants of concern from septic disposal systems from impairing groundwater quality.
- ▶ **Policy PF.P-22:** Ensure that new and existing septic systems and sewage treatment systems do not negatively affect groundwater quality.

The first two paragraphs of the text of Impact 4.9-5a on pages 4.9-48 and 4.9-49 of the DEIR, regarding waste generation projections and the ability of existing facilities to serve the proposed buildout of the 2008 Draft General Plan, are revised as follows:

Growth permitted under the 2008 Draft General Plan would result in additional solid waste in Solano County. The Preferred Plan would project the generation of 19,467 new residents, which, based on EPA's estimated individual solid-waste generation rate of 4.6 pounds per day per person, would result in the generation of approximately 16,342 tons of garbage per year. Implementation of the Preferred Plan would result in an additional 4,557,801 square feet of commercial development. The California Integrated Waste Management Board estimates the solid waste generation rates for commercial establishments at approximately 5 pounds per 1,000 square feet per day, which is taken from the County of Los Angeles Department of Regional Planning, Vesting Tentative Tract No. 47905 (CIWMB 2008a). According to this generation rate, implementation of the Preferred Plan would result in the generation of approximately 4,158 tons of garbage per year. Implementation of the Preferred Plan would result in an additional 6,001,930 square feet of industrial development. The California Integrated Waste Management Board estimates the solid waste generation rates for industrial establishments at approximately 5 pounds per 1,000 square feet per day, which is taken from the Stevenson Ranch DEIR (Phase IV) (CIWMB 2008b). According to this generation rate, the Preferred Plan would result in the generation of approximately 5,158 tons of garbage per year.

The Hay Road Landfill currently accepts approximately 2,400 tons per day, and the Potrero Hills Landfill accepts approximately 1,500 tons per day (Solano County 2003). The Hay Road Landfill has existing capacity and is expected to remain in operation for approximately 64 years, while the Potrero Hills Landfill has existing capacity and is projected to remain in operation until approximately 2058. The current and planned capacity of the Potrero Hills Landfill and the Hay Road Landfill would be sufficient to serve the population growth and commercial and industrial development projected to occur under the 2008 Draft General Plan with the Preferred Plan, which could add 60 tons per day at full buildout—45 tons per day based on population growth and 15 tons per day based on commercial and industrial uses.

The text of Impact 4.9-5b on page 4.9-50 of the DEIR, regarding waste generation projections and the ability of existing facilities to serve the proposed buildout of the 2008 Draft General Plan under the Maximum Development Scenario, is revised as follows:

This impact is similar to Impact 4.9-5a described above; however, the increased density of buildout for the Maximum Development Scenario would increase the demand for solid-waste services above that of the Preferred Plan. The Maximum Development Scenario would result in generation of additional solid waste in Solano County. ~~Generation of An additional~~ 42,117 new residents ~~is~~ are projected, which, based on EPA's estimated individual solid-waste generation rate of 4.6 pounds per day per person, would result in the generation of 35,357 tons of garbage per year.

Implementation of the Maximum Development Scenario would result in an additional 9,378,007 square feet of commercial development. The California Integrated Waste Management Board estimates the solid waste generation rates for commercial establishments at approximately 5 pounds per 1,000 square feet per day, which is taken from the County of Los Angeles Department of Regional Planning, Vesting Tentative Tract No. 47905 (CIWMB 2007a). According to this generation rate, implementation of the Preferred Plan would result in the generation of approximately 8,557 tons of garbage per year. Implementation of the Preferred Plan would result in 12,694,063 square feet of industrial development. The California Integrated Waste Management Board estimates the solid waste generation rates for industrial establishments at approximately 5 pounds per 1,000 square feet per day, which is taken from the Stevenson Ranch DEIR (Phase IV) (CIWMB 2007b). According to this generation rate, the Preferred Plan would result in the generation of approximately 11,268 tons of garbage per year.

The Hay Road Landfill currently accepts approximately 2,400 tons per day, and the Potrero Hills Landfill accepts approximately 1,500 tons per day (Solano County 2003). The Hay Road Landfill has existing capacity and is expected to remain in operation for approximately 64 years, while the Potrero Hills Landfill has existing capacity and is projected to remain in operation until approximately 2058. The current and planned capacity of the Potrero Hills Landfill and the Hay Road Landfill would be sufficient to serve the population growth projected to occur under the 2008 Draft General Plan with the Maximum Development Scenario, which could add 149 tons per day at full buildout—96 tons per day based on population growth and 53 tons per day based on commercial and industrial uses.

Implementation of policies in the 2008 Draft General Plan would ensure that the County complies with applicable regulations related to the disposal and reduction of solid waste, and in general reduces the amount of solid waste it disposes of. Therefore, with implementation of the proposed policies in the 2008 Draft General Plan, as well as compliance with the California Integrated Waste Management Act, this impact would be less than significant.

The first paragraph of Impact 4.9-8a on page 4.9-52 of the DEIR is revised as follows:

Implementation of the 2008 Draft General Plan would allow for additional residents, businesses, and other development, which would increase the need for law enforcement services provided by the County Sheriff's Office.

The Solano County Sheriff's Office currently has 123 sworn officers, 83 of whom serve the unincorporated areas of Solano County. The department does not have a minimum service level ratio standard (Pistochini, pers. comm., 2008). The County maintains a minimum safety patrol of six deputies and one sergeant on duty at all times. Additional service needs would be determined based on future growth and would be funded by the County (Ferrara, pers. comm. 2008). The department indicates that it would be capable of providing services to future development resulting from implementation of the 2008 Draft General Plan (Ferrara, pers. comm., 2008).

## **SECTION 4.10, "CULTURAL AND PALEONTOLOGICAL RESOURCES"**

The first paragraph on page 4.10-4 of the DEIR is revised as follows:

Several ethnohistorical and ethnographic accounts describe the Patwin and the Miwok who were the native inhabitants of what is now Solano County (Kroeber 1925, 1932; Maloney 1943, 1944; McKern 1922, 1923; Powers 1976 [1877]). When Europeans first entered central California, the area west of the Sacramento River and north of Suisun Bay was occupied by a series of linguistically and culturally related tribelets. ~~These groups appeared to have no political unity or collective identity, but did speak dialects of the same historically related language.~~ This linguistic similarity led Powers (1877) to call the groups "Patwin," a term each group used in reference to themselves. The Patwin, along with their neighbors the Nomlaki and Wintu, are Wintuan speakers. The Wintuan language is part of the larger Penutian language family, which also includes Miwok, Maidu, Costanoan, and Yokuts.

The bulleted list on page 4.10-26 of the DEIR is revised as follows:

- ▶ The project applicant shall conduct a records search at the NWIC to access the existing archival database for historical built-environment resources, and to obtain recommendations for additional study, if appropriate.
- ▶ The project applicant shall implement the recommendations of the NWIC as pertains to additional study. If an architectural study is recommended, the County shall require that the work be conducted for the project applicant by a qualified architectural historian. (A qualified architectural historian is defined as an individual who meets the Secretary of the Interior's Professional Qualifications

Standards in architectural history [36 Code of Federal Regulations 61].) At a minimum, the study shall enable the County to determine:

- whether the building or structure qualifies as a historical resource (as defined at 14 CCR Section 15064.5);
  - whether there would be a substantial adverse change in the significance of the resource (if it does so qualify); ~~and~~
  - whether local historical organizations were consulted and afforded an opportunity to provide input during the architectural study; and
  - if a substantial adverse change would occur, what steps can be taken to avoid, minimize, or offset such impacts.
- ▶ If the building or structure qualifies as a historical resource, and a substantial adverse change in its significance would occur, the County shall require the project applicant to implement feasible mitigation as recommended by the architectural historian. The objective of the mitigation shall be to substantially lessen the material impairment of the resource's significance in accordance with the requirements of 14 CCR Section 15041(a).

The second and third bullets in the bulleted list on page 4.10-28 of the DEIR are revised as follows:

- ▶ The project applicant shall implement the recommendations of the NWIC. If additional architectural study is recommended (either to evaluate the significance of an unevaluated building or structure, or to develop mitigation recommendations for a previously identified historical resource), the County shall require that the work be conducted for the project applicant by a qualified architectural historian. At a minimum, the evaluation study shall enable the County to determine:
- whether the building or structure qualifies as a historical resource (as defined at 14 CCR Section 15064.5);
  - whether there would be a substantial adverse change in the significance of the resource (if it does so qualify); ~~and~~
  - whether local historical organizations were consulted and afforded an opportunity to provide input during the architectural study; and
  - if a substantial adverse change would occur, what steps can be taken to avoid, minimize, or offset such impacts.
- ▶ If the building or structure qualifies as a historical resource, and a substantial adverse change in its significance would occur, the County shall require the project applicant to implement feasible mitigation as recommended by the architectural historian. The objective of the mitigation shall be to substantially lessen the material impairment of the resource's significance in accordance with the requirements of 14 CCR Section 15041(a).

The bulleted list on page 4.10-29 of the DEIR is revised as follows:

- ▶ The project applicant shall implement the recommendations of the NWIC. If additional architectural study is recommended (either to evaluate the significance of an unevaluated adjacent building or structure, or to develop mitigation recommendations), the County shall require that the work be

conducted for the project applicant by a qualified architectural historian. At a minimum, the evaluation study shall enable the County to determine:

- whether the buildings or structures adjacent to the project site qualify as a historical resource (as defined at 14 CCR Section 15064.5);
  - whether there would be a substantial adverse change in the significance of those resources (if they do so qualify); ~~and~~
  - whether local historical organizations were consulted and afforded an opportunity to provide input during the architectural study; and
  - if a substantial adverse change would occur, what steps can be taken to avoid, minimize, or offset such impacts.
- ▶ If the buildings or structures adjacent to the project site qualify as a historical resource, and a substantial adverse change in its significance would occur, the County shall require the implementation of feasible mitigation as recommended by the architectural historian. The objective of the mitigation shall be to substantially lessen the material impairment of the resources' significance in accordance with the requirements of 14 CCR Section 15041(a).

The first bullet in the bulleted list on page 4.10-31 of the DEIR is revised as follows:

- ▶ Project applicants shall prepare cultural resources studies for all development projects requiring discretionary County approval, based on the recommendations made by the NWIC as part of the records search. Each cultural resources study shall be conducted by an individual listed on the consultant list maintained by the NWIC. The scope of the study shall be tailored to the nature of the project, the sensitivity of the project area, and community concern about potential project effects (e.g., Native American community concerns about human remains and prehistoric archaeological deposits). The professional judgment of the NWIC staff, cultural resources consultant and County planning staff shall be the primary basis for determining the level of effort for the study. Not every development review for cultural resources will require the same level of effort. At a minimum, the study shall provide the technical basis for the County to make the following determinations:
- whether there are any historical resources (as defined at 14 CCR Section 15064.5) or unique archaeological resources (as defined at PRC Section 21083.2[g]) in the project area;
  - whether there would be a substantial adverse change in the significance of such resources as a result of the project;
  - if a substantial adverse change would occur, what steps can be taken to avoid, minimize, or offset such impacts; and
  - whether Native American tribal and historical organizations were consulted during the cultural resources analysis (particularly the Native American Heritage Commission and Native American individuals identified by the Commission), and if such organizations were afforded ~~provided~~ an opportunity to comment on the ~~adequacy of the cultural resources study, or about the conclusions and recommendations therein~~ of the cultural resources study.

## **SECTION 4.12, “ENERGY”**

the following text and table are added after the paragraph under “Electricity” on page 4.12-1 of the DEIR :

Table 4.12-1 shows the amount of current energy usage in Solano County in 2006–2007 as calculated by PG&E.

<b>Table 4.12-1 Solano County Electricity and Natural Gas Usage, 2006–2007</b>		
<u>Sector</u>	<u>Electricity Usage (1,000 kWh)</u>	<u>Natural Gas Usage (1,000 Therms)</u>
Residential	696,547	36,460
Nonresidential*	1,199,581	51,600
<b>Total</b>	<b>1,896,128</b>	<b>88,061</b>
<u>Notes: kWh = kilowatt-hours</u>		
<u>This information excludes Benicia and Vallejo, which are located in a separate service area. Information from Benicia and Vallejo was not available in time for inclusion in this document.</u>		
<u>*Information provided by Pacific Gas and Electric Company groups Commercial, Industrial, and Agricultural use together.</u>		
<u>Source: Bond, pers. comm., 2008</u>		

The following text and table are added following the third paragraph of discussion under Impact 4.12-1a on page 4.12-12 of the DEIR (please note that all subsequent tables in Section 4.12, and text references to these tables, are renumbered to reflect the insertion of the new tables below):

Table 4.12-2 shows the projected electricity and natural gas demand based on population growth and nonresidential acreage in the unincorporated areas of Solano County pursuant to implementation of the 2008 Draft General Plan. Assumptions are made based on energy use per capita for residential areas and energy use per square foot for nonresidential land uses. According to energy generation rates provided by PG&E, the preferred plan would potentially generate a demand for up to 117,317 kW of electricity and 25,592 Therms of natural gas per year.

<b>Table 4.12-2 Projected Electricity and Natural Gas Demand based on Population Growth and Nonresidential Acreage in the Unincorporated Areas of Solano County</b>			
<u>Preferred Plan</u>			
<u>Land Use</u>	<u>Proposed Buildout</u>	<u>Electricity (1,000 kW)</u>	<u>Natural Gas (1,000 Therms)</u>
<u>Residential</u>	<u>4,942 Units*</u>	<u>32,840<sup>2</sup></u>	<u>9,019<sup>1</sup></u>
<u>Nonresidential</u>	<u>10,559,731 Square Feet*</u>	<u>84,477<sup>4</sup></u>	<u>16,573<sup>3</sup></u>
<b><u>Total</u></b>		<b><u>117,317</u></b>	<b><u>25,592</u></b>
<u>Maximum Development Scenario</u>			
<u>Land Use</u>	<u>Proposed Buildout</u>	<u>Electricity (1,000 kW)</u>	<u>Natural Gas (1,000 Therms)</u>
<u>Residential</u>	<u>12,729 Units*</u>	<u>32,840<sup>2</sup></u>	<u>23,230<sup>1</sup></u>
<u>Nonresidential</u>	<u>21,727,070 Square Feet*</u>	<u>173,816<sup>4</sup></u>	<u>34,100<sup>3</sup></u>
<b><u>Total</u></b>		<b><u>206,656</u></b>	<b><u>57,330</u></b>

**Table 4.12-2**  
**Projected Electricity and Natural Gas Demand based on Population Growth and Nonresidential Acreage in the Unincorporated Areas of Solano County**

Notes:

kW = kilowatts

Nonresidential electricity and natural gas generation varies greatly by type of development and actual use, and the rates used are considered a rough estimation.

<sup>1</sup>Residential natural gas projections are calculated based on a per unit estimate assuming 1,825 Therms per unit per year (Lee, pers. comm., 2008).

<sup>2</sup>Residential electricity projections are calculated based on 5 kW per unit (Gardner, pers. comm., 2008).

<sup>3</sup>Nonresidential projections are estimated assuming 430 British thermal units (Btu) per square foot per day (1 Btu = 100,000 Therms) of natural gas (Lee, pers. comm., 2008).

<sup>4</sup>Nonresidential electricity projections are calculated based on 8 kW per square foot (Gardner, pers. comm., 2008).

\*Buildout estimates are generated based on land uses proposed in the 2008 Draft General Plan.

Source: Data provided by EDAW in 2008

The following policy is added to the bulleted list of policies beginning on page 4.12-12:

- ▶ Policy LU.P-1: Collaborate with cities to guide development to the county’s urban centers and promote compact development.

The discussion of Impact 4.12-1b on page 4.12-13 of the DEIR is modified as follows:

**IMPACT 4.12-1b** **Effects on Energy Consumption from Land Use Locations and Patterns – Maximum Development Scenario.** *Buildout of the 2008 Draft General Plan under the Maximum Development Scenario could affect energy usage through inefficient land use patterns that increase dependency on single-occupant vehicles; however, the proposed land use patterns and goals and policies would promote compact, cluster developments in the vicinity of existing infrastructure and developed areas, which would reduce transportation-related energy usage and the need for expanded infrastructure. This impact would be less than significant.*

This impact is similar to Impact 4.12-1a above, although the increased density of development under the Maximum Development Scenario would potentially generate a demand for up to 206,656 kW of electricity and 57,330 Therms of natural gas per year ~~result in a higher overall level of demand for energy.~~ Implementation of policies and a program in the 2008 Draft General Plan would support increasing energy efficiency and would assure that implementation of the plan under the Maximum Development Scenario would not result in increased energy demands from wasteful land use planning. For the same reasons as described above for the Preferred Plan, under the Maximum Development Scenario this impact would be less than significant.

## **SECTION 4.14, “RECREATION”**

The bulleted list and text following the bulleted list on page 4.14-1 of the DEIR is revised as follows:

- ▶ Lake Solano Park is located at the base of the Coast Range foothills west of Winters and at the north end of the county along Putah Creek. The park contains a campground, picnic sites, group picnic facilities, a free boat launch for nonpowered vessels, parking, and public restrooms.
- ▶ Sandy Beach Park is located near Rio Vista on the Sacramento River. The park has a boat-launch ramp, campsites, picnic grounds, a hiking trail, roads for bicycling and driving, a beach, and volleyball and horseshoe pitch courts.

- ▶ Belden’s Landing Water Access Facility is located southeast of Suisun City in the Montezuma Slough/Grizzly Island area. The day-use facility includes a boat-launch ramp, a fishing pier, restrooms, and parking.
- ▶ Rockville Hills Regional Park is located in the unincorporated area but is owned and managed by the City of Fairfield.

In addition, although it is not a County park, Rockville Hills Regional Park is located in the unincorporated county. This park is owned and managed by the City of Fairfield. No neighborhood or community parks are located in the unincorporated area.

The text of the “City Parks” section within Section 4.14.1 on page 4.14-2 of the DEIR, beginning with the second paragraph, is revised as follows:

Dixon has ~~four~~ seven parks — ~~Hall Park, Northwest Park, Women’s Improvement Club Park, and Linear Park~~—covering more than 80 acres. The City of Dixon imposes a parkland acquisition and development fee on all new residential developments to accommodate park demand resulting from new developments.

Fairfield has 14 neighborhood parks and two community parks, totaling 233 acres. The City of Fairfield is proposing development of several new facilities, including ~~10~~ eight additional neighborhood parks serving a half-mile radius and ~~three~~ two additional community parks serving a 2-mile radius, which would add an additional ~~400~~ 167 acres to its parks system. In addition, the City of Fairfield owns and manages 1,361 acres of publicly accessible open space, which includes 633 acres in Rockville Hills Regional Park.

Rio Vista has seven parks covering 15 acres. Because of Rio Vista’s proximity to the Sacramento River, water-related recreation facilities, such as a pier and boat launch, are also available for use.

Suisun City has eight parks that together cover 127 acres. Six of the parks are neighborhood parks, one is a community park, and one is a regional park. These parks primarily serve city residents.

Vacaville has more than ~~520~~ 260 acres of parks, in addition to ~~1,906~~ 2,183 acres of urban open space surrounding the city. Lagoon Valley Park, which spans about ~~300~~ 348 acres on the western edge of Vacaville, is owned and operated by the City of Vacaville. The majority of the city’s public open space is found in the hillsides around Lagoon Valley and to the west of Browns Valley (including Old Rocky and the Glen Eagle open space area).

Vallejo has approximately ~~145~~ 324 acres of neighborhood, community, and regional parks. The Greater Vallejo Recreation District oversees the park planning for the City of Vallejo. These parks also serve approximately 3,000 residents of the unincorporated that live within the district.

Benicia, Fairfield, and Vallejo are also currently collaborating with the County in planning a 10,000-acre open space—the Tri-City and County Cooperative Planning Area for Agriculture and Open Space.

Table 4.14-1 on page 4.14-3 of the DEIR is revised as follows:

Table 4.14-1 Open-Space Resources within Solano County		
Open-Space Area	Acres	Uses
Blue Ridge Berryessa	5,000	Hiking
Grizzly Island Wildlife Area	13,250	Bird watching

Table 4.14-1 Open-Space Resources within Solano County		
Open-Space Area	Acres	Uses
Jepson Prairie	9,250	Nature study
Lagoon Valley Open Space	2,500	Hiking
Mare Island Wetlands	2,500	Bird watching, hiking
Rockville Hills Regional Park	<del>4,000-633</del>	Hiking, biking, picnicking, nature study, fishing, bird watching
<u>Rolling Hills Open Space</u>	<u>338</u>	<u>Hiking</u>
<u>Serpas Ranch Open Space</u>	<u>365</u>	<u>Hiking</u>
<u>Spy Glass Open Space</u>	<u>25</u>	<u>Hiking</u>
Suisun Marsh	74,000	Hunting, hiking
Tri-City & County, including Lynch Canyon	14,000	Hiking, mountain biking, horse riding in Lynch Canyon
Vacaville-Dixon Separator	4,500	Hiking, mountain biking, horse riding
Vallejo Lakes	6,500	Picnicking, boating, fishing
Source: Data provided by Solano County in 2008		

The text of Section 4.14.2 on page 4.14-3 of the DEIR, under “Quimby Act (California Code 66477),” is revised as follows:

The Quimby Act authorizes local governments to requires the dedication of land and/or imposes a requirement of fees for park and recreational purposes as a condition of approval of a tentative map or parcel map.

The text of Mitigation Measure 4.14-1a on page 4.14-4 of the DEIR is revised as follows:

The County shall develop and implement a park impact fee payment program for new development in nonagricultural and open space districts.. As a condition of approval of all residential development, the County shall require project developers to mitigate any adverse impacts on park and recreational facilities through the payment of a fair-share impact fee. The park mitigation impact fees shall be designed to mitigate impacts reasonably related to a proposed residential development and fees collected through the program must be used by the County to acquire or develop park and recreational facilities within 5 years of collection. “Development,” for the purposes of this measure, shall mean all single-family structures requiring a building permit, condominium and multifamily residential units, planned residential development, and all multifamily structures that require building permits, but shall exclude remodel or renovation permits that do not result in additional dwelling units. Impact fees shall be based on a fee formula developed by the County. Payment of the required impact fee shall occur before the issuance of any building permit. If the County determines that it is in the best interest of providing adequate levels of parkland provision, a developer may be given the option to dedicate parkland in lieu of the impact fee. Parkland dedication will provide the same amount of acreage as is required under the impact fee.

## CHAPTER 5, “ALTERNATIVES TO THE PROPOSED PROJECT”

The third and fourth paragraphs under “Impacts on Agricultural Resources” of Section 5.4.2, “Environmental Effects,” on pages 5-21 and 5-22 of the DEIR are revised as follows:

Although fewer acres of agricultural land, including Important Farmland, would be converted to urban land uses under Alternative 1 than under the 2008 Draft General Plan, implementation of Alternative 1 would continue to result in the loss of approximately ~~17,655~~6,899 acres of agricultural land, of which a certain portion would be designated as Important Farmland. Because Alternative 1 would continue to result in the loss of Important Farmland from development of urban uses, this impact would be significant.

Of the ~~17,655~~6,899 acres that would be converted from agriculture, it is assumed that a certain percentage is protected under a Williamson Act contract. The Williamson Act is an agricultural conservation tool that allows local governments in California to enter into contracts with private-property owners to protect land for agricultural and open-space purposes. This voluntary program offers tax breaks by assessing lands based on actual use (agricultural or open space) as opposed to their potential full market value, creating a financial incentive to maintain farmland and open space, as opposed to allowing conversion to other uses.

The first paragraph under “Impacts on Cultural and Paleontological Resources” of Section 5.4.2, “Environmental Effects,” on page 5-22 of the DEIR is revised as follows:

A total of ~~18,090~~6,899 fewer acres would be converted from agricultural uses or designated as new commercial, industrial, or residential uses under Alternative 1 than under the 2008 Draft General Plan. Based on these numbers, it appears that fewer impacts on archaeological deposits and paleontological resources that may be significant under CEQA would occur. The potential for the disturbance of human remains from development-related construction would also be lower. Similarly, fewer historical built-environment resources (e.g., rural ranch houses, barns) would be subject to destruction or alteration because of the difference in acreage that would be converted.

## **CHAPTER 6, “OTHER CEQA CONSIDERATIONS”**

The last paragraph of the “Impacts on Land Use” section on page 6-5 of the DEIR is revised as follows:

As shown in Table 6-1, the 2008 Draft General Plan has been projected to facilitate a population increase within the unincorporated county from 19,990 in 2005 to 39,460 in 2030. ABAG projects that growth in the incorporated cities is expected to increase the total population of the cities from 402,900 in 2005 to 555,800 in 2030. Combined, the 2030 population is expected to be 595,260. As discussed in Section 4.1, “Land Use,” of this EIR, the level of growth allowed in the unincorporated county through the implementation of the 2008 Draft General Plan would be significant. When development under the 2008 Draft General Plan is combined with the potential development permitted by the cities, a significant and unavoidable cumulative impact related to a population increase would result.

However, no feasible mitigation is available to reduce this cumulative impact. The only mitigation available would involve reducing acreage devoted to residential use, decreasing residential densities to reduce the projected number of dwelling units, or regulating the number of residential building permits that may be issued annually. This mitigation could increase the cost of housing in Solano County, thereby conflicting with Objective C.1 and Policy C.1 of the 2008 Draft General Plan Housing Element, which promotes the production of housing for all segments of the population at all income levels. Therefore, the 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.

The last paragraph of the “Impacts on Air Quality” section on page 6-6 of the DEIR is revised as follows:

As described under Impact 4.2-4, implementation of the 2008 Draft General Plan would result in significant air quality impacts related to carbon monoxide emissions from local mobile sources. Because

the model used in the traffic analysis is a regional transportation model that includes development forecasted in Solano County through 2030, this is representative of the cumulative condition. Thus, this would be a significant and unavoidable cumulative impact. The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.

With respect to mitigation, the EIR includes all available feasible mitigation to reduce the project's contribution to cumulative air quality impacts (see Section 4.2, "Air Quality"). However, while mitigation measures would substantially reduce air emissions from the project and cumulative projects, they are not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable.

The last paragraph of the "Impacts on Noise" section on page 6-7 of the DEIR is revised as follows:

Implementation of the 2008 Draft General Plan, along with regional growth and traffic conditions, would cause changes in traffic noise levels ranging from a decrease of 2 A-weighted decibels (dBA) day/night average sound level ( $L_{dn}$ ) to an increase of 12 dBA  $L_{dn}$  over existing traffic noise levels, as indicated in Table 4.3-8 in Section 4.3, "Noise." A traffic noise level increase of 3 dBA  $L_{dn}$  is considered significant when no-project noise levels exceed 60 dBA  $L_{dn}$ . The 2008 Draft General Plan would result in significant impacts on several roadway sections. Although more roadway sections would experience significant noise level increases under the Maximum Development Scenario than under the Preferred Plan, this cumulative impact nonetheless would be significant and unavoidable. The 2008 Draft General Plan would make a cumulatively considerable contribution to the impact.

With respect to mitigation, the EIR includes all available feasible mitigation to reduce the project's contribution to cumulative noise impacts (see Section 4.3, "Noise"). Despite implementation of mitigation, it is infeasible to ensure that existing residential uses will not be exposed to cumulative, future traffic noise levels exceeding the County's noise standards or significantly exceeding levels they are exposed to today. Therefore, mitigation is not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable.

The last paragraph of the "Impacts on Transportation and Circulation" section on page 6-7 of the DEIR is revised as follows:

As described in Section 4.4, "Transportation and Circulation," the 2008 Draft General Plan would result in a significant and unavoidable impact related to degradation of roadway levels of service. This would be a significant and unavoidable cumulative impact. ~~The and the 2008 Draft General Plan would make a cumulatively considerable contribution to this significant cumulative impact.~~ With respect to mitigation, no feasible mitigation is available to reduce this cumulative impact to a less-than-significant level.

The last paragraph of the "Impacts on Hydrology and Water Quality" section on page 6-8 of the DEIR is revised as follows:

Cumulative development in the unincorporated area of the county plus the eight cities would increase demand on groundwater and surface-water supplies, potentially adversely affecting supplies of groundwater and surface water. Solano County Water Agency is the major provider of water for both the County and the eight cities, and County ordinance requires areas of urban development in the unincorporated county (i.e., the coverage area for the 2008 Draft General Plan) to be annexed to a city, so cumulative development in the county would affect the cities as well. ~~Section 4.5, "Hydrology and Water Resources," identifies additional policies and mitigation measures that would further reduce the impacts of the 2008 Draft General Plan related to water supply and demand. However, these measures would not reduce cumulative impacts to a less than significant level.~~ These cumulative impacts would be greater under the Maximum Development Scenario than under the Preferred Plan because these alternatives would result in more rural and/or urban land uses and development than would occur under the Preferred

Plan. This would be a significant and unavoidable cumulative impact. The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.

With respect to mitigation, the EIR includes all available feasible mitigation, including policies, to reduce the project's contribution to cumulative impacts related to water supply and demand (see Section 4.5, "Hydrology and Water Resources"). Despite implementation of mitigation and policies, cumulative impacts would not be reduced to a less-than-significant level. Therefore, implementation of recommended mitigation and policies are not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable.

The last paragraph of the "Impacts on Biological Resources" section on page 6-8 of the DEIR is revised as follows:

With respect to mitigation, the 2008 Draft General Plan includes numerous policies intended to protect biological resources and mitigate their loss. With implementation of these policies and the mitigation measures for biological resources recommended in (see Section 4.6, "Biological Resources") of this EIR, impacts of plan adoption would be less than significant. However, because mitigation requirements for major development projects in and adjacent to the incorporated cities listed above are unknown, and the Solano Multi-Species Habitat Conservation Plan has not yet been adopted, this would be a significant and unavoidable cumulative impact. Therefore, implementation of recommended mitigation and policies is not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable. The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.

The last two paragraphs of the "Agricultural Resources" section on page 6-9 of the DEIR are revised as follows:

With respect to mitigation, the 2008 Draft General Plan includes numerous policies intended to protect future productivity of agricultural land uses in Solano County and to mitigate their loss (i.e., through use of an Agricultural Reserve Overlay). However, the 2008 Draft General Plan also has the potential to exacerbate the loss of agricultural land to wind energy production, to park and recreation uses, to industrial land uses, and residential land uses. Implementation of land uses envisioned in the 2008 Draft General Plan would result in the overall loss of agricultural land uses, including Important Farmland, to urban development.

Similarly, cumulative projects would also result in the conversion of Important Farmland, the impacts of which could not be mitigated to a less-than-significant level. Overall, implementation of land uses envisioned in the 2008 Draft General Plan would continue to add to the cumulative loss of farmlands associated with other cumulative projects in Solano County and the surrounding counties and in the Central Valley as a whole. ~~This would be a significant cumulative impact. Therefore, implementation of recommended mitigation and policies is not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable.~~ The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.

The paragraph of the "Water Supply Services" section on page 6-9 of the DEIR is revised as follows:

Development of future water supply in Solano County depends on several variable factors such as surface water availability and groundwater recharge, and it is affected by other variable factors such as land use density and land use type. Future growth in the unincorporated county and cities could cumulatively lead to potential future water shortages and depletion of existing water supplies. The 2008 Draft General Plan contains policies with requirements to maintain the county's water resources, and existing regulations require future development to prove that adequate water supply is available before development may occur. Although multiple water sources exist in Solano County, water sources in a large portion of the unincorporated county cannot currently be quantified. Furthermore, available water supplies to

incorporated areas and portions of unincorporated areas would be insufficient to accommodate projected future growth in the county (SCWA 2005). Therefore, this would be a significant and unavoidable cumulative impact. The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.

With respect to mitigation, the EIR includes all available feasible mitigation to reduce the project's contribution to cumulative water supply impacts (see Section 4.9, "Public Services and Utilities"). Despite implementation of mitigation, it would not reduce impacts associated with water supply to a less-than-significant level and would partially reduce the impact of insufficient water supplies associated with uncertain future availability of groundwater. However, the ability of groundwater supplies to meet the increased water demand resulting from the implementation of cumulative projects would remain uncertain. Therefore, mitigation is not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable.

The last paragraph of the "Impacts on Cultural and Paleontological Resources" section on page 6-11 of the DEIR is revised as follows:

Cumulative gains in population, households, and jobs would require a commensurate increase in infrastructure, capital facilities, services, housing, and commercial uses. Each of these increases carries with it a corresponding increase in the magnitude of ground disturbance and the construction of new buildings and structures and other site development activities. The impact on archaeological deposits, human remains, and paleontological resources would be substantial given the gains in population, jobs, and housing; however, it is likely that the greatest degree of impact on cultural resources—especially historical built-environment resources within the densely developed and historical downtown Vallejo, as well as Mare Island—would result from expansion of the built environment. ~~These impacts on the historical built environment, even with mitigation applied, would still result in significant, unavoidable impacts on a project-by-project basis. Although data generated by this analysis cannot confirm this, it is also possible that, because of the scope and range of activities that would be undertaken, the 2008 Draft General Plan may result in the loss of a class of archaeological sites unique to the paleoenvironmental context of Solano County. This would be a significant cumulative impact. The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant cumulative impact.~~

With respect to mitigation, the EIR includes all available feasible mitigation to reduce the project's contribution to cumulative cultural and paleontological resource impacts (see Section 4.10, "Cultural and Paleontological Resources"). These impacts on the historical built environment, even with mitigation applied, would still result in significant, unavoidable impacts on a project-by-project basis. Although data generated by this analysis cannot confirm this, it is also possible that because of the scope and range of activities that would be undertaken, the 2008 Draft General Plan may result in the loss of a class of archaeological sites unique to the paleoenvironmental context of Solano County. This would be a significant cumulative impact. Therefore, implementation of recommended mitigation is not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable. The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.

The paragraph of the "Impacts on Aesthetic Resources" section on page 6-11 of the DEIR is revised as follows:

Implementation of the 2008 Draft General Plan would substantially alter the visual character of Solano County by converting agricultural lands and open space to developed urban uses, resulting in a significant impact related to degradation of existing visual character. ~~Because of the location of future urban development envisioned in the 2008 Draft General Plan, no feasible mitigation is available to address impacts on aesthetic resources associated with the conversion of agricultural land and open space to urban development and impacts on views of scenic vistas. Standards for design, architecture, development, and landscaping would be included as part of future development projects and would help to ensure that future~~

~~urban development remains within aesthetic guidelines established in policies of the 2008 Draft General Plan; however, there is no mechanism to allow implementation of development projects while avoiding the conversion of the local viewsheds from agricultural land uses and open spaces to urban development. Related cumulative projects in Solano County would also transform the visual environment from open space and agricultural areas to urban development. These projects would also be expected to comply with adopted community design and aesthetic standards, but it is likely that these projects would also result in significant and unavoidable aesthetic impacts because of the magnitude of the development proposed. Cumulative visual impacts within Solano County would be significant. The 2008 Draft General Plan would make a cumulatively considerable contribution to these significant and unavoidable cumulative impacts.~~

With respect to mitigation, the EIR includes all available feasible mitigation to reduce the project's contribution to cumulative aesthetic resource impacts (see Section 4.11, "Aesthetic Resources"). Because of the location of future urban development envisioned in the 2008 Draft General Plan, no feasible mitigation is available to address impacts on aesthetic resources associated with the conversion of agricultural land and open space to urban development and impacts on views of scenic vistas. Standards for design, architecture, development, and landscaping would be included as part of future development projects and would help to ensure that future urban development remains within aesthetic guidelines established in policies of the 2008 Draft General Plan; however, there is no mechanism to allow implementation of development projects while avoiding the conversion of the local viewsheds from agricultural land uses and open spaces to urban development. Therefore, implementation of recommended mitigation is not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable.

The paragraph of the "Impacts on Energy" section on pages 6-11 and 6-12 of the DEIR is revised as follows:

Land uses and development consistent with the 2008 Draft General Plan would lead to an increased demand for energy and consumption of energy resources. Future land use patterns, new construction and building renovations, and commuting patterns would increase demand for energy in the Solano County. As discussed in Section 4.12, "Energy," of this EIR, the 2008 Draft General Plan contains policies that encourage the development of renewable-energy supplies that would offset a portion of the energy demands created from future development. Regardless, cumulative development throughout the county and cumulative planned projects would result in a significant and unavoidable cumulative increase in the demand for energy. Therefore, this would be a significant and unavoidable cumulative impact and the : ~~The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant cumulative impact. With respect to mitigation, no feasible mitigation is available to reduce this cumulative impact to a less-than-significant level.~~

The last paragraph of the "Impacts on Recreation" section on page 6-12 of the DEIR is revised as follows:

~~Potential impacts on County facilities resulting from increased city populations and potential impacts on city facilities resulting from growth in the unincorporated county, however, are not addressed through policies or mitigation measures. Population growth in the incorporated cities could create additional pressure on County parks. Each of the cities provides park facilities for its own residents, but the County provides park facilities such as boat launches, campgrounds, and open-space trail networks that are not available in all the cities. The increase in urban population may create additional impacts on these County parks. Furthermore, because the County does not provide recreation programs for its residents, the increased growth in the unincorporated county could increase impacts on city programs. For these reasons, this would be a significant cumulative impact. The 2008 Draft General Plan would make a cumulatively considerable contribution to this significant and unavoidable cumulative impact.~~

With respect to mitigation, the EIR includes all available feasible mitigation to reduce the project's contribution to cumulative aesthetic resource impacts (see Section 4.14, "Recreation"). Potential impacts on County facilities resulting from increased city populations and potential impacts on city facilities resulting from growth in the unincorporated county, however, are not addressed through policies or mitigation measures. Therefore, implementation of recommended mitigation is not sufficient to reduce the cumulative contribution of the 2008 Draft General Plan to a level that is not considerable.

The last paragraph on page 6-20 of the DEIR is revised as follows:

With respect to Solano County, certain low-lying areas are already expected to be affected by reasonably foreseeable sea level rise. Variability exists between the available estimates of sea level rise affecting the county. The chief uncertainty in predicting sea level is the melting of ice caps on polar continents, and none of the available models for evaluating sea level rise is capable of accounting for this melting.

2007 projections from the ~~International~~ Intergovernmental Panel on Climate Change indicate that sea level could increase by 7–23 inches by 2100 (IPCC 2007a). The California Delta Vision Blue Ribbon Task Force estimates that planning for sea level rise should anticipate a sea level rise of 16 inches by 2050 and 55 inches by 2100. (California Delta Vision Blue Ribbon Task Force 2008). ~~Both moderate and high~~ These projections are expected to result in sea levels that will affect the Bay-Delta area by increasing the frequency, duration, and magnitude of extreme-water-level events. Extreme-water-level events are created by a combination of high tides, Pacific climate disturbances such as El Niño, low-pressure systems, and associated storm surges. Extreme-water-level events are expected to increase substantially with elevated sea levels. Given a 1-foot rise in sea level, as predicted in low-end sea level rise projections, the frequency of a 100-year event would increase tenfold. Additionally, elevated sea levels and increased extreme-water-level events may exacerbate flooding in Solano County and significantly expand the county's floodplains. At the opposite extreme, a sea level increase of 55 inches could overwhelm most levees in the Delta and flood low-lying urban land surrounding the Delta, including some neighborhoods, urban water intakes, sewage treatment outfalls, highways, and other utilities.

The second citation in the last sentence of the first paragraph under "Status and Trends" on page 6-21 of the DEIR is corrected as follows:

Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows (Kiparsky and Gleick 2005, Cayan et al. 2006a).

The citation in the last sentence of the first paragraph under "Status and Trends" on page 6-24 of the DEIR is corrected as follows:

Dry-warm climate scenarios are expected to affect agriculture at both statewide and regional scales, with the most pronounced effects occurring in the Central Valley (~~Zhu~~ Medellin et al. 2006).

The footnote to Table 6-3 on page 6-33 of the DEIR is revised as follows:

Refer to Appendix ~~F~~ B, "Air Quality," for detailed assumptions and modeling output files.

The following information is added between the "Stationary- and Mobile-Source Measures and Regulations" and "Relevant Goals, Policies, and Programs of the 2008 Draft General Plan" sections on page 6-34 of the DEIR:

### **Estimates of Potential Greenhouse Gas Emissions**

Despite the uncertainty described above, potential emissions from residential dwelling units and nonresidential development were estimated using emission factors from the California Climate Action

Registry (CCAR) General Reporting Protocol and general estimates of electrical consumption per dwelling unit, per commercial/institutional square foot, and per million gallons of water consumed, from the California Energy Commission. These calculations are presented in Table 6-5.

These emission factors are applicable to present-day emissions, and do not account for emissions reduction technologies that may become available or required for electric utilities by the year 2030 or before. For example, companion legislation to AB 32 will require public utilities to increase the renewable-energy portion of their portfolio in just a few years' time. Thus, GHG emission factors would be reduced during the 2008 Draft General Plan buildout. Therefore, this is considered a conservative estimate of indirect emissions from electricity use. For comparison purposes, indirect emissions from energy generation would be approximately 27% of the direct emissions presented in Table 6-3.

There are currently no agency-adopted or agency-recommended emission factors or methodologies for calculating GHG emissions from off-site waste disposal or for any other GHG emission source over the life cycle of the 2008 Draft General Plan.

The bulleted list at the bottom of page 6-36 of the DEIR under the heading “Land Use Chapter” is revised to add the following:

- ▶ LU.P-35: Encourage land use patterns and development that will result in fewer and shorter motor vehicle trips, and make transportation choices like transit, biking, or walking more viable alternatives.
- ▶ LU.I-7: When reviewing development proposals, work with applicants to establish development patterns that result in shorter motor vehicle trips, make alternative transit modes viable, and encourage physical activity.

The bulleted list on pages 6-37 and 6-38 of the DEIR under the heading “Resources Chapter” is revised to add the following:

- ▶ RS.P-58: Encourage on-site renewable energy production and use and energy conservation measures.
- ▶ RS.P-75: Promote sustainable management and efficient use of agricultural water resources.

The bulleted list on pages 6-38 and 6-39 of the DEIR under the heading “Health and Safety Chapter” is revised to add the following:

- ▶ HS.I-10: During project review, encourage the use of landscaping practices and plants that will reduce demand on water, retain runoff, decrease flooding, and recharge groundwater.
- ▶ HS.P-21: Prohibit nonfarm-related development and road construction for public use in areas of extreme wildfire risk.

The bulleted list on pages 6-40 and 6-41 of the DEIR under the heading “Transportation and Circulation Chapter” is revised to add the following:

- ▶ TC.P-15: Promote the careful location and design of bus stops, transit centers, and complementary roadway projects that maximize the speed and productivity of fixed-route buses.
- ▶ TC.I-12: Support responsible improvements to track capacity so that both passenger and freight rail, including transportation of hazardous materials, can be operated without delays through Solano County.

**Table 6-5  
Estimated Greenhouse Gas Emissions from Energy Consumption and Water Use  
Associated with the 2008 Draft General Plan**

**Indirect Emissions from Energy Consumption**

<u>KWh/du/yr</u>	<u># du</u>	<u>KWh/ksf/yr</u>	<u># ksf Commercial</u>	<u>Total KWh</u>	<u>MWh</u>	<u>Region</u>	<u>Emission Factor (lb CO<sub>2</sub>/MWh)</u>	<u>GWP</u>	<u>Emission Factor (lb CH<sub>4</sub>/MWh)</u>	<u>GWP</u>	<u>Emission Factor (lb N<sub>2</sub>O/MWh)</u>	<u>GWP</u>	<u>Total CO<sub>2</sub>e (Metric Tons/yr)</u>
7000	7543	16,750	8948	202,680,000	202,680	CALI	804.54	1	0.0067	23	0.0037	296	<b>74,080</b>

**Indirect Emissions from Water Use (includes conveyance, treatment, distribution, and wastewater treatment)**

<u>KWh/million gallons/year</u>	<u>KWh/acre-ft/year</u>	<u>Net increase (acre-ft/year)</u>	<u>Total KWh</u>	<u>MWh</u>	<u>Region</u>	<u>Emission Factor (lb CO<sub>2</sub>/MWh)</u>	<u>GWP</u>	<u>Emission Factor (lb CH<sub>4</sub>/MWh)</u>	<u>GWP</u>	<u>Emission Factor (lb N<sub>2</sub>O/MWh)</u>	<u>GWP</u>	<u>Total CO<sub>2</sub>e (Metric Tons/year)</u>
3,950	1287	24,423	31,433,969	31,434	CALI	804.54	1	0.0067	23	0.0037	296	<b>11,489</b>

**Total Indirect Greenhouse Gas Emissions**

**85,569**

**Notes:**

CH<sub>4</sub> = methane; CO<sub>2</sub>e = carbon dioxide equivalent; du = dwelling unit; GWP = global warming potential; ksf = thousand square feet; kWh = kilowatt-hours; kWh/du/yr = kilowatt-hours per dwelling unit per year; kWh/ksf/yr = kilowatt-hours per thousand square feet per year; lb CH<sub>4</sub>/MWh = pounds of methane per megawatt-hour; lb CO<sub>2</sub>/MWh = pounds of carbon dioxide per megawatt-hour; lb N<sub>2</sub>O/MWh = pounds of nitrous oxide per megawatt-hour; MWh = megawatt-hours

Water use rates are drawn from the DEIR for the 2008 Draft General Plan.

Sources: California Energy Commission 2000, 2005; CCAR 2007

The following text is added to the impact discussion for Impact 6.2-1, between the end of the bulleted list of relevant goals, policies, and programs and the impact conclusion, on page 6-42 of the DEIR:

The policies and programs in the 2008 Draft General Plan are strikingly consistent with the examples of mitigation measures identified in *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review*, a technical advisory recently released by the Governor’s Office of Planning and Research (OPR 2008). Table 6-6 lists each of the mitigation measures recommended in the technical advisory and identifies which goals, policies, and programs of the 2008 Draft General Plan implement the recommended measures.

<b>Table 6-6 Implementation of Recommended Greenhouse Gas Reduction Measures by the 2008 Draft General Plan</b>	
<u>OPR Examples of GHG Reduction Measures</u>	<u>Measures in the 2008 Draft General Plan Implementing OPR’s Recommendation</u>
<u>Implement land use strategies to encourage job/housing proximity, promote transit-oriented development, and encourage high-density development along transit corridors. Encourage compact, mixed-use projects, forming urban villages designed to maximize affordable housing and encourage walking, bicycling, and the use of public transit systems.</u>	<u>Goals, Policies, and Programs LU.P-1; LU.P-19; LU.P-24; LU.P-25; LU.P-37; TC.G-3; TC.G-4; TC.P-2; TC.P-3; TC.P-6; TC.P-12; TC.P-14; TC.P-16; TC.P-17; TC.P-18; TC.P-24; LU.I-13; TC.I-9; TC.I-10; TC.I-12; TC.I-13; TC.I-17; TC.I-18; TC.I-19; PF.P-6; and PF.P-7</u> <u>Additions recommended by County staff: LU.P-A3; LU.P-A4; TC.I-L; TC.I-M; and TC.I-P</u>
<u>Encourage infill, redevelopment, and higher density development whether in incorporated or unincorporated settings.</u>	<u>Policies LU.P-1; LU.P-19; LU.P-24; and LU.P-37</u> <u>Additions recommended by County staff: LU.P-A4 and TC.I-L</u> <u>Please also refer to Master Response I, “Orderly Growth Initiative,” in Chapter 2 of this FEIR</u>
<u>Encourage new developments to integrate housing, civic and retail amenities (jobs, schools, parks, shopping opportunities) to help reduce VMT resulting from discretionary automobile trips.</u>	<u>Policies and Programs LU.P-1; LU.P-19; LU.P-24; LU.P-37; LU.I-13; PF.P-6; PF.P-7; and TC.P-3</u>
<u>Apply advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services.</u>	<u>Policies and Programs TC.P-3; TC.P-12; RS.I-47; HS.P-43; HS.I-54; HS.P-48; HS.I-58; HS.I-59; HS.I-60; HS.I-73; PF.P-26; PF.P-27; PF.P-28; and P.FP-27</u>
<u>Incorporate features into project design that would accommodate the supply of frequent reliable and convenient public transit.</u>	<u>Policies and Programs TC.P-17; TC.P-14; TC.P-16; TC.I-19; TC.I-12; TC.I-13; TC.I-9; and TC.I-10</u> <u>Additions recommended by County staff: LU.P-A3; TC.I-L; TC.I-M; TC.I-N; and TC.I-O</u>
<u>Implement street improvements that are designed to relieve pressure on a region’s most congested roadways and intersections.</u>	<u>Policy TC.P-12</u>
<u>Limit idling time for commercial vehicles, including delivery and construction vehicles.</u>	<u>Program HS.I-60; Mitigation Measures 4.2-1a(1) and 4.2-5a</u>
<u>Plant trees and vegetation near structures to shade buildings and reduce energy requirements for heating/cooling.</u>	<u>Programs RS.I-8; RS.I-46; and RS.I-50</u> <u>Addition recommended by County staff: RS.I-C</u>
<u>Preserve or replace on-site trees (that are removed due to development) as a means of providing carbon storage.</u>	<u>Policy AG.P-21</u>

**Table 6-6  
Implementation of Recommended Greenhouse Gas Reduction Measures  
by the 2008 Draft General Plan**

<u>OPR Examples of GHG Reduction Measures</u>	<u>Measures in the 2008 Draft General Plan Implementing OPR's Recommendation</u>
<u>Encourage public and private construction of LEED (Leadership in Energy and Environmental Design) certified (or equivalent) buildings.</u>	<u>Program RS.I-49</u> <u>Additions recommended by County staff: RS.I-B and RS.I-BB</u>
<u>Recognize and promote energy-saving measures beyond Title 24 requirements for residential and commercial projects.</u>	<u>Program RS.I-38</u> <u>Additions recommended by County staff: RS.I-AA; RS.I-D; and RS.I-FF</u>
<u>Where feasible, include in new buildings facilities to support the use of low/zero carbon fueled vehicles, such as the charging of electric vehicles from green electricity sources.</u>	<u>Addition recommended by County staff: RS.I-H</u>
<u>Educate the public, schools, other jurisdictions, professional associations, business, and industry about reducing GHG emissions.</u>	<u>Policy RS.P-55</u> <u>Addition recommended by County staff: TC.I-S</u>
<u>Purchase Energy Star equipment and appliances for public agency use.</u>	<u>Programs RS.I-38 and RS.I-40</u> <u>Addition recommended by County staff: RS.I-G</u>
<u>Incorporate on-site renewable energy production, including installation of photovoltaic cells or other solar options.</u>	<u>Policies and Programs RS.P-49; RS.P-52; RS.P-53; RS.I-40; RS.I-53; RS.I-54; and HS.I-73</u> <u>Addition recommended by County staff: LU.I-A5</u>
<u>Execute an Energy Savings Performance Contract with a private entity to retrofit public buildings. This type of contract allows the private entity to fund all energy improvements in exchange for a share of the energy savings over a period of time.</u>	<u>Addition recommended by County staff: RS.I-I</u>
<u>Design, build, and operate schools that meet the Collaborative for High Performance Schools (CHPS) best practices.</u>	<u>This policy would be infeasible, as the County has no control over design and operation of schools.</u>
<u>Convert landfill gas into energy sources for use in fueling vehicles, operating equipment, and heating buildings.</u>	<u>Policy PF.P-28</u> <u>Addition recommended by County staff: PF.I-K</u>
<u>Purchase government vehicles and buses that use alternatives fuels or technology, such as electric hybrids, biodiesel, and ethanol. Where feasible, require fleet vehicles to be low-emission vehicles. Promote the use of these vehicles in the general community.</u>	<u>Policy TC.P-6 and Programs RS.I-42 and TC.I-1</u> <u>Addition recommended by County staff: RS.I-G</u>
<u>Offer government incentives to private businesses for developing buildings with energy and water efficient features and recycled materials. The incentives can include expedited plan checks and reduced permit fees.</u>	<u>Programs RS.I-49 and HS.I-54</u> <u>Additions recommended by County staff: RS.I-E; RS.I-F; and RS.I-FF</u>
<u>Offer government employees financial incentives to carpool, use public transportation, or use other modes of travel for daily commutes.</u>	<u>Program HS.I-54</u>
<u>Encourage large businesses to develop commute trip reduction plans that encourage employees who commute alone to consider alternative transportation modes.</u>	<u>Program HS.I-54</u> <u>Addition recommended by County staff: TC.I-R</u>

<b>Table 6-6 Implementation of Recommended Greenhouse Gas Reduction Measures by the 2008 Draft General Plan</b>	
<u>OPR Examples of GHG Reduction Measures</u>	<u>Measures in the 2008 Draft General Plan Implementing OPR's Recommendation</u>
<u>Develop shuttle systems around business district parking garages to reduce congestion and create shorter commutes.</u>	<u>Goals, Policies, and Programs TC.G-3; TC.G-4; TC.P-2; TC.P-3; TC.P-14; TC.P-16; and TC.I-9</u>
<u>Create an online ridesharing program that matches potential carpoolers immediately through e-mail.</u>	<u>Addition recommended by County staff: TC.I-T</u>
<u>Add residential/commercial food waste collection to existing green waste collection programs.</u>	<u>Program PF.I-27</u>

The second paragraph within the discussion of Impact 6.2-2a on page 6-43 of the DEIR is revised as follows:

Although there is a strong scientific consensus that global climate change is occurring and is influenced by human activity, there is less certainty as to the timing, severity, and potential consequences of the climate phenomena. Scientists have identified several ways in which global climate change could alter the physical environment in California (IPCC 2007a, California Delta Vision Blue Ribbon Task Force 2008, CEC 2006b, DWR 2006).

## **CHAPTER 8, “REFERENCES”**

The following references were inadvertently omitted from the list of references for Section 4.5, “Hydrology and Water Resources,” in the DEIR:

Association of Bay Area Governments. 2008a. Bay Area Dam Failure Inundation Hazards. Available: <<http://www.abag.ca.gov/bayarea/eqmaps/damfailure/damfail.html>>. Accessed April 2008.

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Some of the references pertaining to Section 6.2, “Effects Related to Climate Change,” were inadvertently omitted from the DEIR. The complete list of references for Chapter 6, “Other CEQA Considerations,” of the DEIR is presented below.

## **CHAPTER 6, “OTHER CEQA CONSIDERATIONS”**

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## 5 PROPOSED GENERAL PLAN MODIFICATIONS

This chapter presents modifications to the 2008 Draft General Plan that have been recommended by County staff members based on the EIR analysis. These revisions will be provided to the County Board of Supervisors for further consideration during public hearings on the 2008 Draft General Plan. The text in this chapter reflects proposed changes made as part of corrections and revisions to the DEIR (as shown in Chapter 4 of this FEIR) and in master responses and responses to comments received on the DEIR (as shown in Chapters 2 and 3, respectively, of this FEIR).

The proposed revisions to the 2008 Draft General Plan are presented in the order in which the original text appeared in the plan and are identified by general plan page number. Strikethrough text (~~striktthrough~~) indicates proposed deletions; underlined text (underlining) indicates proposed additions.

### CHAPTER 2, "LAND USE"

#### PROPOSED REVISIONS

##### Last sentence of the last paragraph on Page LU-12:

A change in land use of unincorporated lands within MSAs should be permitted only for temporary agricultural uses that do not conflict with planned land uses until annexed for urban development.

##### Policy LU.P-7, page LU-35:

LU.P-7: Permit temporary land uses and uses consistent with ~~the~~ current agricultural zoning on unincorporated lands within municipal service areas that do not conflict with planned land uses until the property is annexed to a city for urban development.

##### Policy LU.P-19, page LU-36:

LU.P-19: Require ~~Locate~~ commercial development to be sited in locations that provide maximum access to the primary consumers of such services and where necessary services and facilities can be provided.

##### Program LU.I-2, page LU-39:

LU.I-2: Provide for detailed land planning through the Specific Project Area land use designation outside of the MSAs and subsequent planning process. Specific plans required before development in these areas shall determine:

- resource or hazard areas to be avoided by development;
- techniques to ensure that development is compatible with the character of the surrounding area;
- the amount of land that will be preserved for agriculture and other resources and the methods by which such preservation will be accomplished; and
- plans describing how the proposed development will be provided with adequate levels of water and wastewater service.

**Policy SS.P-32, page LU-73:**

SS.P-32: Work with the City of Fairfield and other water and resource agencies to monitor recurring flooding in Old Town Cordelia and the performance of Cordelia Slough to determine whether it is functioning and will continue to function at a safe carrying capacity.

**Program SS.I-14, page LU-74:**

SS.I-14: Work with local residents, the City of Fairfield, water agencies, resource agencies, and the Fairfield Unified School District to complete improvements to infrastructure and public facilities in Old Town Cordelia, including flood prevention infrastructure, a neighborhood park (possibly on the site of the former Green Valley Middle School), and streetscape improvements and street furniture, and to enhance the community's recreational resources. Work with the water agencies to monitor recurring flooding in Old Town Cordelia and the performance of Cordelia Slough to determine whether it is functioning and will continue to function at a safe carrying capacity. Work with resource agencies to resolve current and future sediment loads, downstream flooding issues, and silt deposits on properties and in sloughs downstream to protect fish and wildlife resources, downstream habitat, and property. Work with the school district to determine desirable future uses for the vacant former Green Valley Middle School site.

**PROPOSED ADDITIONS**

LU.P-A3: Require a variety of housing types (affordable and market-rate) near jobs, services, transit, and other alternative-transportation serving locations (e.g., rideshare lots).

LU.P-A4: Increase residential densities in Traditional Communities where new-growth, infill, or reuse opportunities near transit routes or commercial areas exist.

LU.I-A5: Allow solar energy generation projects in open space areas where consistent with other uses and values.

**CHAPTER 3, "AGRICULTURE"**

No proposed revisions or additions.

**CHAPTER 4, "RESOURCES"**

**PROPOSED REVISIONS**

**Program RS.I-8, page RS-20:**

RS.I-8: Require the planting of shade and roadside trees in development projects for aesthetic, air quality and other associated benefits. Encourage the use of native tree species, especially native oaks. Create development standards to ensure appropriate placement care, and maintenance. The County shall evaluate the feasibility of planting of roadside trees as part of major County road improvement projects.

**Policy RS.P-53, page RS-55:**

RS.P-53: Reduce Solano County's reliance on fossil fuels for ~~private~~ transportation and other energy production consuming activities.

**Policy RS.P-55, page RS-55:**

RS.P-55: Provide information, marketing, training, and education to support reduced energy consumption, the use of alternative and renewable energy sources, ~~and green building practices, recycling, and responsible purchasing.~~

**Program RS.I-38, page RS-57:**

RS.I-38: ~~Develop and implement financially and technically feasible green building standards, including standards that exceed Title 24 state energy efficiency requirements for residential and commercial buildings by at least 20 percent, and comply with the guidelines for the California Energy Star Homes Program. Adopt energy efficiency standards for new and remodeled residential, commercial, and industrial buildings that exceed the state's minimum standards, including requiring all new commercial, industrial and institutional buildings to use energy efficient lighting that reduces electricity use by 20% more than Title 24 requirements. Require all new and remodeled residential, commercial, industrial, institutional, and civic construction to exceed current (2008) Title 24 state energy-efficiency requirements by at least 20%, and require that all new residential homes and major renovations comply with the guidelines for the California Energy Star Homes Program. If the state increases the requirements of Title 24, examine the feasibility of increasing County energy efficiency requirements.~~

**Program RS.I-44, page RS-59:**

RS.I-44: Require residential development of more than six units to participate in the California Energy Commission's New Solar Homes Partnership. Require new construction or major renovation of commercial and industrial buildings over 10,000 square feet in size to incorporate renewable energy generation to provide the maximum feasible amount of the project's energy needs. Commercial buildings shall incorporate renewable energy generation to provide at least 20% of the project's needs.

**Program RS.I-45, page RS-59:**

RS.I-45: ~~Require all new residences to~~ the use of Energy Star rated appliances and the most energy-efficient Energy Star rated water heaters and air conditioning systems that are feasible in the construction of new homes, in all substantial remodels when appliances are being replaced, and in any case where a permit is needed to install or replace appliances (e.g., water heaters, air conditioning).

**Program RS.I-49, page RS-63:**

RS.I-49: ~~Promote Adopt a County "green building program." by adopting and supporting LEED principles in construction of public and private buildings and providing incentives for private property owners seeking LEED certification. Require all new and remodeled renovated commercial, and office, and institutional buildings located outside city MSAs over 10,000 square feet in size to meet achieve LEED certification, or meet equivalent performance standards. Defer to City building and energy efficiency standards for areas located within city MSAs. Amend the County zoning ordinance to encompass these green building requirements.~~

**Program RS.I-50, page RS-64:**

RS.I-50: Require the use of landscaping and site design techniques in development projects that minimize energy use. This may include designing landscaping to shield or expose structures

to maximize energy conservation or acquisition and taking advantage of orientation, sun-shade patterns, prevailing winds, landscaping, and sunscreens. Amend development standards to require such techniques.

## PROPOSED ADDITIONS

- RS.I-AA: Continue to ensure compliance with existing state building requirements for energy-conserving roofing materials on nonresidential buildings in new construction and reroofing.
- RS.I-B: Require that all new County buildings and major renovations and additions achieve LEED certification or meet equivalent performance standards.
- RS.I-BB: Require residential developments of more than six units to construct LEED-certified units or meet equivalent performance standards. For new affordable housing projects, performance standards shall be established pursuant to the requirements of the funding source(s).
- RS.I-C: Require the design and orientation of all buildings to maximize passive solar heating during cool seasons, avoid solar heat gain during hot periods, enhance natural ventilation, and promote effective use of daylight. Orientation should optimize opportunities for on-site solar generation.
- RS.I-D: Provide permitting-related and other incentives for building projects that exceed the County's energy efficiency standards by greater than 5%.
- RS.I-E: Require energy and water efficiency audits for new construction or substantial remodels of commercial, industrial, and institutional buildings. Examine existing usage and potential reductions related to heating, ventilation, air conditioning, lighting, water heater equipment, insulation, weatherization, and water usage by buildings and landscaping. Require energy and water audits of all County buildings.
- RS.I-F: Partner with community services agencies to fund energy efficiency projects, including heating, ventilation, air conditioning, lighting, water heating equipment, insulation, and weatherization for low-income residents.
- RS.I-FF: Adopt an energy efficiency ordinance that requires upgrades as a condition of issuing permits for substantial remodels or additions. Require disclosure of the energy consumption of a home during the sale or lease of a residence or building.
- RS.I-G: Require environmentally responsible government purchasing. Require or give preference to the purchase of products that reduce or eliminate indirect greenhouse gas emissions (e.g., giving preference to recycled products over products made from virgin materials).
- RS.I-H: Where feasible, include in new buildings facilities to support the use of low/zero carbon fueled vehicles, such as the charging of electric vehicles from green electricity sources.
- RS.I-I: Execute an Energy Savings Performance Contract with a private entity to retrofit public buildings. This type of contract allows the private entity to fund all energy improvements in exchange for a share of the energy savings over a period of time.

## CHAPTER 5, “PUBLIC HEALTH AND SAFETY”

### Program HS.I-7, page HS-17:

HS.I-7: During project review, ~~encourage~~ require the use of stormwater management techniques in developed upstream watershed areas that protect low-lying areas from flooding and incorporate appropriate measures into the development review process to mitigate flooding and prevent erosion in and around County ditches.

### Program HS.I-54, page HS-73:

HS.I-54: ~~Consider-Adopt~~ a trip reduction ordinance and ~~incentives to encourage employers to increase~~ encourage employers to develop practices that reduce employees’ vehicle trips such as telecommuting, provide-provision of bicycle facilities, and access shuttles to public transit for employees, including County employees.

### Program HS.I-73, page HS-104:

HS.I-73: Develop and adopt a climate action plan for Solano County. The Climate Action Plan will have two primary objectives, which include: (a) reduce total greenhouse gas emissions in the county to 20 percent below 1990 levels by 2020, (b) create adaptation strategies to address the impacts of climate change on the county such as sea level rise, increased risk of flooding, diminished water supplies, public health, and local agricultural-based economy. The CAP will contain the following chapters:

Climate Change and Solano County—The first chapter of the CAP will outline the county’s rationale and motivation for taking a leadership role in addressing climate change and developing and implementing the CAP. The chapter will provide a brief overview of the science behind climate change, describe the potential impacts climate change may create in Solano County, and outline state policy mandates to reduce GHG emissions.

Baseline GHG Emissions Inventory and Forecast—In this chapter the county will calculate GHG emissions for the base year 1990, forecast emissions in 2020 under a business as usual scenario, and will describe the GHG reductions necessary to achieve the county’s adopted target. The County will make best efforts to evaluate all reasonable sources of GHG emissions. The chapter will identify GHG emissions and target levels per sector. Sectors to be described in the inventory will include municipal operations, residential, commercial, industrial buildings, motor vehicles, agriculture, and waste. This inventory and forecast shall provide a benchmark for planning and monitoring progress in government operations and the community. The GHG inventory ~~will~~ shall be conducted using a methodology consistent with that used by other local governments and will be completed within 1 year after the effective date of adoption of the General Plan.

GHG Emissions Policies and Measures—This chapter will describe the policies and measures that are necessary to reduce GHG emissions in the county and achieve the reduction target. Policies and measures will be created with public input from all stakeholders. Each measure will be enforceable, include a timeline, describe financing mechanisms, and assign responsibility to relevant agencies and departments. In addition to direct GHG reduction measures, the chapter will incorporate public education efforts to raise awareness on the importance of minimizing GHG emissions and methods for reducing emissions from individuals’ lifestyles. ~~Policies and programs relevant to climate change contained in the 2008 General Plan will be included within the CAP. Policies, benchmarks, and measures will be~~

~~reevaluated according to current State law and guidance each time the general plan is updated. These policies and measures will be developed within 2 years after the effective date of adoption of the General Plan. The effectiveness of policies and measures will be evaluated annually and will be modified as necessary to achieve the County's reduction goals.~~

As the CAP is to be implemented over a period of several years, it is likely that the scientific and state and federal policy framework surrounding climate change measures will evolve. The CAP will adapt its policies, measures, and programs to ensure successful GHG emissions reduction, protection of the county, and compliance with regulations.

Protection and Adaptation Strategies—The fourth chapter of the CAP will describe strategies, policies and measures that will be used to protect the county from and facilitate adaptation to the potential effects of climate change. Potential effects to be evaluated include, but are not limited to, sea level rise, saltwater intrusion, increased frequency and magnitude of flooding, diminished water supply, increased wildfire risk, habitat loss, and possible impacts to public health and the local economy, including agriculture. Each measure will include a timeline, describe financing mechanisms, and assign responsibility to relevant agencies and departments.

County and state concerns regarding sea level rise and its associated impacts led to the development of an SLRSP. The SLRSP has been included as an implementation measure in the 2008 General Plan (See Program HS.I-1). ~~The SLRSP is to be contained within the CAP after the CAP is adopted.~~

Benchmarks and Next Steps—In conclusion, the CAP will identify benchmarks, monitoring procedures and other steps needed to ensure the county achieves its GHG reduction, protection, and adaptation goals. Monitoring and verifying progress on the GHG emissions reduction measures will be conducted on an ~~ongoing~~ annual basis. Monitoring will provide important feedback that can be used to demonstrate overall progress toward emissions reduction targets and improve measures over time.

Benchmarks will be established to serve as intermediate goals and to motivate compliance with county and sector level reduction targets. While additional benchmarks will be created during CAP development, the following emissions reductions benchmarks will be included:

- ▶ Overall emissions reductions of at least 10 percent below 1990 levels by 2015.
- ▶ Overall emissions reductions of at least 20 percent below 1990 levels by 2020.
- ▶ Reductions of total countywide energy consumption of at least 2 percent per year to achieve a minimum 20 percent reduction by 2020.

Benchmarks for strategic responses to climate change impacts should be based on the expected timescale of the specific impact and will be established during the development of individual strategic plans.

~~As the CAP is to be implemented over a period of several years, it is likely that knowledge surrounding climate change and implementation measures will evolve. The CAP will contain provisions to evaluate measures in order to ensure successful GHG emissions reduction and protection of the county.~~

CAP Relationship to the General Plan—Implementation strategies identified in the CAP will be incorporated as implementation measures of the General Plan through amendment within 1 year

of completion. Revisions to CAP policies and measures and subordinate strategic programs may require further General Plan amendments.

## CHAPTER 7, “TRANSPORTATION AND CIRCULATION”

### PROPOSED REVISIONS

#### Goal TC.G-1, page TC-4:

TC.G-1: Maintain and improve the County’s transportation systems to enhance safety, resident access to basic needs, mobility, and convenience.

#### Goal TC.G-3, page TC-5:

TC.G-3: Encourage land use patterns that maximize access and mobility options for commuting and other types of trips, and minimize traffic congestion, vehicle miles traveled (VMT), and greenhouse gas emissions carbon footprints.

#### Goal TC.G-5, page TC-5:

TC.G-5: Encourage and maintain the safe, convenient transfer of goods and services from agricultural lands and industrial locations to regional and interregional transportation facilities.

#### Policy TC.P-3, page TC-6:

TC.P-3: ~~Establish land use patterns that~~ Facilitate shorter travel distances and non-auto modes of travel ~~other than the automobile, and limit the extent of additional transportation improvements and maintenance that may be needed with a more dispersed land use pattern.~~

#### Policy TC.P-5, page TC-7:

TC.P-5: Fairly attribute to each development the cost of on- and off-site improvements needed for state and county roads and transportation systems to accommodate that development, including the potential use of development impact fees ~~for~~ to generate revenue.

#### Program TC.I-1, page TC-7:

TC.I-1: ~~Support proposals by County departments and agencies to sponsor~~ Require the purchase of energy efficient or alternative-fuel County vehicles when fleet upgrades occur.

#### Program TC.I-3, page TC-8:

TC. I-3: Support regular monitoring of the transportation system by the California Department of Transportation and the Solano Transportation Authority with emphasis on studying congested areas to identify the cause, duration, and severity of the congestion, and potential traffic management solutions.

#### Policy TC.P-16, page TC-16:

TC.P-16: ~~Ensure that~~ Require major retail and employment centers ~~and commercial and industrial centers with high levels of employment are served with~~ to facilitate the provision of adequate public transportation ~~opportunities.~~

**Policy TC.P-19, page TC-18:**

TC.P-19: Develop strategies to remove barriers and increase commuter ridership on Amtrak passenger rail, including, but not limited to collector bus services, bicycle and pedestrian routes to and bicycle parking facilities at stations, and promotional campaigns.

**The first paragraph in the “Planning Context” section on page TC-8:**

Roadways are the primary mode by which most persons and goods are transported in Solano County. Therefore, roadways need to be constructed appropriately to accommodate expected traffic volumes and adjacent land uses, while considering issues of safety, ~~and~~ proper design, and accommodation.

**The sixth and seventh full paragraphs on page TC-9:**

**Freeways.** Also known as superhighways in the *County’s Road Improvement Standards and Land Development Requirements*, these facilities are designed for limited-access operation without any signalized controls and provide interregional connectivity. All roadway access is limited to ramps.

Solano County has four designated freeways that are operated and maintained by the California Department of Transportation (Caltrans):

**The first paragraph on page TC-10:**

In addition, portions of SR 37 and SR 12 in Solano County are currently designed to freeway or expressway standards, but these sections are not within the unincorporated area.

**The third and fourth paragraphs on page TC-18:**

**Grade Separations.** The proposal for additional rail service through the county will increase interest in constructing grade separations. The need for grade separations will depend on roadway volumes, train lengths and duration of blockage, and overall design and safety issues such as sight distance and speeds. New at-grade crossings of public roads are generally discouraged.

**Compatibility with Surrounding Land Uses.** Freight rail is often a mode that carries hazardous materials. The trains also sometimes move quickly and can be very difficult to stop. Land use proposals adjacent to rail tracks should consider the needs of rail operations for safety, ~~and~~ speed, and reliability.

**Program TC.I-17, page TC-23:**

TC.I-17: Design, construct, and maintain bicycle routes as described in the Countywide Pedestrian and Bicycle Plan and to ensure that adequate signs and pavement markings are provided.

**PROPOSED ADDITIONS**

TC.I-L: Continue to support cities’ efforts to locate higher density transit-oriented developments near the existing Capitol Corridor passenger rail line.

TC.I-M: Require projects to facilitate bicycle and walking access when feasible. Adopt development standards and design guidelines that support such access.

TC.I-N: Continue to participate in the Safe Routes to School program.

TC.I-O: Ensure that funding priorities for investment in transportation system improvements are consistent with the land use and economic development goals and policies of the General Plan, especially as these relate to transit-supportive development and are consistent with the *Regional Transportation Plan*.

TC.I-P: Ensure that nonmotorized transportation systems are connected and not interrupted by impassible barriers such as freeways, and include amenities such as secure bicycle parking.

TC.I-R: Work with the Solano Transportation Agency to offer financing programs for the purchase or lease of vehicles used in employee ridesharing programs.

TC.I-S: In cooperation with the Solano Transportation Agency, provide public education about options for reducing motor vehicle–related greenhouse gas emissions. Include information on trip reduction, trip linking, public transit, biking and walking, vehicle performance and efficiency, low- and zero-emissions vehicles, and ridesharing.

TC.I-T: Work with Solano Transportation Authority to create an online ridesharing program that matches potential carpoolers immediately.

TC.I-4a: Adopt road construction standards that account for the needs of pedestrians, bicyclists, and transit.

## **CHAPTER 8, “PUBLIC FACILITIES AND SERVICES”**

### **PROPOSED REVISIONS**

#### **Program PF.I-8, page PF-10:**

PF.I-8: Adopt ordinances that require the use of water-efficient landscaping, water-conserving appliances, and plumbing fixtures.

#### **Program PF.I-14, page PF-11:**

PF.I-14: Encourage water agencies to require water efficiency training and certification for landscape irrigation designers and installers, and property managers. Work with local partners and water agencies to educate the public about water conservation options, including landscaping, irrigation, low-water appliances, and other measures the public can take to reduce water use. Encourage water purveyors to provide incentives for customers that use water more efficiently.

#### **Policy PF.P-21, page PF-15:**

PF.P-21: Sewer services for development within the unincorporated area may be provided through private individual on-site sewage disposal systems, or ~~central~~ centralized community treatment systems permitted and managed by a public agency or public utility utilizing the best systems available that meet tertiary treatment or higher standards. Use of such centralized sewage treatment systems shall be limited to: (1) existing developed areas to address health and safety hazards, (2) areas designated for commercial or industrial uses, or (3) areas designated for rural residential development when part of a specific plan, policy plan overlay, or planned unit development.

**Program PF.I-22, page PF-15:**

PF.I-22: On-site sewage disposal systems for individual lots and subdivisions may be operated by private property owners. A public agency or public utility shall permit and manage a centralized community sewage disposal systems. If lands proposed to be served by a for community sewage disposal systems are not within the boundaries or service area of an existing public sewage treatment agency or utility, the Board of Supervisors shall, as a condition of development, designate a public agency or utility to provide and manage the public sewer service, which may be contracted to a private entity with oversight by the public agency. Sewer treatment facilities shall be designated to provide sewer service to existing developed areas to address health and safety hazards, areas designated for commercial or industrial uses, or areas designated for rural residential development when part of a specific plan, policy plan overlay, or planned unit development and areas designated for future development within the General Plan. An analysis of the financial viability to construct, operate, and maintain a proposed community sewage disposal system shall be required.

**Last paragraph on page PF-19:**

The County contracts with many different companies to collect solid waste. The collection companies pick up nonhazardous solid wastes and transport these wastes to a landfill. Nonrecyclable solid wastes generated in the unincorporated county are disposed of in one of two privately owned landfills: 1) the Potrero Hills Landfill, located near State Route (SR) 12 and Suisun City, and 2) the Hay Road Landfill, located on SR 113 east of Vacaville (see Figure PF-2). The Potrero Hills Landfill is located in the Secondary Management Area of the Suisun Marsh. The Public/Quasi-Public land use designation applied to the Potrero Hills Landfill shall be limited to only solid waste facilities that are established consistent with Solano County Suisun Marsh Local Protection Program Utilities, Facilities and Transportation policy 4 (Appendix C). All other Public/Quasi-Public facilities and uses shall not be permitted at this site. The Potrero Hills Landfill will reach its near-term capacity in 2013, but can be expanded to reach its long-term capacity in 2049. The Hay Road Landfill has until 2070 before it reaches capacity. Each site shall be restored to its original natural condition consistent with each site's approved closure plan and reclamation plan. Restoration may be phased over the life of the landfill. Other than these two landfills, no other facilities accept solid waste in Solano County.

**Program PF.I-27, page PF-22:**

PF.I-27: Expand waste minimization efforts including household recycling, food waste and green waste recycling, business paper recycling, and construction and demolition recycling. Require commercial and industrial recycling. Require building projects to recycle or reuse a minimum of 50% of unused or leftover building materials.

**PROPOSED ADDITIONS**

PF.I-K: Work with the owners and operators of methane-producing facilities (e.g., landfills, dairies, wastewater treatment plants) to establish methane recovery and electricity generation systems.

PF.I-L: The Public/Quasi-Public land use designation applied to the Potrero Hills Landfill shall be limited to only solid waste facilities that are established consistent with Solano County's Suisun Marsh Local Protection Program and *Suisun Marsh Protection Plan*.

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None

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## **CHAPTER 4, “CORRECTIONS AND REVISIONS TO THE DEIR”**

None

**CHAPTER 5, “PROPOSED GENERAL PLAN MODIFICATIONS”**

None

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# **APPENDIX A**

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Reason and Solimar Ventura County Study



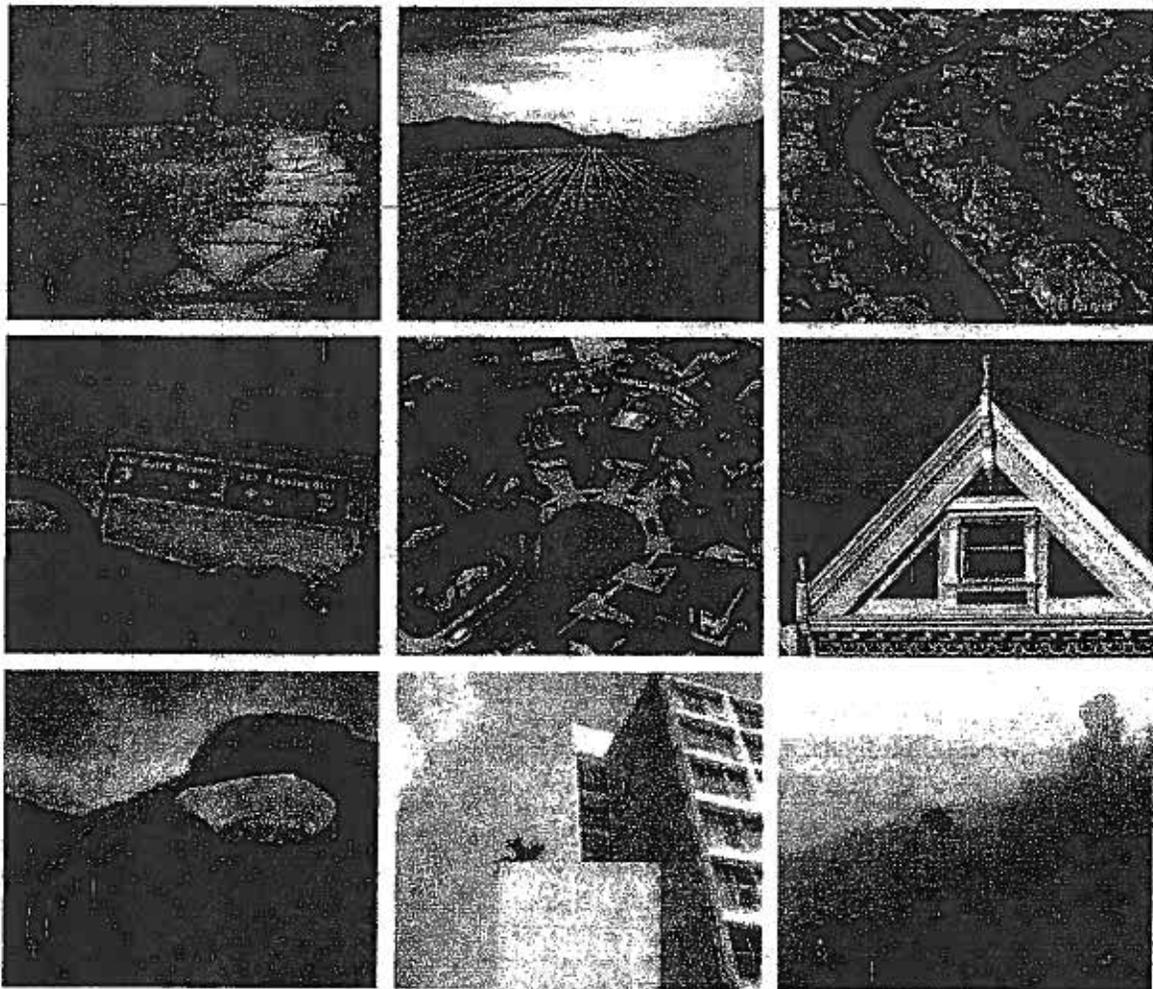


June 2003

*Reason*

## SMART GROWTH IN ACTION, PART 2: CASE STUDIES IN HOUSING CAPACITY AND DEVELOPMENT FROM VENTURA COUNTY, CALIFORNIA

By William Fulton, Susan Weaver, Geoffrey F. Segal, and Lily Okamura  
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# Reason Public Policy Institute



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# Solimar Research Group



Solimar Research Group is a public policy analysis firm based in Ventura, California that focuses on land use, metropolitan growth, and related policy issues. Solimar works with a variety of research and policy analysis partners across the ideological spectrum in order to improve the information available to policymakers and others interested in the field.

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# Smart Growth in Action, Part 2: Case Studies in Housing Capacity and Development from Ventura County, California

BY WILLIAM FULTON, SUSAN WEAVER, GEOFFREY F. SEGAL, AND LILY OKAMURA  
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## Executive Summary

The management of urban growth has emerged as one of the most important local policy issues in the nation. More than a dozen states have enacted some form of statewide growth management law, and most others are actively considering growth management legislation or planning reform laws that will directly affect the pace, pattern, and quality of land development. On the local level, growth management ordinances have become increasingly common, especially in the coastal states, with significant pressure for urbanization.

Despite the groundswell of activism and apparent public support for this new wave of growth management, remarkably little analysis has been done on whether local governments actually do, in fact, implement planning goals and visions. In part, the dearth of research is a result of the highly localized nature of growth management initiatives. Implementation issues, particularly assessments of the capacity of local communities to implement planning goals, are rarely addressed in the debate over "smart growth" or planning law reform.

This report is the second portion of a two-part study that attempts to help fill this void by examining the implementation of growth management techniques in Ventura County, California, a county of some 800,000 residents about 40 miles northwest of downtown Los Angeles and adjacent to Los Angeles County.

The first phase of this study was a quantitative analysis of residential development approvals in the county between 1996 and 2001. This second phase is a "case study" analysis examining six different residential development approvals in more detail.

We found that, despite the passage of Save Open Space and Agricultural Resources (SOAR) growth management initiatives, most cities in Ventura County had not amended their plans or their project approval processes to allow greater density within the boundaries of their municipalities. Quite the contrary, projects

being approved in the cities were likely to have lower densities than the applicable general plans theoretically allowed. By failing to amend their plans or practices, cities were tacitly refusing to take any growth shunted from the SOAR-protected areas, in essence setting the stage for a crisis in housing supply to occur before SOAR's sunset date in 2020 and an exacerbated housing price escalation in the meantime.

Some of the study's findings specific to the mismatch between allowable and approved densities were these:

- Relative to the densities allowed by general plans, projects approved in the county on average provided less than 80 percent of planned capacity.<sup>1</sup>
- Multi-family projects were less likely to be scaled back severely than were single-family ones.
- Projects proposed within specific plan areas were subject to fewer reductions than those that were not.
- Projects in bigger cities were more likely to be approved at close to the plan densities than projects in smaller cities.
- Projects in the eastern part of the county were more likely to be approved at close to plan densities than in other parts of the county.
- The largest capacity reductions were more likely to occur prior to or at the time of application, not during public review of the project.

This last finding in particular engendered another series of questions that suggested pursuing the second phase of the study: What was happening in the so-called "pre-application" stage to spur the density reductions?

In examining the possible answers to this question, we posed five possible explanations for reductions in planned density during the pre-application stage. These were:

1. *The Market.* Developers know what is marketable in any given area at any given time and seek to provide a product that conforms to consumer demand; in some cases, this may mean reducing density. To remain competitive they must also bear in mind other current operating conditions—for example insurance availability, financing trends and tax incentives. Developers will make every reasonable effort to get their projects approved in the most cost- and time-efficient manner.
2. *Politics.* Planners have a good sense of what their elected officials expect to see and will vote to approve. They are loath to advance any project that promises to be highly controversial into the public forum unless they have support from their officials to do so.
3. *"The Devil in the Details."* In the transition from policy to implementation, the site specifics may drive a wedge between what is theoretically allowed under a general or specific plan and what is permissible under zoning regulations or other ordinances that set development standards.
4. *Convenient Memory Loss or Myopia.* The implication of the broad policy statements included in a general plan seldom hit home with residents until a specific development forced the issue. Even when neighbors have been involved in the general plan process, they may lose sight of the bigger picture when focusing on the vacant property adjacent to their own. Their perception of who was in control of the earlier general plan process—previous residents, developers, non-resident landowners—may erode their willingness to support the policies of the general plan.

5. *Aversion to Growth.* Density is still a dirty word for many residents of Southern California. And many planners working in Ventura County may also be growth-averse. The SOAR initiatives created the presumption of limited growth and made no density-tradeoff promises.

In applying this conceptual framework, we selected six case studies of residential development approvals, ranging in size from 75 to 404 units and in density from 3 to 18 units per acre. They were approved at densities ranging from 42 percent to 100 percent of planned density and averaged out to 68 percent. In assessing these six case studies, we found that, of our five possible explanations, no one explanation was the dominant factor in density reduction, and in some cases it was a combination of all five. We did find that market factors, politics, and "the devil is in the details" emerged most frequently as reasons for the reductions. Based on the case studies, however, we did reach four conclusions about the reasons for density reductions in residential development approvals.

**First, developers sometimes do ask for lower densities in order to meet their perception of market demand or other non-regulatory considerations.**

In some cases, developers will seek lower densities because they believe the market will accept single-family and lower-density housing types. Other issues not associated with local land use regulations, such as construction defect liability, may also play a role.

**Second, the capacity in plans cannot always be politically sustained, especially under the pressure of neighborhood opposition.**

Planning policies are not always the result of widespread political consensus. Often, they are brokered by a few interest groups with the motivation or desire to "play the game" at the plan level, including developers and citizen groups. Many stakeholders will sit out the comprehensive planning process and attempt to overturn policies when specific projects are proposed.

**Third, the actual application of planning processes often drives the density down below the capacity contained in plans.**

Project-specific review in California is largely, but not entirely, driven by the dictates of the California Environmental Quality Act, which identifies impacts that could be significant and strongly encourages local governments to take steps to mitigate those impacts. The net result is a system that often drives down the density or drives up the cost or both.

**Fourth, specific plans appear to make a significant difference in creating plans that can be implemented "as-is".**

A specific plan is a document that envisions the buildout of a specific part of a community, often under a separate set of planning policies and regulations. It is a hybrid document that includes planning policies, a buildout scenario, development regulations, and often a financial agreement between the developers and the city as well. Whereas general plans are "big picture" documents that both developers and citizens may have difficulty relating to, specific plans are often "real" enough to engage all parties in a meaningful way. Residents are less likely to stand outside the specific plan process than the general plan process because the issues are focused closer to home.

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## Part 1

# Introduction

The management of urban growth has emerged as one of the most important local policy issues in the nation. More than a dozen states have enacted some form of statewide growth management law, and most others are actively considering growth management legislation or planning reform laws that will directly affect the pace, pattern, and quality of land development. On the local level, growth management ordinances have become increasingly common, especially in the coastal states, with significant pressure for urbanization.

This pattern has been especially true in California, which does not have a state growth management law, but gives local governments great leeway in enacting local growth management ordinances. Not only have local elected officials in California been at the forefront in enacting such ordinances, but voters throughout the state have done the same. Since the 1980s, more than 600 local measures affecting land use policy and land use regulation have appeared on local ballots, mostly in coastal counties.<sup>2</sup>

Growth controls, however, are not implemented in a political vacuum. Once policies are adopted, local politics figure prominently in the question of whether planning goals will be realized. Particularly in the United States, where planning is explicitly local and must be adopted by locally elected officials, these political constraints are important elements of the planning process and should be incorporated into an evaluation of the success of the planning process and recommendations for further reform.

Despite the groundswell of activism and apparent public support for this new wave of growth management, remarkably little analysis has been done on whether local governments actually do, in fact, implement planning goals and visions. In part, the dearth of research is a result of the highly localized nature of growth management initiatives. Implementation issues, particularly assessments of the capacity of local communities to implement planning goals, are rarely addressed in the debate over "smart growth" or planning law reform.

This report is the second portion of a two-part study that attempts to help fill this void by examining the implementation of growth management techniques in Ventura County, California, a county of some 800,000 residents about 40 miles northwest of downtown Los Angeles and adjacent to Los Angeles County. Home to one of the most aggressive local approaches to growth management in the United States, Ventura County holds important lessons for all local governments attempting to plan development. The first phase of this study was a quantitative analysis of residential development approvals in the county between 1996 and 2001. This second phase is a case study analysis that examines six different residential development approvals in more detail.



Over the past 30 years, the county has engaged in a series of strong growth management and local government organization efforts seeking to preserve agricultural land and channel development into the county's cities. The result is a county with a unique spatial structure. The county still has more than 100,000 acres of irrigated agriculture. More than 90 percent of the population lives inside the county's 10 cities. But no one city is dominant. As Table 1 reveals, the county has four cities with populations of at least 100,000 but no city with a population of 200,000.

**Table 1: Population of Ventura County and its Cities, 1990-2002**

	1990 Census	2000 Census	% Increase, 1990-2000	2002 State Estimate	% Increase, 2000-2002
Camarillo	52,297	57,077	9.1%	59,500	4.2%
Fillmore	11,992	13,643	13.8%	14,400	5.5%
Moorpark	25,494	31,415	23.2%	33,050	5.2%
Ojai	7,613	7,862	3.3%	7,925	0.8%
Oxnard	142,560	170,358	19.5%	182,000	6.8%
Port Hueneme	20,322	21,845	7.5%	21,850	0.0%
San Buenaventura	92,557	100,916	9.0%	102,300	1.4%
Santa Paula	25,062	28,598	14.1%	28,750	0.5%
Simi Valley	100,218	111,351	11.1%	115,500	3.7%
Thousand Oaks	104,381	117,005	12.1%	121,000	3.4%
Unincorporated	86,520	93,127	7.6%	93,800	0.7%
<b>Total</b>	<b>669,016</b>	<b>753,197</b>	<b>12.6%</b>	<b>780,075</b>	<b>3.6%</b>

Source: California Department of Finance, Demographics Research Unit

The county's cities are geographically distinct from one another and maintain separate socio-economic identities as well. For example, six of the 10 cities have white populations of more than 70 percent, while three of the remaining four have Hispanic populations of 60 percent or more.<sup>3</sup> The county is separated into at least three areas that are experiencing pressure for urbanization. The first is the "East County," meaning cities such as Thousand Oaks, Moorpark, and Simi Valley, which are located close to the San Fernando Valley and at the top of the "Conejo Grade," a dramatic rise in the topography located along Highway 101 several miles inland from the ocean. The second is the "West County," meaning such cities as Oxnard, Ventura, and Camarillo, which are located below the grade, near the ocean, and along the rich agricultural soil of the Oxnard plain. The third is the Santa Clara Valley, another agricultural area along the Santa Clara River that is more remote from urbanization than the first two and consists mostly of the incorporated cities of Santa Paula and Fillmore.<sup>4</sup>

Most recently, the county's residents have passed a series of ballot-box zoning measures known as the Save Open Space and Agricultural Resources (SOAR) measures, which have been adopted in all but two of its cities.<sup>5</sup> These measures create urban growth boundaries around each city and require a public vote to change those boundaries. A SOAR measure was also adopted for unincorporated areas, and requires a countywide vote for land to be converted from agricultural or open space zoning to urban development. It is important to note that although the SOAR measures subjected future changes to a public vote, they did not substantially alter the growth management system already in place at the time.

There is no question that Ventura County's growth slowed during the 1990s. Between 1990 and 2000, the county's population grew by 12.6 percent, from approximately 669,000 to approximately 753,000, and the number of households grew by 11.9 percent, from approximately 217,000 to approximately 243,000. Despite

the county's strong legacy of growth control, these figures were typical of California generally and the metropolitan Los Angeles region in particular. The deep recession of the early 1990s appeared to depress population growth throughout California. Over the decade the population grew by 13.8 percent, from 29.8 million to 33.9 million, while households increased by 10.8 percent, from 10.3 million to 11.5 million.

Even though its population growth was below the statewide average, Ventura County did not produce enough housing to keep up with either population growth or household growth. During the 1990s, only about 23,000 units were added to the county's housing stock, a 10.2 percent increase, compared with 45,000 units in the 1980s and 77,000 units in the 1970s. Much of the additional population was accommodated by filling up vacant units (the vacancy rate dropped from 4.8 percent in 1990 to 3.3 percent in 2000) and by increasing household size (household size increased from 3.08 persons per household in 1990 to 3.10 persons per household in 2000.)<sup>6</sup>

Ventura County	1990	2000	Net Change	Percent
Population	669,016	753,197	84,181	12.6%
Housing Units	228,478	251,712	23,234	10.2%
Households	217,298	243,234	25,936	11.9%

In the first phase of this study, *Smart Growth in Action: Housing Capacity and Development in Ventura County*,<sup>7</sup> we examined the effects of growth management policies at the county level in trying to understand why the level of housing production might have decreased. We took into account trends in population growth, demographics, and household formation, both before the imposition of these new controls and after they had been in place, to see what effect they had had on residential development and the general (or comprehensive) planning process.

We found that despite the passage of SOAR growth management initiatives, most cities in Ventura County had not amended their plans or their project approval processes to allow greater density within the boundaries of their municipalities. Quite the contrary, projects being approved in the cities were likely to have lower densities than the applicable general plans theoretically allowed. By failing to amend their plans or practices, cities were tacitly refusing to take any growth shunted from the SOAR-protected areas, in essence setting the stage for a crisis in housing supply to occur before SOAR's sunset date in 2020 and an exacerbated housing price escalation in the meantime.

Some of the study's findings specific to the mismatch between allowable and approved densities were these:

- Relative to the densities allowed by general plans, projects approved in the county on average provided less than 80 percent of planned capacity.<sup>8</sup>
- Multi-family projects were less likely to be scaled back severely than were single-family ones.
- Projects proposed within specific plan areas were subject to fewer reductions than those that were not.
- Projects in bigger cities were more likely to be approved at close to the plan densities than projects in smaller cities.
- Projects in the eastern part of the county were more likely to be approved at close to the plan densities than in other parts of the county.

The largest capacity reductions were more likely to occur prior to or at the time of application, not during public review of the project.

This last finding in particular engendered another series of questions that suggested pursuing the second phase of the study: What was happening in the so-called "pre-application" stage to spur the density reductions?

The pre-application stage is usually characterized by a series of private discussions—and informal negotiations—between the real estate developers applying for permit approvals and the government staff planners who process the permits. To our knowledge, no previous research had documented that the pre-application stage had such a profound impact on the final outcome of development approvals. And it was not clear from our quantitative analysis just exactly how the pre-application stage was reducing densities.

Was the story mainly about the developers' sense of what the market would buy, as many planners suggested? Or was it more a matter of planners imposing their ideas about good urban form or guiding developers to a better understanding of what the political climate in their community would support, as many developers suggested? This is the basic question that we sought to answer in this second phase of the research project.

Part 3

# Framing the View: A Conceptual Framework of the Development Approval Process

The literature on development project approvals is thin. There is little literature on real estate development, for example, that describes the motivations of developers seeking lower densities; indeed, what literature exists focuses on how developers might increase densities during the project approval process.<sup>9</sup>

Meanwhile, literature on city planning offers little insight into the breach between comprehensive planning and implementation, but does speak to some of the political issues surrounding project approval—specifically public consensus and the influence planners exert at various points in the approval process.

If residential development projects are approved at lower densities than the underlying plans call for, this may reflect a lack of consensus in the community about the densities contained in the plan itself. Though a California jurisdiction's general plan may map out its future development through policy statements,<sup>10</sup> it is not always a consensus document. The formal adoption process—with its emphasis on public hearings—does not lend itself to the type of dialogue required to reach consensus<sup>11</sup> and the focus on the technical aspects of planning, including environmental impact reports, often deters the average citizen from participating in the process. As a consequence, the resulting plans are generally not considered by public officials to be indicative of the community's vision of itself because the most likely to participate are those associated with special interest groups.<sup>12</sup>

Even among those who do participate in the general planning process, few will stick around after the general principles have been adopted to hammer out the specifics that will guide implementation. Much like Captain Picard, of Star Trek fame, the public in effect waves its hands and declares, "make it so." The result is that what is adopted as policy is often expected by citizens to impinge only on someone else's choices. A survey taken in Wisconsin and reported on by the *Milwaukee Journal Sentinel* revealed that while more than three-fourths of those polled voiced support for compact, pedestrian-friendly development, two-thirds indicated they would not consider living in such a development because they themselves prefer lower-density neighborhoods.<sup>13</sup>

Public involvement in the general planning process provides no guarantee that implementation of the adopted plans will proceed smoothly. Many stakeholders do not participate in the plan-making process and enter the fray only when individual projects are presented for approval at the implementation level.

Furthermore, at such a late stage, they will often contest not only the specifics of the project but challenge the general plan principles as well.<sup>14</sup>

At the implementation level, planning is not as antiseptically technical an exercise as might be expected by those not involved in the development community. The entitlement process is often the vehicle used by elected and appointed officials to advance their own view of the community, no matter what the existing plans say. Their personal agendas are often implicitly promoted in the project approval process by staff members, for whom job security and career advancement may be more important than adhering to good planning principles.<sup>15</sup>

The dynamic tension between the various actors involved in real estate development is multi-layered, and an understanding of its local peculiarities is critical to political effectiveness. Even as local government planners seek to further the agendas of their elected officials, they also maintain close working relationships with developers who cultivate such relationships in order to facilitate approval of their projects, though, as public servants, planners are charged with serving in the public interest.<sup>16</sup>

Though planners may be active participants in the development approval process, their relationship with developers is not necessarily a simple, straightforward and trusting one. Planners may share a specialized set of tools with developers, but they generally are not similarly concerned with development economics. Manuals on planning practice advise that the policies, guidelines, and standards that will be applied “should be ironed out in the pre-app process...elements of the project get locked in fast because it is in early phases that projects are approved for financing by banks and other lenders.”<sup>17</sup> But it is not uncommon for planners to use the financial value of time as a strategic tool to shape projects to match what they envision for particular sites. Simply put, the planners, unlike the developers, need not be concerned about the cost of money over time and the need to reach the marketplace with products quickly.

With planners as the gatekeepers to the project approval process, compliant developers will have help in expediting the approval process; others may find that inter-agency wrangling or other snags will subject them to expensive slow-downs.<sup>18</sup>

Since planners provide a link between adopted policies, elected officials, citizens, and developers, their role has also been described as facilitation. Working with developers, in the pre-application and application processes, planners convey what types of development are likely to receive community support or spark community opposition. Ethically, there is a limit to the amount of advice planners can give developers before they cross the line into advocacy. Frequently planners wind up conducting “shuttle diplomacy” between the various interested parties.<sup>19</sup>

Given all these factors, we constructed a conceptual framework suggesting five different possible reasons why densities might be reduced at the project approval stage. As we approached the case studies, we did not believe that the answer would always lie with only one of the five possibilities. Rather, given the fact that individual circumstances in real estate development vary widely across markets, communities, and land parcels, we believed that a different combination of reasons would exist in each case. However, we believed that, over six case studies in the same county, we would find consistent patterns.

Our five possible explanations for reduced densities at the project approval stage were as follows:

1. *The Market.* Developers know what is marketable in any given area at any given time and seek to provide a product that conforms to consumer demand; in some cases, this may mean reducing density. To remain competitive they must also bear in mind other current operating conditions, for example insurance availability, financing trends and tax incentives. Developers will make every reasonable effort to get their projects approved in the most cost- and time-efficient manner.
  2. *Politics.* Planners have a good sense of what their elected officials expect to see and will vote to approve. They are loath to advance any project that promises to be highly controversial into the public forum unless they have support from their officials to do so.
  3. *The Devil in the Details.* In the transition from policy to implementation, the site specifics may drive a wedge between what is theoretically allowed under a general or specific plan and what is permissible under zoning regulations or other ordinances that set development standards.
  4. *Convenient Memory Loss or Myopia.* The implication of the broad policy statements included in a general plan seldom hit home with residents until a specific development forces the issue. Even when neighbors have been involved in the general plan process, they may lose sight of the bigger picture when focusing on the vacant property adjacent to their own. Their perception of who was in control of the earlier general plan process—previous residents, developers, non-resident landowners—may erode their willingness to support the policies of the general plan.
  5. *Aversion to Growth.* Density is still a dirty word for many residents of Southern California. And many planners working in Ventura County may also be growth-averse. The SOAR initiatives created the presumption of limited growth and made no density-tradeoff promises.
-

## Part 4

## Methodology

To pry open the “black box” of the pre-application process, the case study approach was taken. The original study had considered 126 different residential projects in nine of the 10 cities in the county. While assembling our database on the 126 different projects, we identified approximately 30 projects that might be suitable for case studies based on their characteristics. In preparing for this phase of the study, we whittled these 30 projects down to six. These projects were chosen specifically because they represent a range of situations representative of the county as a whole. Among the considerations were the following:

- The six case studies include one each from six of the county's 10 cities.
- All six residential projects were approved and constructed in the late 1990s.
- The projects were approved at densities ranging from 42 percent to 100 percent of the densities called for in the city's planning documents.
- The projects range in size from 75 to 404 units.
- The projects range in density from 3 to 18 units per acre.
- Two of the six projects were multi-family projects and four were single-family projects.
- Five of the six projects were located within specific plan areas. One was in fact removed from a specific plan area, and another involves a transfer of density within a specific plan area.

The six projects included are:

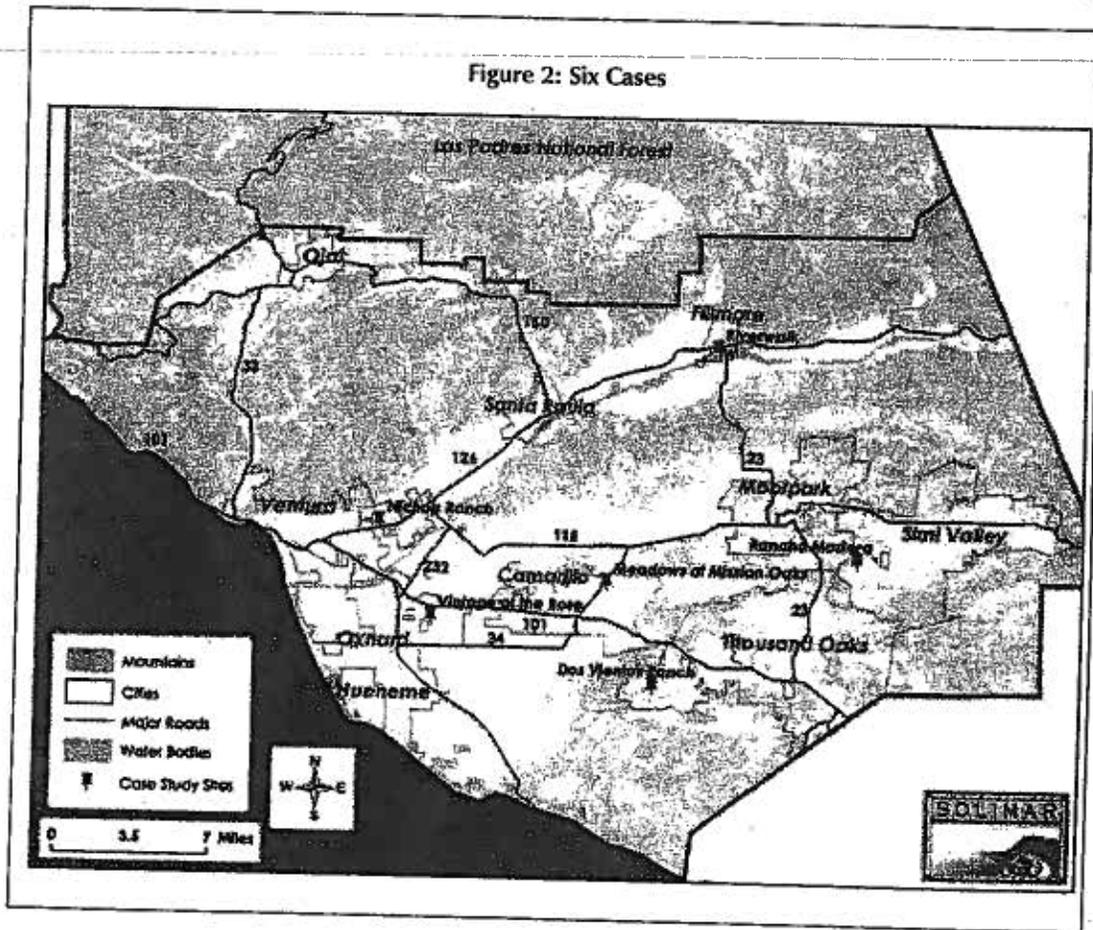
- Meadows at Mission Oaks, a 221-unit detached condominium project in Camarillo.
- Riverwalk, a 144-unit single-family neighborhood in Fillmore.
- Vintage at the Rose, a 404-unit multi-family complex in Oxnard.
- Rancho Madera, a 75-unit single-family neighborhood in Simi Valley.
- Tract 5095 at Dos Vientos Ranch, a 168-home subdivision in a master planned community in Thousand Oaks.
- Nichols Ranch, a 198-unit single-family home subdivision in Ventura.

As shown in Table 3, the case studies were approved at densities that ranged from less than half the maximum assigned in the relevant general plans to nearly 100 percent (in the case of Vintage at the Rose). Taken as a group, the projects were approved at about 70 percent of maximum density. Compared to specific plans or zoning minimums, Vintage at the Rose, Dos Vientos and Nichols Ranch were all approved at

greater densities. The average for the six was still only 85 percent, largely because Riverwalk was approved at only 45.5 percent of the minimum indicated by zoning. The approval rates for the six case studies are higher than those for the total 126 projects included in our previous study, where the overall approval rates were 55 percent of general plan density and 79 percent specific plan/zoning minimum capacity.

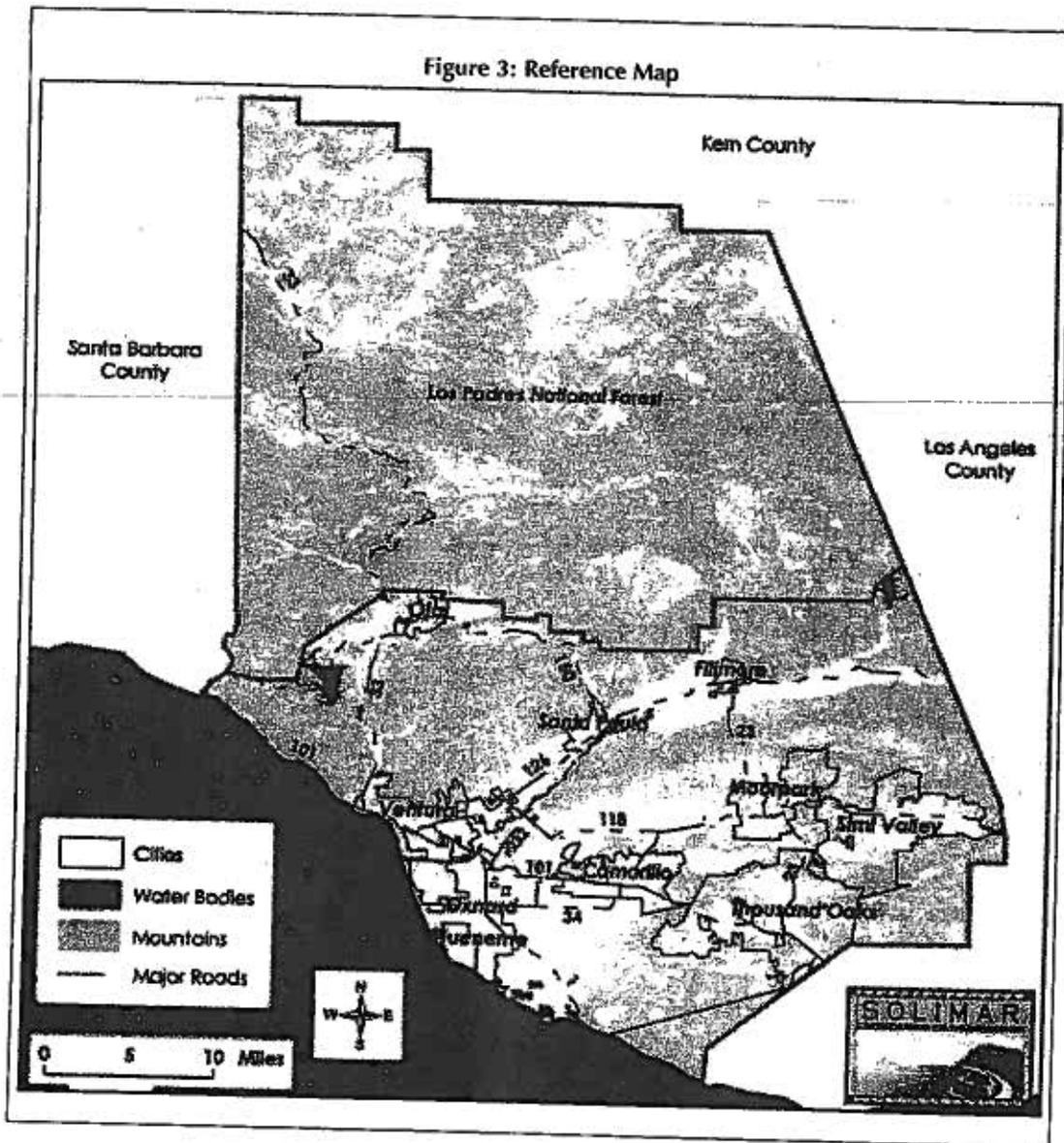
**Table 3: Approved Capacity as Percent of Planned Capacity**

	General Plan Maximum Density	Specific Plan/ Zoning Minimum Density	Initial Application Density	% of General Plan Density	% of Specific Plan/ Zoning Density	Final Approval Density	% of General Plan Density	% of Specific Plan/ Zoning Density
Meadows at Mission Oaks	10.0	10.0	11.1	111%	111%	8.2	82.0%	82.0%
Riverwalk	11.0	11.0	5.9	54%	54%	5.0	45.5%	45.5%
Vintage at the Rose	18.0	18.0	22.0	122%	122%	18.0	99.8%	100.0%
Rancho Madera	7.0	3.3	3.2	46%	97%	3.1	44.3%	93.9%
Dos Vientos	4.5	3.1	3.4	76%	110%	3.2	71.1%	103.2%
Nichols Ranch	12.0	6.0	7.1	59%	118%	6.2	51.7%	103.3%
Average for Case Studies	10.4	8.6	8.8	84%	103%	7.3	69.9%	85.0%



Once the six case studies were identified, the researchers took a qualitative approach to the actual research. Specifically, we:

1. Reviewed the project file available at each city planning department;
2. Assembled a preliminary chronology telling "the story" of the project approval;
3. Interviewed between two and five participants in each project approval, including the developer applicants, the city's case planner, and in some cases elected officials and planning commissioners; and
4. Revised the chronology based on the interview, thereby fleshing out the case study.



## Part 5

## Camarillo: Meadows at Mission Oaks

Meadows at Mission Oaks, a 221-unit detached condominium project in Camarillo, was approved at 82 percent of the density called for in both the city's general plan and in the Pitts Ranch Specific Plan. Though the project was a long time in the making, its approval process was remarkably uncontroversial. Market conditions may have been a major factor in lowering the density, but the devil was definitely in the details.

Camarillo, a mid-sized city located amidst the farmland of the Oxnard plain, has been growing in both size and importance because of its advantageous location along Highway 101 in the very center of the county. The Meadows at Mission Oaks was a project typical of Camarillo in the 90s—a "greenfield" development at the eastern edge of the city that reflected the shift away from single-family residences that occurred in some parts of the city.

Throughout the decade of the 1990s, Camarillo was adding population more slowly than most cities in the county, but it was adding housing at an unsurpassed rate. Despite the real estate downturn in the early nineties, the city increased its housing stock by 7.9 percent between 1990 and 1994, and by 8.5 percent between then and the end of the decade. When the housing price bubble burst, the real median home price in Camarillo plummeted by more than 30 percent, slightly more than the county average of 28.2 percent.<sup>20</sup>

It was in this climate that the Meadows at Mission Oaks project was proposed in 1990. By the time the project was built almost a decade later, the real estate market had rebounded and the real median home price had risen by 27 percent over its 1995 level, but still was nearly 12 percent below its 1990 high.<sup>21</sup>

That it took so long to build the Meadows project has more to do with the real estate market than with the city's review and approval processes. In fact the city's stance during that time has been characterized as moderately growth-promoting.<sup>22</sup> With a jobs-to-housing ratio of 1.6, it is on a par with Thousand Oaks.<sup>23</sup> Though the city established a maximum build-out population in 1986, it has distributed the housing unit allocations using a consistent set of standards that, unlike Ventura's process (described later), lays out a predictable path to development entitlements.

The Meadows at Mission Oaks project occupies the northwest portion of the area comprising the 211-acre Pitts Ranch Specific Plan (PRSP) in the city of Camarillo. Lying to the south of Upland Road, it is also bounded by Flynn Road on the east, the Southern Pacific Railroad tracks and Lewis Road to the west. To the south, there is a landscaped buffer dividing it from an area designated for industrial development. Until development began, Pitts Ranch was a lemon grove. It adjoined St. John's Seminary, which is located on the

north side of Upland Road. When the Pitts Ranch Specific Plan was drawn up, both the Pitts Ranch and land belonging to St. John's were included. The Meadows was built on a portion of the latter property.

The area occupied by the Meadows is shown in the Pitts Ranch Specific Plan as a 33.8-acre parcel carrying a Residential-Low Medium (R-LM) designation of 10 dwelling units per acre. Another 8-acre parcel was set aside for R-LM in the southern portion of the plan area. Theoretically, the Meadows project could have accommodated 338 homes, or 80 percent of the total set aside for R-LM in the specific plan area. The amount of acreage that comprises the site was a continuing matter of discussion, however, and was revised several times prior to project approval. But up until late in the project's history, its developers consistently adjusted their plans to conform to the 10 units per acre density specified by the specific plan.

When Village Properties first submitted project plans to the city in December 1990, the company had estimated the site at 29.4 acres and designed a 299-unit attached condominium project.<sup>24</sup> In May of 1991, surveyors re-calculated the size of the parcel and then determined that it was only 28 acres. Accordingly, revised plans were drawn showing 280 units in clustered 2- to 6-unit buildings, still right on the mark of 10 dwelling units per acre. These plans were approved, but carried a condition that the tract map could not be recorded nor construction started until a final plan for Calleguas Creek had been submitted. The applicant also requested that the development allotments necessary under the city's growth management ordinance be awarded to him from the 1992 allotments.

In early 1992, approved plans and allotments in hand, Village filed for a modification that would allow it to record its map and develop the site prior to the completion of the Calleguas Creek Study. The study was being managed by Pardee, another developer in the specific plan area whose property was adjacent to the creek. A dispute between the city and Pardee regarding a mobile home site was holding up the study's finalization. Since its condominium project was not near the creek, Village Properties asked for relief from the condition. No action was taken on the issue, however, and in March of 1993, the developer requested a one-year time extension on that basis. It was approved, and in August the city council finally approved the deletion of the condition of approval related to the Calleguas Creek Study, clearing the way for Village Properties to record its map and begin construction.

In December 1993, the developer once again requested a plan modification. Yet another site survey had determined the parcel to be only 26.9 acres. It is unclear what the problems were in accurately determining the size of the parcel. Contributing factors may have been the proximity of rights-of-way for the future widening of Upland Road and for the Southern Pacific Railroad tracks. In order to mitigate the noise of the railway, a sound-attenuating wall of block, earth and plants was designed. The width of this structure may have reduced the useable space.<sup>25</sup> Whatever the reason for the corrected acreage, Village adjusted the number of units, reducing them from 280 to 266. Despite the approval of these changes, the developers still did not break ground. With the difficulties in complying with ordinances resolved, "the market" now entered the picture.

Changes in real estate market conditions and in construction liability laws prompted Village to apply for yet another modification in late 1995. Based on its experience with another attached condominium project, which was suffering from lagging sales, Village had deduced that current buyer demand was for detached units. This, coupled with its concerns about its ability to get construction liability insurance for attached units, prompted Village to ask permission to build 221 detached condominium units rather than the 266 attached ones for which it had entitlements.<sup>26</sup> With only 221 units on 26.9 acres, the density was now reduced to 8 units per acre and the Village once again had a set of approved plans.

This was the critical decision in determining the final density, and it was apparently made by the developer for solely market-based reasons. Had Village pursued a single-family scenario on the property, it almost certainly would have occurred at an even lower density, because—even with detached units—a condominium project still did not need to meet single-family setback requirements. As it was, however, the decision to "pull apart" the units reduced the project's density by some 1.5 units per acre.

Five years later, the project still had not been built. Village continued to apply for time extensions, apparently trying to weather the dismal real estate market conditions. Prior to construction, Village sold the property to Pardee, which finally built the units in 2000. Asking prices for the units ranged from approximately \$300,000 upward.<sup>27</sup>

Though the number of units steadily decreased through the development history of the Meadows project, density was not reduced until late in the game. Even then, it wasn't city staff or adjacent property owners who drove the process. Rather, the density decline occurred for two reasons. First was the "devil in the details." Repeated property surveys steadily diminished the developable area of the parcel. Second was the role of "the market," or at least the developer's concerns about construction defect liability and product type, which were not a local land-use regulatory issue. Village Properties is defunct, and those who worked for it and might have explained why it took so long to get the details right are apparently no longer in the industry. Tony Bowden, who was the Development Director at the time and had an encyclopedic knowledge of development in Camarillo, is deceased. It is clear, however, in the memories of others involved and from the published public record that in this instance the density reductions were made solely at the behest of the developer in response to a market experience he interpreted as a consumer preference for single-family detached units.

## Part 6

## Fillmore: Riverwalk

By far the largest differential between theoretical and approved density found in these case studies existed in the Riverwalk project in Fillmore. The initial application represented about 54 percent of the maximum allowable density; the plans finally approved were at 45 percent. As is often the case in highly political circumstances, the reductions were a result of a complex mélange of all five possible explanations.

With an area of three square miles and a year 2000 population of 13,643, Fillmore is by far the smallest city in the study and one of the fastest growing. Traditionally, Fillmore was a citrus packing town in the Santa Clara Valley, far from most urbanization. It is perhaps best known for its picturesque 1920s downtown, and a majority of its residents are Hispanic. Much of its recent growth is attributable to its increasing role as a bedroom community for Ventura, which is located 20 miles to the west. Continued population and job growth in Santa Clara (20 miles to the east) has also created more urbanization pressure.

Through the 1990s, population growth outstripped housing production. While its population was growing at a double digit pace during the decade (13.8 percent), housing expanded by only 4.4 percent from 1990 to 1994 and by an even lower rate of 3.4 percent between 1995 and 2000. Meanwhile, the median house price increased by nearly 35 percent—the second-highest rate of increase in the county.<sup>28</sup> To some extent this increase was certainly fueled by the competition of buyers for homes in this relatively affordable community, but it was also affected by the conscious effort of the city council to move the city up-market. While Fillmore did not adopt SOAR boundaries at the ballot box (but rather at the city council level after seven other cities had voted to impose them)<sup>29</sup> and does not have any other growth management policy,<sup>30</sup> neither does it give free rein to development. Rather it relies on its general plan and zoning ordinances to control growth and direct developers into the markets the city wants to see developed, as the Riverwalk project illustrates.

The 28.95-acre area that would become Riverwalk was the mish-mash remainder of agricultural acreage held by multiple owners, who had carved up their individual properties over the years to accommodate the surrounding development. It butted up against State Route 23 to the east. River Street and existing single-family residential development lay to the north, to the west lay undeveloped land and the city's sewage treatment plant, and to the south the Santa Clara River. The parcel was not an economically viable agricultural property, and was not in an agricultural preserve. Though it lay alongside the river, the property was not included in the floodplain on FEMA maps. The Fillmore general plan designated the area as Residential Medium, which provides for 7 to 11 dwelling units per acre and, theoretically, between 200 and 318 units could have been developed on the parcel.

These attributes suggested to Lynn Jacobs, president of Ventura Affordable Homes, Inc., that the site would be a perfect place for an affordable housing project much like one she had developed recently in Ventura.<sup>31</sup> She undertook to acquire the property, and in late 1996 she approached the city with a plan that would have put approximately 7 affordable single-family houses per acre on the site. The project that was ultimately approved provided 4.97 units per acre, barely more than 70 percent of Jacobs' original proposal and the low-end of the density range assigned in the general plan. No affordable units were included.

Opinions among the participants on what led to the knockdown in density differ. From the developer's standpoint, the city made it impossible to develop within the 7 to 11 units per acre density range provided for in the general plan, and in so doing priced the homes that could be built there out of the affordable range. But in the city's view, expressed by City Planner Kevin McSweeney, it was the developer who drove the density reduction by requesting to build single-family homes in an area that theoretically could have been developed with multi-family residences.<sup>32</sup>

McSweeney had expected that apartments would be proposed for the property. The rationale he recalls Jacobs giving for proposing the single-family development was "that is what sells." Though the city was grappling with the housing targets assigned by Southern California Association of Governments, McSweeney indicates that city officials were not in all respects disappointed that multi-family housing was not being proposed for this particular location.<sup>33</sup> They suspected the local political environment would not have supported it. When Jacobs came in with her single-family proposal, the city planning commission played its "devil-in-the-detail" card and noted that the zoning ordinance set minimum lot size in single-family residential at 6,000 square feet.

Still intent on building affordable housing but knowing that the 6,000-square-foot lot size would preclude this, Jacobs argued in the pre-application process in early 1997 that the city's development permit allowed the city to relax its minimum lot size in return for design concessions. In September 1997, she submitted plans for 162 units, or 5.6 per gross acre, but as negotiations continued and the city laid out the mitigations it would require, she became convinced that the city had no intention of allowing affordable units at that location. The amenities package initially requested included a 2.86-acre linear park, a horse trail, improvements to the adjacent sewer treatment facility, a grid-patterned street design, parkways, neo-traditional architectural features and utility line undergrounding that extended beyond the borders of the project. These, Jacobs believes, indicated that the city was consciously pricing the property out of the affordable range. From the city's perspective, these pointed strictly to its desire to apply "new urbanist" design principles.

Jacobs regrouped and joined with Kaufman and Broad to redesign the development to include 162 homes, upgrading the architectural details and incorporating the neo-traditional designs features that city council and staff had suggested. Pressing her point that the city's ordinances allowed for lots of less than 6,000 square feet with the approval of a development permit, Jacobs continued to negotiate with city staff over lot size. When the application was deemed complete in March 1998, staff and developers had compromised—the number of units being proposed had been reduced from 162 to 152, or 5.25 units per gross acre; the average lot size was 5,265 square feet. But at estimated selling prices of \$175,000 to \$250,000, the homes were no longer priced in the "affordable" range.<sup>34</sup> Nevertheless, the applicant's name—Ventura Affordable Housing—generated substantial and persistent opposition to the project among adjacent property owners.

At the July 1998 planning commission hearing on the 152-unit plan, Jacobs responded to the staff report by pointing out that the lot sizes included in her plan were substantially larger than those of surrounding

developments. The commission reiterated its desire to see standard 6,000 square foot lots. One commissioner went so far as to suggest that the developer acquire more land south of the levee in order to increase lot sizes. Several area residents spoke against the project, citing the substandard lot size and their concern that houses on small lots would likely become HUD rental units. The hearing was continued and the applicant advised that the commission wanted, among other things, to see larger lots. That desire was restated at the subsequent continued hearings in August.

At the September 3, 1998, meeting, Jacobs presented new site plans to the planning commission, apologizing that they had not been available earlier.<sup>35</sup> The developers had eliminated all lots under 5,000 square feet, which along with a street change had eliminated two lots. Staff asked that the site plan and footprints be submitted to staff rather than be reviewed by the commission on the spot, and the commission agreed. But following public comments, the commission indicated that the applicant had not sufficiently addressed their concern about lot size. During commissioners' comments, it was suggested that the applicant reduce the number of units—this time to 140 (4.8 units per acre)—and redesign the project so that the minimum lot size would be 6,000 square feet. The hearing was continued for two weeks, and when that hearing was concluded, the commission validated the 5,000-square-foot minimum lot size, but required that the median lot size be 5,800 square feet. As explained later by McSweeney, who was the case planner at that time, this continued insistence was based on the planning commissioner's belief—one shared by the city council—that buyers came to Fillmore looking for larger lots than were available in the more urban settings of Santa Clarita or Ventura County's coastal cities.

Jacobs reworked the plans, and in October 1998 she returned to the commission with a plan for 144 units, or ~~4.97 units per gross acre—62 percent of low end of the density range shown in the general plan.~~ The average lot size was now 5,500 square feet but the median was 5,200 square feet, not the 5,800 square feet the commission has requested. Despite this, city planning staff supported the plan, citing the design and infrastructure concessions as justification for allowing the smaller lot sizes. Though several members still pressed for 5,800-square-foot median lot size, after two failed motions, the commission finally recommended approval of the project to the city council, but not without reiterating its desire to have larger lot sizes.

In December 1998, the city council approved the development with the median 5,200 square foot lots, finding that the design of the project warranted the deviation from the 6,000-square-foot standard established in the zoning ordinance for single-family homes. Among the mitigating benefits were:

1. A new levee designed not only for safety but also for aesthetics;
2. A park nearly twice the size that would have been required by the city's park and recreation land dedication ordinance;
3. Payment of half of the fees that would have been assessed in lieu of park provision;
4. Incorporation of traditional neighborhood design features;
5. Street lighting upgraded to the nostalgic "Fillmorean" poles used in the civic center;
6. Rubberized asphalt paving on subdivision streets;
7. Landscaped parkways between the street and the sidewalks; and
8. An odor attenuation system for the city's sewage treatment plant.

Though Ventura Affordable Housing had acquired the necessary approvals, the company did not go on to build the project, but sold the entitlements to Greystone Homes in mid-1999.<sup>36</sup> Greystone then joined with Western Pacific Housing to form Grewes LLC, and in February of 2000 briefly floated a proposal to modify the plan to include 103 duplex housing units and 71 single-family homes. This would have increased the number of units per acre to 6, but the officials' response to the revision prompted Grewes, to withdraw the proposal from further consideration.<sup>37</sup> Instead, the partnership later applied for and received approval of a plan modification that allowed the inclusion of more single-story homes than had been proposed by Jacobs' firm, but did not increase the number of units. Hence the density remained at 4.97 units per gross acre.

The homes eventually sold for prices ranging upwards of \$200,000.<sup>38</sup> Though city officials had expected buyers to come from northern Los Angeles County, as it turned out the majority came from Ventura County, specifically Ventura, Camarillo and Santa Paula.<sup>39</sup>

It is arguable that the density reduction in the case of Riverwalk was introduced by the developer, but only to the extent that she opened a window of opportunity for the city by requesting single-family homes in an area zoned to accommodate multi-family residences—a proposal based in part on her reading of the marketplace. Jacobs had accurately gauged the city's reluctance to develop single-family projects at the high end of the MDR range of 7-11 units. It is doubtful, though, that a multi-family project of any size would have been approved on the site. It was clear from the outset of this case that the adjacent community favored lower-density development, and the concerns raised in public hearings about HUD rental units indicate there would have been vociferous opposition to a multi-family project. While City Planner Kevin McSweeney indicates that he had waged an ongoing campaign to have the planning commission relax their focus on density in favor of neighborhood design, they remained intent on increasing lot-sizes in this project even as they handed the project off to the city council.

In the case of Riverwalk, then, the density reductions came at every point along the path to approval, and all possible explanations played a role. The developer, taking the market into account and using staff's input to gauge the city's mood (politics), proposed a single-family project at the low end of the density range allowed; planning staff and city officials decreased the density in the pre-application stages by requiring neo-traditional amenities (politics and devil in the details); the city planning commission in the public hearing process (myopia and growth aversion) ratcheted the density down further, though not as far as some commissioners might have liked.

## Part 7

## Oxnard: Vintage at the Rose (Tierra Vista)

Vintage at the Rose offers a rare example of a city's adopting a general plan and adhering faithfully to it. In this case politics trumped the market. Despite the developer's argument that consumers would prefer single-family residences to the multi-family residences that were called for in the Northeast Community Specific Plan, the city staff's resolve to stick to its plan was unwavering.

Located in the heart of the Oxnard plain, Oxnard is the largest city in Ventura County (182,000 residents) and, during the 1990s, it was the second-fastest growing, behind only Moorpark. It is heavily Hispanic and has a younger population than the county on average. It is also more crowded, with more than 30 percent of housing units having more than one person per room.<sup>40</sup> With an area of 24 square miles, it is far from the largest of the study cities in terms of geographical size, but it is the most hospitable to a variety of housing types. Despite this, Oxnard's housing production is not keeping up with population growth. While the population grew by 19.8 percent over the last decade, housing units increased by slightly less than 11 percent. The majority of this growth occurred between 1995 and 2000.<sup>41</sup>

Vintage at the Rose, which would later be renamed Tierra Vista, was proposed and built in this latter time frame. The property is located in the northeast section of the Oxnard's Northeast Community Specific Plan (NECSP) area, an area just south of the emerging retail corridor along Highway 101 in Oxnard, a few miles west of Camarillo. The project is bounded by Graves Road on the east and Wankel Way to the north. A greenbelt lies to the west, providing a visual buffer between the property and similarly zoned property to the west. Socorro Way forms the southern boundary and beyond it a Low Medium Residential (LMR) area.

The NECSP was adopted in 1993 "to provide a guide for orderly growth and development of a portion of the Northeast Community..."<sup>42</sup> It covered an area of 856 acres, which originally comprised 21 parcels. As part of the adoption process, a General Plan Advisory Committee was formed and drafted a preferred alternate land use pattern, which was compared to that proffered by specific plan area property owners among others. Neighboring communities of Rio Linda and La Colonia also were consulted. As a result of the public input process, it was agreed that 3,411 dwelling units would be appropriate for the area. Of these, 1,427 (41.8 percent) were allocated to Low Density zones, 940 (27.6 percent) to Low Medium Residential, 908 (26.6 percent) to Medium Density and 136 (4.0 percent) to Manufactured Housing.

The site on which Vintage at the Rose was eventually built was assigned a Medium Density Residential (MDR) designation, which allowed 12-18 dwelling units per acre. Covering approximately 23 acres, the site

was allocated 405 units—the maximum 18 dwelling units per acre—or nearly half of the total allotted for the MDR designation. The property immediately to the south of the Vintage at the Rose site (and bounded north and south by Socorro Way and a greenbelt respectively) was designated as Low Medium Residential (LMR) and given a limit of 92 dwelling units.

In January of 1998, SIA, Inc. submitted a site plan for review that largely ignored the NECSP. It proposed apartments on 36 acres—the 23 acres that carried the MDR designation and approximately 13 that carried a LMR designation. With an average density of 11 units per acre, the density would have fallen between the allowances for the LMR (7-10 du/ac) and MDR (12-18 du/ac) zones. The 384 units proposed represented less than 80 percent of the 497 units allotted to the two areas by the NECSP. The city council was unimpressed with the proposal, and indicated that the developers should familiarize themselves with “...the design intent of the NECSP as well as the city’s vision for a more livable community” before redrawing and resubmitting.<sup>43</sup>

Subsequently, the developers submitted new plans showing 496 units on the 36 acres, which increased proposed density to 14 units per acre, and they asked the city council for further design direction. When the project was reviewed by the city council in April of 1998, the fact that a portion of the project was within the LMR zone became an issue. The applicant was advised to go back to the drawing board and confine the apartments to the MDR portion of the property.<sup>44</sup>

Matthew Winegar, the city’s development department director, relates that there was very little negotiation over density going on anywhere in the city during the 1980s and 1990s. Particularly within the confines of the NECSP boundaries, there was no incentive to propose something that didn’t conform to the plan and the EIR. The city, in adopting the NECSP, intended to provide housing for the city’s industrial workers and for employees they expected to work in adjacent high capacity office districts. Its intent was to provide a variety of housing opportunities while maximizing housing capacity and creating a critical mass to support local retail. Planning well in advance had allowed them to avoid neighbor disputes in the NECSP area.<sup>45</sup>

While the SIA project was more than one-half mile away from the nearest residential development (which was south of Camino Del Sol), it was not consistent with the NECSP. This meant that SIA could not rely on the Environmental Impact Report that had been adopted as part of the plan approval process but would have to prepare a supplemental EIR, at the minimum. Additionally SIA would have had to initiate a plan amendment and take on the substantial costs and risks that effort would involve. With both of the communities involved in the adoption of the NECSP on record as favoring lower density development, vocal opposition was to be expected.<sup>46</sup>

The project SIA subsequently submitted in the summer of 1998 was confined to the MDR zone and proposed 404 units on a 22.5-acre parcel, exactly the density allowed under the NECSP. Plans consisted of two- to three-story apartment buildings, a single-story community building, 2 pool and spa areas, and accessory buildings. As proposed the project was strictly market rate, but the NECSP called for a 10 percent set aside for low- and very-low income housing. Pressed by the city to include the affordable units, SIA proposed to work with another developer to provide the units off-site. That proposal was rejected.

When the project went before the planning commission in October of 1998, it included 40 affordable units on-site and evenly dispersed throughout the project. The project as proposed was exactly what the commission expected to see and was willing to approve. There was no opposition to the project. It was the first apartment complex with more than 100 units to be proposed and approved in Oxnard in 20 years.<sup>47</sup>

SIA decided in late 1998 to pursue bond financing for the project. That entailed no changes in the plans, but would have included 81 affordable units. The bond issue was approved by the city council in January of 1999, but was never used for the project. SIA sold the project to Essex in 2000 and, according to Oxnard Housing Director Sal Gonzales, Essex wasn't interested in using the public financing.<sup>48</sup> Instead they reduced the number of affordable units to the 40 required by the inclusionary housing provisions of the NECSP and renamed the project Tierra Vista.

The remaining 13 acres of SIA's original proposal are currently being developed by SIA in partnership with another developer as a 90-unit single-family housing tract. Under the NECSP that property had been allocated 92 units. In terms of density, the property was restricted to seven units per acre, on the low end of the range allowed by the LDR designation.

Vintage at the Rose was built to the highest density allowed by the NECSP, but the density range was less meaningful here than the number of housing units assigned to the site. SIA could have proposed to build as few as 276 units and still have been in compliance with the NECSP range assigned to the parcel. But given the city's determination to implement the NECSP, it is unlikely the city would have been encouraged to build less than 12 units per acre. In contrast, the cap of 92 units imposed on the LDR property immediately to the south restricted density there to the low end of the range allowed by the NECSP. If only the density range had applied, as many as 130 units might have been developed there.

Within the NECSP in Oxnard, the negotiations on density were hammered out in the specific plan approval process when the total number of housing units was divvied up among the various sites. The EIR predicated on those allocations served as a strong disincentive to requesting use changes or increased density. It would have presented less of a barrier to density decreases. Staff, however, was firm in demanding a plan that squared with the NECSP. As noted above, the city council was not open to negotiations concerning changes in density, and the staff was aware of this political situation. The staff also felt there was sufficient demand for multi-family units to warrant its insistence on building to the full density allowed. Though not all developers may have agreed with the staff's reading of the market at the time, experience has supported the staff's view. Tierra Vista, as Vintage at the Rose is now known, has occupancy rates that routinely range between 93 percent and 95 percent<sup>49</sup> and full-market rents that ranged from \$1,140 to \$1,910 per month in March, 2003.<sup>50</sup>

Part 8

## Simi Valley: Rancho Madera

In Rancho Madera, we once again saw an interplay between the market and the “devil in the details.” Viewed in light of the general plan, the density reduction was severe, but what was approved was in line with the Rancho Madera Specific Plan. Topography played a large part in the knock-down, as we will see.

At 115,000 people, Simi Valley is the third-largest city in Ventura County and one of two cities adjacent to Los Angeles. It is located along Highway 118 just a few miles west of the San Fernando Valley (part of the city of Los Angeles). During the 1990s, Simi Valley's population grew by 11 percent, and the city produced more housing than any other city in the county except for Thousand Oaks (4,662 units or a 14.2 percent increase).

Simi Valley is geographically large (39 square miles) and contains a wide variety of suburban-era neighborhoods, from 1950s and '60s subdivisions featuring large lots but modest homes to high-end master-planned communities such as Wood Ranch, which is located in the southern portion of the city near the border of Thousand Oaks. It is in this more upscale part of the city that the Ronald Reagan Presidential Library is located—and Rancho Madera, the subject of the Simi Valley case study, is positioned just down the hill from the library along Olsen Road, a major arterial.

In its 1988 general plan update, the city of Simi Valley dedicated the 43-acre-plus Rancho Madera area almost exclusively to senior citizen-serving uses, with about 5.5 acres reserved for general commercial uses targeted to senior needs. Requiring a specific plan to be prepared prior to development, the general plan explicitly called for development “to offer senior citizens a variety of residential and residential/care life styles.”

While the general plan indicated preliminary projections of the number of units, it also noted that the Hillside Performance Standards (HPS) would determine the actual number of units that would be allowed. Potential densities ranged from a maximum of 50 dwelling units per acre in the 7.5-acre area designated for very high density to a minimum of 10 units per acre in the 30.2 acres shown as high density, but the “appropriate” number cited for the area was 404 units plus 59 beds in a skilled nursing center.

When project planning began for the parcel in 1989-90, the real estate market was still quite strong. The Rancho Madera Specific Plan was designed as a senior-oriented neighborhood, but it had far fewer units than had been envisioned in the general plan. With the Hillside Performance Standards taken into account, total dwelling units were reduced to 201, or half of the number cited in the general plan. But the skilled nursing/continuing care facility, now planned with 99 beds, had been nearly doubled in size.

By the time the specific plan was approved in 1991, the real estate market had begun to slump. Both housing prices and rents dropped in the area and weak demand for senior housing delayed the start of the project. Not until 1996 did the market begin to rebound, but even then developers were still leery of building so large a project aimed solely at seniors. Kaufman and Broad (K&B), which had acquired rights to the property and submitted a preliminary application for the parcel in 1997, noted that, based on its assessment, a large market rate senior complex was not economically viable.<sup>51</sup> Consequently K&B proposed amendments to both the general plan and the valley floor map that would remove Hillside Performance Standards from certain portions of the property and would reduce the seniors-only portion of the project to 3.5 acres. The intention was to build single family homes for unrestricted sale on approximately 24 acres. The commercial portion of the property would be retained if the city so desired.

By the time the project was to be heard on October 27, 1997, it was clear to K&B that city staff was not supportive of any bid to amend the valley floor map, and would not recommend approval of the project as configured in the proposal. Consequently, at the planning commission hearing K&B expressed its "willingness and commitment to work with the City to create a project that is consistent with its wishes and requirements."<sup>52</sup> The request to amend the valley floor map was withdrawn, but K&B asked for immediate consideration of the GPA request since without it K&B would not be able to include market-rate detached housing. Because this product would be necessary to pay for the majority of the development's infrastructure, K&B was anxious to nail down the change, but it would have to wait for the GPA approval.

Apart from market considerations, K&B was particularly eager to finalize project plans and move the approval process ahead quickly because it already had \$10.7 million in federal tax credit allocations in hand to provide financing for the affordable senior housing component of the plan. These allocations were not renewable or transferable, and would expire if, within 24 months of their award, the qualifying apartments had not been constructed. Since the allocations would leverage an additional \$7 million, losing them would be extremely costly for K&B. City staff was sensitive to these timing issues, but also used the additional leverage to press their desire to have active senior apartments included in the project and negotiated the project design with the developer.<sup>53</sup>

With guidance from city staff, K&B revised its plans and, in early November 1997, submitted a proposal that increased the senior-oriented uses to 8.6 acres and reduced the density on the single family portions to match that of the HPS Residential Moderate designation. This configuration, by K&B's calculations, would have permitted construction of 79 single-family units and more than 250 units of senior apartments and assisted living space.<sup>54</sup> In a follow-up letter, K&B acknowledged the city's desire to retain zoning standard control over the project, control that might be ceded if the specific plan requirement was dropped. In answer to this concern, K&B proposed to submit a vesting tentative tract map and a planned development permit.

In mid-November, the city council authorized K&B to file for the necessary approvals. The proposal that went forward to the planning commission for review included 75 single-family homes and 136 senior-only apartments. Sixty-seven apartments were to be reserved as affordable units. The number was chosen to avoid the condition imposed by Article 34 of the state Constitution, which would have required voter approval before the affordable units could be constructed.<sup>55</sup> Also included was a 97-bed residential care facility site, which K&B intended to offer to other developers.

Table 4: Land Use Designation			
Land Use Designation	Units	Acres	Units / Acre
<b>Simi Valley 1988 General Plan</b>			
▪ High Density / Seniors	364	22.69	16.04
▪ Assisted Living / Seniors	99	7.53	13.15
▪ Very High Density / Senior Care	150	7.51	19.97
▪ Commercial Center	0	5.64	--
▪ Total Units	613	43.37	14.13
<b>Rancho Madera Specific Plan</b>			
▪ High Density / Seniors	201	21.78	9.23
▪ Continuing Care / Seniors	99	2.06	48.06
▪ Open Space	0	16.25	--
▪ Commercial Center	0	3.45	--
▪ Total Units Including Congregate Care	300	43.54	6.89
<b>November 1997 GPA Proposal</b>			
▪ Very High Density / Seniors	129	8.63	14.95
▪ Moderate Density	79	23.86	3.31
▪ Open Space	0	11.05	--
▪ Total Units	208	43.54	4.78
<b>June 1998 GPA Proposal</b>			
▪ Residential Moderate	75	23.87	3.14
▪ Residential Very High	136	5.48	24.82
▪ Residential High	97	4.08	23.77
▪ Open Space	0	10.11	--
▪ Total Residential Units	211	43.54	4.85
▪ Including Congregate Care	308	43.54	7.07

The major reduction in permissible density on the Rancho Madera parcel was imposed during the HPS review when the slope analysis was conducted. Approximately 50 percent of the site was found to have slopes in excess of 15 percent, and hence restricted severely in the number of units allowed per acre<sup>56</sup>. The slope analysis was used with the 1988 general plan zoning designations to determine that a maximum of 251.6 units could be constructed—149.9 in high density areas and 101.7 in very high density areas—for an overall density of 5.77 units per acre. The reduction from 79 to 75 units that occurred in the final stages of design was a result of working with the setback, parking, and open space design constraints.<sup>57</sup> Tom Preece of Simi Valley's Environmental Services Department suggests it is appropriate to omit assisted living, continuing and congregate care facilities from density calculations, as these are considered commercial uses and are allowed in residential zones only by special use permit. If this is done, the residential density approved for the tract was 4.85 dwelling units per acre. While this is only 84 percent of the HPS allowable density, it is 101 percent of the density proposed in the 1997 general plan amendment. When congregate care facilities are considered, the units-per-acre figure rises to 7.07, which is 103 percent of the total density including congregate care allowed by the Rancho Madera Specific Plan.

The density decisions in this case were driven primarily by the "devil in the details" of the inflexible Hillside Performance Standards. Once the maximum number of units was established by that process, the developer and city staff worked to fine-tune the development to meet their respective needs. Here both the market and politics came into play, with city staff using market knowledge to their political advantage with respect to the

ticking time-bomb tied to the federal tax allocation credits. By all accounts, both sides took design constraints and market analysis into consideration in deciding how the allowed number of units would be allocated between single-family detached, active senior housing and assisted senior living facilities. Here, the forecasts were not uniformly accurate. The first two residential types have been built as planned, but the demand for congregate care facilities has remained sluggish and the area designated for this use has not yet been developed.

## Part 9

## Thousand Oaks: Tract 5095 within Dos Vientos Ranch

Though we found evidence of many of our potential explanations of density reduction in the case of Tract 5095 in Dos Vientos Ranch in Thousand Oaks, most actors had long since exited the scene because the knockdown had occurred as part of the specific plan approval process well before the tract was designed. In the tract approval process itself, the city officials stood firm to defend the density allowed by the Dos Vientos Specific Plan No. 8/9, and a factor not found in the other case studies proved to be the most influential.

Thousand Oaks occupies a unique position in Ventura County. Originally developed as an executive suburb for the San Fernando Valley, it is now the county's most affluent city as well as one of its most important job centers, thanks largely to Amgen Corporation, a leading biotech company headquartered in Thousand Oaks. Many of the early Thousand Oaks neighborhoods—such as Westlake Village, which actually straddles the county line between Ventura and Los Angeles Counties—were pioneering high-quality suburban developments in the 1960s. Furthermore, Thousand Oaks is unusual in the sense that the city laid out a forward-looking general plan in 1970 and has, generally speaking, stuck with it ever since.

For this reason, Thousand Oaks has continued to deliver housing production despite a slow-growth reputation and the fact that it is rapidly approaching buildout. At 121,000 residents it is the second-largest city in the county after Oxnard, and between 1990 and 2000 its population grew by 12 percent. More than 5,000 housing units were added during that time for a 13.3 percent increase.

The area known as Dos Vientos Ranch is situated on the far southwestern side of the city, and stretches across the rolling savannah that lies south of the US 101 freeway. It butts up against the ruggedly scenic Western Plateau area. The 1970 general plan initially proposed 2,900 housing units for this area, but when the Dos Vientos Specific Plan No. 8/9 was approved in April of 1988, the total number of units had been reduced to 2,350 units, of which 225 were to meet affordability criteria and 125 were to be seniors-only, market-rate units. Attachments to the city council resolution recording that decision noted that these “density reductions have been imposed as a means to mitigate to acceptable levels potentially adverse cumulative effects including traffic, noise, schools and air quality impacts identified in the Final EIR dated February 9, 1987. Therefore, approval of these Specific Plans does not permit the maximum number of residential units identified below (2,350) to be exceeded...”<sup>58</sup> At the same time, the council amended the general plan to reflect the change.

By the time that tentative tract 5095 and the related residential planned development (RPD) permit applications were submitted by Courtly Homes, a decade had passed. The tract had originally been planned for 175 homes and, as a general condition imposed by the community development department, this number was set as the maximum density for the development.<sup>59</sup> But as the project went through the formal pre-application process, minor refinements were made to the plans. The plans that went forward included a site for a daycare center, and the number of homes was reduced to 168. That change reduced the density of the tract from 3.54 to 3.40 units per net acre; however this was still in the range (2.0 to 4.5) and above the average of 3.25 units per net acre designated for the area in the Thousand Oaks General Plan.

Since the specific plan approval and general plan amendment in 1987, a subsequent EIR (FSEIR 301, dated June 27, 1994) had been certified as having fully analyzed the environmental effects of 2,350 new residential units. The planning commission resolution approving tract 5095, its RPD, and several other tentative tract maps referenced this certification and stated assertively:

*...the City has made a commitment to specific land uses, residential densities and the number of new residents generated by the project. Therefore, the question of new development is not a consideration. (Resolution No. 98-167) (emphasis added)*

Perhaps this was meant to quiet opposition to the developments, as the size and scope of the Dos Vientos Specific Plan had made its approval process a fairly contentious one, but the strategy was successful only to the extent that it narrowed the debates. While none of the individual tract approvals generated specific opposition to their design or mix of land uses, they were still individually contested on the basis of cumulative noise and traffic impacts. These concerns are often raised as reasons to rein in growth. Tract 5095 generated relatively moderate attention on these grounds during its approval process.<sup>60</sup> In response to these concerns, the tract's developers were assessed nearly \$500,000 in fees to mitigate the projected traffic impacts, but mitigation of noise impacts was deemed infeasible. Despite these and other unavoidable impacts, the planning commission found that the benefits to be derived by the city from the project were sufficient to warrant adoption of a statement of overriding considerations as they approved the tract map on a split vote on June 22, 1998.<sup>61</sup>

Within two weeks, the community development director appealed the planning commission's June 22<sup>nd</sup> decision. While the policy and procedure for density transfers within the Dos Vientos plan area was a major issue, the grounds for appeal hinged on the reduction in the amount of commercial acreage shown in tract 5096 and the impact this would have on surrounding tracts, tract 5095 included. Previously 9.2 acres had been determined as the minimum area required for an economically viable neighborhood shopping center. As approved, the commercial acreage was now only 7.3 acres. Coupled with density increases and transfers in tract 5094 and tract 5095, this prompted the community development director to point out that sufficient provisions for local shopping opportunities had been identified in both final EIRs associated with Dos Vientos as a mitigation measure to reduce off-site traffic impacts and to lessen traffic-related adverse air quality impacts. With the reduction in size, he contended the commercial acreage was no longer sufficient to serve as mitigation. The city council upheld the planning commission's decision regarding the density transfers, but seemed to acknowledge that increased off-site traffic impacts would result from the smaller commercial site.<sup>62</sup> In partially granting the appeal, the council established the tract's pro rata share for a future bridge-widening project on Wendy Drive and so amended the conditions attached to the tract in ratifying its approval.<sup>63</sup> At the same time, the council also ratified, without changes, the accompanying RPD 917-517, which gave Courtly Homes permission to construct 168 single-family detached dwellings.<sup>64</sup>

While construction had already begun in many phases of tract 5095, the daycare center site was still vacant in February 2002 when the Western Plateau Preservation Plan was heard by the city. As part of that plan, an application was made to re-subdivide that 3.83-acre site into seven lots. Entitlements for seven single-family residences were also requested. Both requests were granted as part of a 17-application package that amended the city's general plan and the Dos Vientos Specific Plan by adding 191 acres to the city's inventory of permanently protected open space. The compound result of the council's actions on the Western Plateau Preservation Plan was to reduce the maximum number of housing units that could be built in the Specific Plan 8/9 area by four units, to 2,346.<sup>65</sup> It also lifted age and affordability restrictions on housing built there.<sup>66</sup> Starting prices on houses in the most recent phase of the Villa Encanto subdivision within tract 5095 were advertised as being in "the low \$500,000's."<sup>67</sup> Prices in adjacent subdivisions currently start at \$650,000.<sup>68</sup>

With the additional seven-unit entitlement, the density of tract 5095 is once again at 3.54, solidly in the middle of the density range established in 1988. In protecting 191 acres of Western Plateau land from development, the city reduced the total number of units allowed in Specific Plan 7 by 128, but in Specific Plan 8/9 they were reduced by only four.

The city has generally maintained the density established for the Specific Plan 8/9 area by allowing density to be transferred between tracts. The city's resolve to stand firm against residents' growth-averse assaults on Specific Plan 8/9 stems, at the least in part, from development agreements with the area's master developers—a factor not present in our other case studies. These stipulate the minimum number of residential unit entitlements will be equal to the maximum number of units permitted by the specific plan.<sup>69</sup>

## Part 10

## Ventura: Nichols Ranch

The Nichols Ranch case offers an example of growth-resistant myopia. The Juanamaria Specific Plan, which had been adopted in 1989, was not embraced by current residents. They strongly opposed the initial project proposed for the parcel in conformance with the Juanamaria plan. This opposition finally led to the city's bringing in professional mediators to preside over a consensual planning process.

Commonly known as Ventura, the city of San Buenaventura is the county seat, stretching from the ocean inland along the Highway 126 corridor for some nine miles. Comprising 21 square miles, it had a population in 2000 of about 101,000—a 9 percent increase over its 1990 population. The 2000 median house price of \$233,800 represented a 33.6 percent increase in real terms over the 1995 median house price. This rapid rise, third fastest in the county, was due almost exclusively to the interplay of increased demand and an insufficient supply of housing rather than to a change in the type or quality of housing being built. Housing stock in the Ventura metropolitan area increased by only 3.9 percent from 1990 to 1994, and by a mere 1.9 percent from 1995 to 2000.<sup>70</sup>

Ventura has had a slow-growth reputation since the 1970s. The city's comprehensive plan sets a maximum population limit of approximately 116,000 persons by the year 2010, and residential growth toward that target is controlled by an implementation system known as the Residential Growth Management Plan. Under the RGMP, the city doles out a limited number of "housing allocations" (permissions to move forward in the planning process) every two years.<sup>71</sup> In 1995 an additional brake on growth was imposed when voters passed the Save Open-space and Agricultural Resources (SOAR) initiative. SOAR requires a vote to convert any land in the city's sphere of influence that is zoned for agriculture.<sup>72</sup>

SOAR's passage may have fixed in some residents' minds the notion that any property still under cultivation within the city limits would remain so unless and until citizens voted for a change. This was especially true in the eastern Ventura neighborhoods where pro-SOAR sentiment was high. Leapfrog development dating back to the 1960s has resulted in a patchwork of urbanization in east Ventura, with neighborhoods and agricultural land intermixed.

However, not all of the land under cultivation in 1995 was zoned for agriculture. When the city adopted the comprehensive plan in 1989, it also approved a specific plan for the so-called Juanamaria area and designated some agricultural parcels for urban development. Hence, these parcels were not subject to SOAR.

Nichols Ranch was one such parcel.

Situated along Kimball Road near Route 126 in Ventura, Nichols Ranch was a lemon orchard of slightly more than 42 acres that had been surrounded by urban development. Included in the Juanamaria community, it had carried an urban use designation in the city's comprehensive plan prior even to the 1989 update. Residential areas had already been developed on three sides of the site, and the 126 Freeway abutted it to the south.

In the comprehensive plan, the site was assigned a planned residential designation with density to range between 6 and 12 units per net acre. According to the CP, the assignment had been made because the site "...provide[d] the best opportunity in the Community for a mixed density residential development." The plan went on to describe the preferred arrangement of uses on the property—low-density development to face existing single-family residences stepping up to higher density on the perimeter adjacent to Kimball Road and the freeway<sup>73</sup>.

Beazer Homes had been working to design a project for the site for a number of years, and had acquired housing allocations through the RGMP process in August of 1994, more than a year before SOAR's passage. The allocations allowed Beazer to build as many as 227 additional units on the property (there was an existing house on the property), subject to entering a development agreement with the city and obtaining the requisite planning approvals. Mark Stephens, who was then a Ventura city planner assigned to the case, recalls there was very little public input during the RGMP allocation process and early stages of the approval process.<sup>74</sup> A portion of the property was in the city's sphere of influence but outside the city's boundary, so, in addition to a zone change request and planned development permit application, annexation proceedings had to be initiated. In November 1994, Beazer submitted the applications for these with the intent to build 227 single-family homes ranging in size from 1,998-square feet to 2,622-square feet. Ninety-three lots would be 5,500 square feet or larger, 133 smaller parcels would be 3,900 square feet or larger.

In July of 1995, the city council approved a mitigated negative declaration for the project, but the project didn't reach the planning commission until November of that year, the same month that the SOAR initiative was voted on. At that commission meeting, commission members raised concerns about the design of the subdivision, and appointed a three-member subcommittee to work with city staff and the applicant to redesign the project. That effort took the better part of eight months.

The plans presented to the planning commission on March 5, 1996, included a reconfigured street pattern and design changes intended to soften the differences between the proposed development and the existing one. Though the developers had met with residents of the neighboring homes, they had, in Commissioner Lynn Jacobs's view, engaged in a mediocre public relations job that had done more to fuel neighbor opposition to the project than to garner support for it.<sup>75</sup> Based on the commission's continuing concerns about project design, the case was continued for a week. At the subsequent meeting, the opposition was out in full force; more than 200 people attended the hearing. The commission, because of what then-Planning Commissioner Sandy Smith described as "a disconnect between staff and the Planning Commission,"<sup>76</sup> was still not satisfied that design changes sufficiently addressed community concerns. The commission denied the project. Surprisingly, even some of the members of the sub-committee, which had overseen the revisions, voted to deny.

Beazer, however, was not ready to give up the fight. With support from members of the city council, at the following planning commission meeting it asked for and got reconsideration. In granting this, the commission continued the project and recommended the developer not only retain outside design assistance in reconfiguring the project but engage a professional facilitator to solicit neighbor participation in the

process. The commission was specifically interested in seeing “new urbanist” ideas incorporated into the plans.

The consulting team of John Cahill, a process facilitator, and David Sargent, an architect with the firm of Civitas Town Planning, were hired to guide the consensus planning project. Two residents of the Ventura East tract, which is adjacent to the project site, were chosen to represent that community. Then Cahill and Sargent set to work, meeting with the planning commission committee and city staff, Beazer staff and the project property owners, and the community representatives. In March of 1997, nearly a full year after the reconsideration had been granted, they held their first public workshop at Juanamaria School. About 100 people attended. In the course of the workshop, general concerns about the city’s growth were aired. But when the focus was narrowed to the Beazer project, the paramount concerns voiced were about traffic, pedestrian access, and the adequacy of public safety services—not the number or density of units.

The result of the public consensus process was the decrease in the number of units planned from 228 to 198. Though density had decreased from 6.98 dwelling units per net acre to 6.06, it was ostensibly the desired street configuration and not resistance to the proposed density that spurred the change. Vehicular and pedestrian circulation issues had been hashed out, and in Sandy Smith’s view, solving an existing traffic problem for the Ventura East neighborhood was important in building support for the redesigned project.<sup>77</sup> Mark Stephens recalls that prohibiting two-story units on lots adjacent to the Ventura East neighborhood and reaching an agreement on boundary and streetscape landscaping that would help retain the feeling of space once the orchard was gone were also important.<sup>78</sup> Architectural design standards were established to make the development more visually compatible with the existing neighborhood. The end result was that the redesigned project reflected the preference of its neighbors for something they were comfortable with—something very similar to their own low-density subdivision. Though much of the neighbors’ concerns were voiced in terms of traffic and circulation issues, the crux of their fear was that an adjacent, higher density project would diminish their properties’ values. As noted by David Sargent, reducing the size of the project by 30 homes had a negligible effect on circulation between the two neighborhoods, but the increase in lot size this accommodated made the project much more palatable to the residents of Ventura East.<sup>79</sup>

Toward the end of March 1997, Beazer submitted its revised plans to the city. For the next few months they were reviewed by various city departments, and in May received staff level approvals from the environmental impact review committee and the subdivision committee. In early June, Cahill and Sargent issued the Consensus Planning Process Final Report; the project had been placed on the June 17<sup>th</sup> planning commission agenda. Sandy Smith recalls that perhaps four or five members of the public showed up for that final planning commission hearing. The commission voted to recommend the approval of the revised project to the city council. The project received final approval from the city council on July 21, 1997. When the homes were marketed in 1998, Beazer’s asking prices started at \$350,000.<sup>80</sup>

Under the Residential Growth Management Plan (RGMP), the planned densities shown in the comprehensive plan only give the broadest idea of what may eventually be developed. The developer’s timing and Ventura’s RGMP allocation process turn out to be major factors. The number of units a developer can hope for is determined by the number available for distribution, the other projects vying for allotments at the same time, and the design merits of the projects. The number of units assigned to the Nichols Ranch project restricted the density of the project to approximately seven units per net acre, or the lower end of the range allowed by the property’s comprehensive plan (CP) designation (6-12 units), but they might well have been assigned more or fewer units. So, relative to the CP designation, the first reduction came in the political “black box” of the RGMP process. The developers did not of their own volition reduce project density. The

remaining reduction resulted from the public process where the Juanamaria Specific Plan was attacked (myopia) and concerns about traffic and infrastructure adequacy betrayed neighbors' growth-averse tendencies. Though the "D" word may not have been bandied about in the public workshops or hearings, the result of the process was to reduce the project's density to six units per net acre as average lot sizes were increased and neighbors molded the new subdivision into an image of their own.

## Part 11

## Conclusion

In the first phase of this study, we found—to our surprise—that most reductions in density occurred not during the public approval process, but in the pre-application stage. As a result, we concluded that the real horsetrading over density occurred during these pre-application negotiations, though we could only guess why. In reviewing the first phase of the study, government planners often told us that developers proposed the density reductions based on market conditions, while developers often told us that planners proposed the density reductions based on political feasibility. As we searched the literature for studies dealing with the project negotiations, we found some dealing with the public side, but nothing that helped explain the process from the developers' side of the table.

In constructing our hypothesis, we were somewhat hampered by the paucity of information presented from the developers' point of view. As a consequence, the myriad reasons that might prompt density reduction requests were condensed into the "Market" category. Reductions emanating from the public agency side were placed in two categories—Politics, which encompasses staff interactions with elected officials and other departments, and "devil in the details," which accounts for technical difficulties imposed by codes and ordinances on the translating of broad policy statements into practical projects. The remaining categories—Myopia and Growth Aversion—include sources found not only in the general public, but among public officials, too.

We expected that if reductions did occur mainly at the pre-application stage, that they would come mainly from the market, politics, or the "devil in the details." In fact they did, but we also found evidence of the other two. We also hoped to determine whether the planners' actions or the developers' requests were most often responsible for the reductions. But the case study analysis examined here reveals a truth that is somewhat more complicated. What we found was that seldom was only one source responsible for driving density down. Instead, there were generally several reasons intermingled in each case.

Overall, based on our case study approach, we found at least four common reasons why densities are reduced.

**First, developers sometimes do ask for lower densities in order to meet their perception of market demand or other non-regulatory considerations.**

This factor came into play in several case studies, including Riverwalk in Fillmore and Rancho Madera in Simi Valley, but it was most dominant in the case of The Meadows in Camarillo.

Camarillo's planning policies permitted a density of 10 units per acre at The Meadows. The area was still developing, neighborhood opposition was minimal, and city officials were supportive of higher-density products. But the project was originally proposed at the beginning of a "down" market, at a time when California was beginning to see a steep decline in the construction of attached condominium projects.

The project was delayed for several years because of market considerations, and eventually the developers sought and obtained a density decrease of approximately 1.5 units per acre in order to build detached, rather than attached, condominium units. This approach was not uncommon in the mid-'90s; indeed, a number of other detached condo projects were built in Camarillo and Oxnard during this time.<sup>81</sup>

It is important to note that the switch to detached condos was also motivated by an economic consideration not related to the city's land use regulatory structure: the difficulty in obtaining insurance for attached condominium projects, which appears to be related to the state's liberal construction defect liability laws. Even those outside of the building industry have come to accept that the construction defect liability issue is a legitimate concern, and recent state legislation is designed to reduce the liability and therefore encourage insurance carriers back into the marketplace.<sup>82</sup> Thus, in that one case, a state-level legal issue completely unrelated to land use regulation was a major factor in driving down the density.

**Second, the capacity in plans cannot always be politically sustained, especially under the pressure of neighborhood opposition.**

The fact that existing plans do not have strong political support came out most obviously in the case of Riverwalk in Fillmore and Nichols Ranch in Ventura. In both cases, existing plans anticipated development and called for a particular density range. Yet in both cases, it was clear neither neighboring residents nor the community's political leadership was deeply "invested" enough in those plans to make them stick. Sometimes this came out in the pre-application stage; other times it didn't become an issue until the public hearing process began.

In the case of Fillmore, we heard somewhat conflicting stories from the developer and the city over who made the actual decision to propose single-family, rather than multi-family, units. But there is no question that both sides recognized that multi-family units were not politically palatable, and this was factored into the pre-application process. Furthermore, when confronted with conflicting policy directives—a general plan permitting up to 11 units per acre and a zoning ordinance requiring 6,000-square-foot lots—the city stuck strongly to the policy directive that would force a lower density.

In the case of Ventura, neighborhood opposition took a somewhat different form. In the wake of SOAR's passage, the surrounding residents simply did not believe that Nichols Ranch could be developed because it was still in agricultural cultivation. The lengthy process of facilitation and consensus-building was only partly about the design and size of the project. In large part, it simply served to allow the neighbors to become familiar with the reality of the city policy they had voted on, which still permitted development on agricultural land that was slated for urban development in the comprehensive plan.

**Third, actual application of planning processes often drives the density down below the capacity contained in plans.**

When we discussed the results of the first phase of this report with planners throughout Ventura County, they were not surprised by the results because, they argued, project-level review inevitably reveals site-

specific situations that will cause the project to be reduced in size. Although we were somewhat surprised by this perspective (Why would planners believe that the plan could not be implemented as written?) it turned out to be true in some cases.

Project-specific review is largely, but not entirely, driven by the dictates of the California Environmental Quality Act, which identifies impacts that could be significant and strongly encourages local governments to take steps to mitigate those impacts. The net result is a system that often drives down the density and drives up the cost or both. Such site-specific considerations played some role in reducing the density in the Simi Valley, Ventura, and Fillmore projects.

In Simi Valley, both the 1988 general plan and the 1990 specific plan proposals called for relatively high densities (somewhere between 10 and 16 units per acre). But the Rancho Madera property is extremely hilly. Once the city's hillside review was conducted, the project declined considerably in size and density.

In Fillmore and Ventura, project-specific review did not simply identify impacts and mitigations; it also "opened the door" for a negotiation between the neighborhood and the developer over the amenities to be provided, which in turn affected the density. In Fillmore, a residential development proposal originally designed as affordable eventually had to bear the cost of a wide range of community amenities, including a new levee and a park that exceeded city standards. In Ventura, project-specific review created the opportunity to discuss traffic patterns and alternate traffic scenarios, which in turn appeared to decrease the density as well.

It is worth noting as well that in one case project-specific review revealed deficient information about the parcel itself, which in turn affected the size of the project. In the case of The Meadows in Camarillo, neither the city nor the developer had accurate information about the size of the parcel even though a specific plan for the area had already been adopted.

Practicing planners often argue that project-level review will always reveal site-specific conditions that cannot be anticipated at the plan level, and therefore the actual density of a project will inevitably be lower than the plan calls for. To them, this is simply part of the implementation of their planning policies. As Ventura County continues to mature, this consideration will likely become more important, because more development will occur on small, difficult, or leftover parcels adjacent to existing neighborhoods—as was the case in Simi Valley, Fillmore, and Ventura.

**Fourth, specific plans appear to make a significant difference in creating plans that can be implemented "as-is".**

In the first phase of the study we found that residential development projects located inside specific plan areas were much more likely to be approved at the densities envisioned in planning policies. In general, the case studies—especially those in Thousand Oaks and Oxnard—bore out this conclusion.

In California, the "specific plan" provides an intermediate step between a citywide general plan and actual project approval. A specific plan is a document that envisions the buildout of a specific part of a community, often under a separate set of planning policies and regulations. It is a hybrid document that includes planning policies, a buildout scenario, development regulations, and often a financial agreement between the developers and the city as well.<sup>83</sup> Whereas general plans are "big picture" documents that both developers and citizens may have difficulty relating to, specific plans are often "real" enough to engage all parties in a

meaningful way. Residents are less likely to stand outside the specific plan process than the general plan process because the issues are focused closer to home.

In both Oxnard and Thousand Oaks, the specific plans were major community undertakings that focused community attention on the buildout of important sections of the city. This is not to say that they were without controversy. The Dos Vientos Specific Plan in Thousand Oaks has been the subject of a great deal of controversy and even litigation over the years. But in both cases, the battles had been waged at the specific plan level, so that the actual projects could be proposed and approved more or less as envisioned at the plan level.

In the case of Dos Vientos, it is possible that when the Western Plateau Preservation Plan was being considered, the community might have reneged on commitments made in the specific plan if not for the accompanying development agreement. It is to be expected that over the course of time, community priorities may change. And technically, plans may be amended. But where development agreements are in place, and developers are resolved to defend them, the legal ramifications of plan amendments may dissuade the community from changing its mind.

The Nichols Ranch project in Ventura offers a different cautionary note about specific plans. Nichols Ranch was contained in the Juanamaria Specific Plan area, which envisioned a fairly specific buildout and also contained a financial plan for infrastructure improvements. This did not prevent intense community opposition at the project level. But in the case of Nichols Ranch, the community consensus around the Juanamaria Specific Plan—if consensus ever existed—had already been undermined by the passage of time and the adoption of SOAR.<sup>84</sup>

One final important note about specific plans. In the two case studies where specific plans were successfully implemented at the project level, they involved large tracts of undeveloped land that could be developed together, almost as a master-planned community. In the future, however, it will be far more likely that development in Ventura County will occur on smaller parcels previously passed over, as was the case with Nichols Ranch. So, to be successful in the future, specific plans will have to address the question of how to continue to build out partially completed communities that already have residents and vested interests.

In the world of real estate development, translating plans into on-the-ground projects is never easy. Land use plans always represent an uneasy truce between the market reality of development, driven by the needs and preferences of consumers not yet in residence, and the political reality of communities, which are driven by the views of homeowners who already live there. No matter how carefully they are drawn, it may not be possible to implement plans as they are written because political and economic conditions are subject to change.

## About the Authors

**William Fulton** is president of Solimar Research Group Inc., a public policy research firm dealing with metropolitan growth, urban planning, and economic development issues throughout California and nationwide. He was one of the principal authors of *Smart Growth In Action*, released by Reason Public Policy Institute in 2001. Mr. Fulton is also editor and publisher of *California Planning & Development Report*, a monthly newsletter, and the author of four books, including *The Reluctant Metropolis: The Politics of Urban Growth* in Los Angeles, which was an *L.A. Times* best-seller. Mr. Fulton earned his B.A. in Mass Communications from St. Bonaventure University, an M.A. in Journalism/Public Affairs from The American University in Washington, D.C., and an M.A. in Urban Planning from the University of California, Los Angeles.

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Mr. Segal has authored numerous studies and articles on privatization, government performance, accountability, and efficiency. He is also editor of Reason's monthly newsletter *Privatization Watch* and the *Annual Privatization Report*. His articles have appeared in publications as diverse as *Investor's Business Daily*, *Intellectual Ammunition*, *L.A. Daily News*, and *Orange County Register*.

Mr. Segal has presented his research at numerous conferences around the world. He has appeared in front of the cities of Phoenix, San Diego, and Stockton city councils as well as submitted testimony to the State of California. Furthermore, he has advised numerous government officials on privatization, efficiency, transparency, and accountability.

Mr. Segal holds a Master's in Public Policy from Pepperdine University with specializations in Economics and Regional/Local Government. While at Pepperdine, Segal was named a Hansen Scholar. He graduated cum laude from Arizona State University with a Bachelor of Arts in Political Science.

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## Related Reason Foundation Studies

William Fulton, Chris Williamson, Kathleen Mallory, and Jeff Jones, *Smart Growth in Action: Housing Capacity and Development in Ventura County*, Reason Foundation Policy Study No.288, December 2001.

Samuel Staley, *Line in the Land: Urban-Growth Boundaries, Smart Growth, and Housing Affordability*, Reason Foundation Policy Study No.263, November 1999.

Randall O'Toole, *Urban Transit Myths*, Reason Foundation Policy Study No.345, September 1998.

James V. DeLong, *Myths of Light Rail Transit*, Reason Foundation Policy Study No. 244, September 1998.

# Endnotes

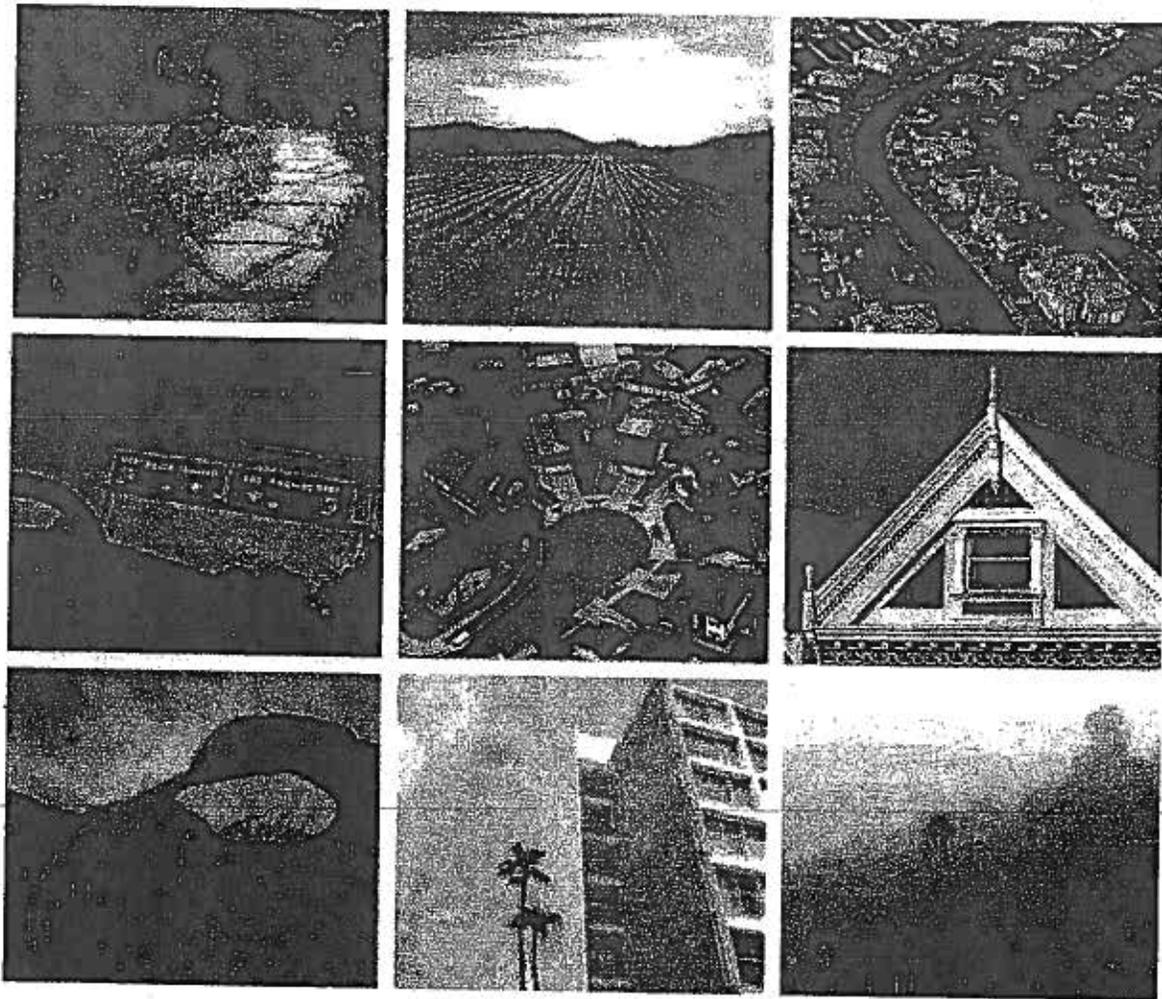
- <sup>1</sup> Compared to general plan capacity, only 55 percent of the maximum number of dwelling units permissible were approved. When compared to more restrictive zoning ordinances, the entitlement rose to 80 percent.
- <sup>2</sup> William Fulton, Mai Nguyen, et al., *Growth Management Ballot Measure in California* (Ventura, CA, Solimar Research Group, Inc., 2002).
- <sup>3</sup> U.S. Census Bureau, Census 2000, <http://www.census.gov/main/www/cen2000.html>.
- <sup>4</sup> In local parlance, the Santa Clara Valley is typically lumped together with the West County, but we separated it out as the "North County" in phase one of this report.
- <sup>5</sup> The only two cities without SOAR measures in place are Ojai, which permits little growth as a matter of course, and Port Hueneme, which is completely surrounded by the city of Oxnard and the Pacific Ocean.
- <sup>6</sup> Similarly on the state level, housing units increased by 9.2 percent, more slowly than the population increase of 13.8 percent, and the vacancy rate decreased from 7.2 percent to 5.8 percent.
- <sup>7</sup> William Fulton, Chris Williamson, et al., *Smart Growth in Action: Housing Capacity and Development in Ventura County* (Los Angeles, CA: Reason Public Policy Institute, 2001).
- <sup>8</sup> Compared to general plan capacity, only 55 percent of the maximum number of dwelling units permissible were approved. When compared to more restrictive zoning ordinances, the entitlement rose to 80 percent.
- <sup>9</sup> Steven Fader, *Density by Design: New Directions in Residential Development* (Washington, D.C., Urban Land Institute, 2000).
- <sup>10</sup> William Fulton, *Guide to California Planning* (Point Arena, CA, Solano Press, 1999).
- <sup>11</sup> Charles J. Hoch, ed., *The Practice of Local Government Planning* (Washington, D.C., International City/County Management Association, 2000).
- <sup>12</sup> Hoch, *The Practice of Local Government Planning*.
- <sup>13</sup> Jerry Taylor and Peter VanDoren, *Sprawl for Me, But Not for Thee* (Washington, D.C.: Cato Institute, 2003).
- <sup>14</sup> James Innes, "Planning through consensus building." *Journal of the American Planning Association* (62(4), 1996), pp. 460-472.
- <sup>15</sup> Steven A. Bollens, "Urban Planning and Intergroup Conflict: Confronting a Fracture Public Interest," *Journal of the American Planning Association* (68(1), 2002), pp. 22-42.
- <sup>16</sup> John Forester, "Planning in the Face of Conflict: Negotiation and Mediation Strategies in Local Land Use Regulation," *Journal of the American Planning Association* (53(3), 1987), pp. 303-314.

- <sup>17</sup> Albert Solnit, Carl Reed, et al., *The Job of the Practicing Planner* (Washington, D.C., Planners Press, 1988).
- <sup>18</sup> John Forester, "Planning in the Face of Conflict: Negotiation and Mediation Strategies in Local Land Use Regulation," *Journal of the American Planning Association* (53(3), 1987), pp. 303-314.
- <sup>19</sup> John Forester, "Planning in the Face of Conflict: Negotiation and Mediation Strategies in Local Land Use Regulation."
- <sup>20</sup> Ventura County Workforce Investment Board, *State of the Workforce 2002*, November 2002, [www.wib.ventura.org](http://www.wib.ventura.org)
- <sup>21</sup> Ibid.
- <sup>22</sup> Madelyn Glickfeld, William Fulton, et al., *Growth Governance in Southern California* (Claremont, CA: Claremont Graduate University Research Institute, 1999).
- <sup>23</sup> Ventura County Workforce Investment Board, *State of the Workforce 2002*, November 2002. [www.wib.ventura.org](http://www.wib.ventura.org)
- <sup>24</sup> Ed Burns and Bob Burrow, city of Camarillo, in October 25, 2002, interview.
- <sup>25</sup> Ed Burns, city of Camarillo planner, in October 25, 2002, interview.
- <sup>26</sup> Camarillo Development Director Bob Burrow in November 13, 2002, interview.
- <sup>27</sup> Ventura County Houses and Homes for Sale. <http://www.signonvc.com/findhomemain.htm>
- <sup>28</sup> Ventura County Workforce Investment Board, *State of the Workforce 2002*, November 2002.
- <sup>29</sup> William Fulton, et al., *Smart Growth in Action: Housing Capacity and Development in Ventura County*.
- <sup>30</sup> Governor's Office of Planning and Research, California Planners' Book of Lists 2001, Sacramento, California, 2001.
- <sup>31</sup> Lynn Jacobs in October 31, 2002, interview.
- <sup>32</sup> Fillmore City Planner Kevin McSweeney in October 23, 2002, interview.
- <sup>33</sup> Under the state law governing Housing Elements (Section §65583), SCAG, the Southern California Association of Governments, as regional planning agency, is responsible for developing the Regional Housing Need Allocation (RHNA) plan for Ventura County in consultation with the state's Departments of Housing and Community Development (HCD) and Finance (DOF). In an iterative process based on the population growth projected by DOF, HCD estimates the housing needs by income level for the county, and the local council of government—SCAG in the case of Ventura County—predicts how the need will be distributed among the cities and unincorporated areas of the county. Once a RHNA plan has been agreed to by HCD, DOF, and the affected Council of Governments, the housing needs allocations are incorporated into the county and city Housing Elements. RHNA allocations are distinct from allocations made by cities, though the latter should reflect RHNA allocations. By way of differentiation, allocations made under the city of San Buenaventura's Residential Growth Management Plan (RGMP) attempt to regulate the pace of housing development so that it doesn't outstrip infrastructure and resource capacity. Allocations made by the city of Oxnard and the city of Camarillo in their specific plan approval processes stipulate where projected growth will go within specific plan boundaries.
- <sup>34</sup> City of Fillmore Planning Department Staff Report to Planning Commission dated July 23, 1998.

- <sup>35</sup> Fillmore Planning Commission Special Meeting Minutes, September 3, 1998.
- <sup>36</sup> Lynn Jacobs in October 31, 2002, interview.
- <sup>37</sup> City of Fillmore Planning Department Staff Report to Planning Commission dated February 17, 2000.
- <sup>38</sup> Home Buyers' Guide <http://www.hbg.com/ven.html>
- <sup>39</sup> Fillmore City Planner Kevin McSweeney in October 23, 2002, interview.
- <sup>40</sup> Ventura County Workforce Investment Board, *State of the Workforce 2002*, November 2002. [www.wib.ventura.org](http://www.wib.ventura.org)
- <sup>41</sup> Ibid.
- <sup>42</sup> City of Oxnard, "Northeast Community Specific Plan," December 1993, p. 1-1.
- <sup>43</sup> Undated city of Oxnard Planning & Environmental Services memo from Joyce Parker-Bozylinski, Planning Manager, to Edmund F. Sotelo, City Manager.
- <sup>44</sup> Ibid.
- <sup>45</sup> City of Oxnard Development Services Director Matthew Winegar in October 24, 2002, interview.
- <sup>46</sup> City of Oxnard, "Northeast Community Specific Plan," December 1993, pp. 1-7 and 1-8.
- <sup>47</sup> Ibid.
- <sup>48</sup> City of Oxnard Housing Department Director, Sal Gonzales in October 22, 2002, interview.
- <sup>49</sup> Debra Baccari, Tierra Vista leasing agent, interview with authors 2003.
- <sup>50</sup> Inside Ventura County Rentals. [http://www.insidevcrentals.com/communities/tierra\\_vista/](http://www.insidevcrentals.com/communities/tierra_vista/)
- <sup>51</sup> Gary Gorian for Kaufman and Broad in letter dated 8/29/97 addressed to city of Simi Valley Mayor and city council members contained in the city's File No. 703-2-2, PR-451 Kaufman & Broad Home Corporation.
- <sup>52</sup> Gary Gorian for Kaufman and Broad in letter dated 10/27/97 addressed to city of Simi Valley Mayor and city council members contained in the city's File No. 703-2-2, PR-451 Kaufman & Broad Home Corporation.
- <sup>53</sup> Eric Lieberman, formerly with Kaufman and Broad, in February 3, 2002, interview.
- <sup>54</sup> Eric Lieberman for Kaufman & Broad in letter dated 11/7/97 addressed to Sam Freed, Senior Planner, city of Simi Valley contained in the city's File No. 703-2-2, PR-451 Kaufman & Broad Home Corporation.
- <sup>55</sup> Amendment 34 requires voter approval prior to construction of publicly funded rental complexes when 50 percent or more of the units are reserved for low and very-low income residents.
- <sup>56</sup> Sites with slopes of 15-20 percent are restricted to 0.25 units/acre; those with slopes greater than 20 percent are restricted to 0.025 units/acre.
- <sup>57</sup> Eric Lieberman, formerly with Kaufman and Broad, in February 3, 2002, interview.
- <sup>58</sup> City of Thousand Oaks, *Resolution No. 88-69, Exhibit B, III.B. Maximum Number of Permitted Residential Units* (1988), p. 1.
- <sup>59</sup> City of Thousand Oaks, *Resolution No. 51-98PC* (1998), p. 11.

- <sup>60</sup> John Prescott, Planning Division Manager, city of Thousand Oaks, interview with G. Segal.
- <sup>61</sup> City of Thousand Oaks, *Resolution No. 51-98PC* (1998), p. 2.
- <sup>62</sup> City of Thousand Oaks Community Development Department, *Appeal Application for Tract Map and Land Division Permit No. TR. 5095*, 1998.
- <sup>63</sup> City of Thousand Oaks, *Resolution No. 98-167* (1998), p. 6.
- <sup>64</sup> City of Thousand Oaks, *Resolution No. 98-168* (1998).
- <sup>65</sup> City of Thousand Oaks, *Western Plateau Preservation Plan Supplemental Environmental Impact Report*, 2002, p. 2-1.
- <sup>66</sup> This was contingent upon payment to the city's affordable housing assistance fund by the Miller Brothers, owners of the property, of \$500,000, and construction of 50 affordable units at a site to be chosen later by the city.
- <sup>67</sup> Standard Pacific Homes. <http://www.hbg.com/xstandardpac.html>
- <sup>68</sup> Trimark Pacific. *Concerto at Dos Vientos Ranch*. Advertisement in the *Los Angeles Times* New Homes Advertising Supplement, January 18, 2003, p. Y5.
- <sup>69</sup> City of Thousand Oaks Community Development Department Memo to Planning Commission dated June 22, 1998, p. 11.
- <sup>70</sup> Ventura County Workforce Investment Board, *State of the Workforce 2002*, November 2002. [www.wib.ventura.org](http://www.wib.ventura.org)
- <sup>71</sup> City of San Buenaventura Comprehensive Plan Draft 2002-2005 Housing Element, May 2002.
- <sup>72</sup> LAFCO, or the Local Agency Formation Commission, is a special agency in each of California's counties, and is responsible for drawing boundaries for nearly all local governments—the sole exception being redevelopment agencies. In addition to establishing incorporation limits for cities, LAFCOs also establish spheres of influence. A city's sphere of influence may extend beyond its incorporation lines to encompass the area the city is expected to ultimately annex. In drawing up its general plans, a city can chose to include all the area in its spheres.
- <sup>73</sup> Planning Commission Community Services Staff Report, action date June 17, 1997.
- <sup>74</sup> Mark Stephens, formerly a planner for the city of San Buenaventura, in November 1, 2002, interview.
- <sup>75</sup> Lynn Jacobs was a Ventura Planning Commissioner at the same time that she was attempting to develop Riverwalk in Fillmore.
- <sup>76</sup> Ventura City Councilman Sandy Smith in November 4, 2002, interview.
- <sup>77</sup> Ibid.
- <sup>78</sup> Mark Stephens, formerly a planner for the city of San Buenaventura, in November 1, 2002, interview.
- <sup>79</sup> David Sargent in November 15, 2002, interview.
- <sup>80</sup> Inside Ventura New Homes  
<http://www.insidevcnewhomes.com/newhomes/newhomesinfo/index.cfm?action=listmodels&DevelopmentsID=105>

- <sup>81</sup> Ed Burns, city of Camarillo planner, in October 25, 2002, interview with William Fulton and Lily Okamura, and Lynn Jacobs in October 31, 2002, interview.
- <sup>82</sup> Paul Shigley, "Construction Defect Rules May Change: Building Industry Says Litigation Depresses Condo, Townhouse Development", *California Planning & Development Report* (17(8)), August 2002.
- <sup>83</sup> Fulton, *Guide to California Planning, 2<sup>nd</sup> Edition*
- <sup>84</sup> The lack of consensus was reflected in the vote on the adoption of the development agreement for Juanamaria, which took place in January 1988. It guaranteed developers 721 building permits in exchange for funding for a freeway overpass and interchange to serve the area. The agreement was adopted with the slimmest of margins (4 ayes, 3 noes). The council members voting "no" had just recently been elected (2) or re-elected (1) primarily on the strength of their slow-growth advocacy. "Ventura: Juanamaria Development Agreement", *California Planning & Development Report*, Vo. 3, No.4, April 1988, p. 6.



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