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MARIN COUNTYWIDE PLAN UPDATE

Draft Environmental Impact Report

COUNTY OF MARIN
COMMUNITY DEVELOPMENT AGENCY

State Clearinghouse No. 2004022076

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MARIN COUNTYWIDE PLAN UPDATE
DRAFT ENVIRONMENTAL IMPACT REPORT

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1.0 INTRODUCTION

1.0 INTRODUCTION

This Draft Environmental Impact Report (EIR) describes the potential environmental effects that could result from implementation of the proposed *Marin Countywide Plan Update* (*Draft 2005 CWP Update*) project (the proposed Project) which provides policy guidelines for the unincorporated portions of Marin County to direct growth and development.

The *State CEQA Guidelines* (Code of Regulations, Title 14, Sections 15000 *et seq*.) charge public agencies with the responsibility of avoiding or minimizing environmental damage where feasible. As part of this responsibility, public agencies are required to balance various public objectives, including economic, environmental, and social issues. An EIR is integral to that process, informing decision-makers and the public what significant environmental effects might result from a proposed project. In addition, an EIR identifies possible means of mitigating any significant effects and presents reasonable alternatives to the project. Marin County, as the lead agency, has prepared this EIR on the proposed Project. In making its decision about the proposed Project, Marin County must consider the information in this EIR along with any other available information.

1.1 EIR REQUIREMENT

Environmental review in compliance with the California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000 *et seq.*) is required as part of the County's consideration of the *Draft 2005 CWP Update*. An Initial Study, completed by Marin County in February 2004 and revised in July 2005, confirmed the need for an EIR and determined the topics for analysis (also called impact areas). [1] The Initial Study identified the following areas as having the potential to be significantly impacted by the project:

- Land Use & Planning
- Population & Housing
- Geophysical
- Water
- Air Quality
- Transportation/Circulation
- Biological Resources
- Energy & Natural Resources
- Hazards
- Noise
- Public Services
- Utilities & Service Systems
- Aesthetics/Visual Resources
- Cultural Resources
- Social & Economic Effects Related to Physical Impacts

In compliance with CEQA, Marin County sent a Notice of Preparation (NOP) on February 16, 2004 to government agencies, special service districts, organizations, and individuals with an interest in or jurisdiction over the project. This step ensured early consultation on the scope of the EIR. The comment period originally scheduled to end on March 17, 2004. At the request of several citizens to

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[1] Both the February 2004 and July 2005 Initial Studies are available at the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157

allow additional time to respond to the NOP, the comment period was extended to March 31, 2004. The Marin County Planning Commission held a public scoping meeting for the project on March 4, 2004 in the Marin County Planning Commission chambers in the Marin Civic Center.

Following the preparation of the revised Initial Study in July 2005, Marin County sent a revised NOP to government agencies, special service districts, organization, and individuals with an interest in or jurisdiction over the project on August 24, 2005. The review period originally scheduled to end on September 22, 2005. At the request of several citizens to allow additional time to respond to the NOP the comment period was extended to October 31, 2005. The Marin County Planning Commission held a second public scoping meeting for the project on October 26, 2005 in the Marin County Planning Commission chambers in the Marin Civic Center.

The Draft EIR has been prepared in accordance with the California Environmental Quality Act, including the *CEQA Statutes* (Public Resources Code §§ 21000-21178.1), *State CEQA Guidelines* (Code of Regulations, Title 14, §§ 15000-15387), and relevant court decisions.

A PROGRAM EIR

CEQA distinguishes between project and program EIRs, defining a program EIR as one that addresses a series of actions that can be characterized as one large project and can be related

- Geographically;
- As logical parts in the chain of contemplated actions;
- In connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or
- As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways.

The *Draft 2005 CWP Update Draft EIR* is a program EIR under Section 15168 of the *State CEQA Guidelines.* As described in CEQA Guidelines § 15168(a)(3), 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." As a program EIR, this document focuses on the overall effect of the *Draft 2005 CWP Update*. This analysis does not examine the effects of site specific projects that may occur within the overall umbrella of this program in the future. The nature of general plans is such that many proposed policies are intended to be general, with details to be worked out during implementation. Thus, many of the impacts and mitigation measures can only be described in general or qualitative terms. The analysis in this program EIR is considered the first tier of environmental review, creating the foundation upon which future, project-specific CEQA documents can build. A program EIR can be incorporated by reference into subsequently prepared environmental documents to address issues such as cumulative impacts and growth inducing impacts, allowing the subsequent documents to focus on new or site-specific impacts.

The EIR was prepared under the direction of Marin County and is provided for review by both the public and public agencies, as required by CEQA. The Board of Supervisors must certify the Final EIR prior to adoption of the Countywide Plan Update.

MITIGATION MEASURES

CEQA defines *mitigation* as follows:

Mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
- Compensating for the impact by replacing or providing substitute resources or environments. CEQA Guidelines Section 15370.

In this case, since the proposed Project is the Countywide Plan, mitigation to accomplish the above outcomes is in the form of:

- Modified goals, policies or implementing programs proposed in the *Draft 2005 CWP Update*;
- New goals, policies or implementing programs not currently proposed in the *Draft 2005 CWP Update*;
- Modified land uses (locations, type and/or amount), capable of reducing or eliminating a potentially significant impact; and
- Other actions (e.g., actions performed by another agency, other).

The *Draft 2005 CWP Update* policies take into account many of the impacts and mitigation measures discussed in this EIR, and many of these mitigation measures are included as part of the proposed Project itself, with the intention that the proposed Project would be self-mitigating for many impacts.

1.2 EIR OBJECTIVITY

In accordance with CEQA, this EIR:

- Assesses the expected impacts of the ultimate environmental changes resulting from the planned population, housing, and employment growth and implementation of the policies in the *Draft 2005 CWP Update;*
- Identifies mitigation measures that could avoid or minimize potentially significant environmental impacts; and
- Evaluates alternatives to the proposed project.

If an EIR determines that there will be significant impacts as the result of a project, agencies with authority over the project must make one or more of the following findings:

- Changes or alterations have been required in, or incorporated into, the project which avoid or substantially reduce the significant impacts identified in the EIR;

- Such changes or alterations are within the responsibility and jurisdiction of another public agency, and such changes have been adopted by such other agency or can and should be adopted by such other agency; or

- Specific economic, legal, social, technological, or other considerations make the mitigation measures of the EIR or project alternative(s) infeasible.

After considering the Final EIR, the lead agency shall not approve a project unless all significant effects have been eliminated or reduced where feasible or the agency adopts a statement of overriding considerations finding that economic, legal, social technological or other benefits of the proposed project outweigh its unavoidable adverse environmental effects.

The EIR is a factual, objective, public-disclosure document that takes no position on the merits of the project, but rather provides information on which decisions about the project can be based. The EIR has been prepared according to the professional standards and practices of the EIR consultants' individual disciplines and in conformance with the legal requirements and informational expectations of CEQA and the State and local guidelines in place to implement it. EIR authors are listed in ***Chapter 7.0 Report Preparers***.

1.3 INFORMATION USED TO PREPARE THE EIR

The *State CEQA Guidelines* permit any person to submit information to assist in the preparation of an EIR, but require independent review of the information to ensure that it accurately reflects the lead agency's judgment about the environmental impacts of the project. As a part of the Countywide Plan update process, Marin County prepared a series of technical background reports and other studies with the assistance of independent consultants. Various sources consulted in preparation of this EIR are listed below and are also referenced in ***Section 7.3 Bibliography***.

Planning Commission Draft Marin Countywide Plan 2005

This is the document analyzed in this EIR. This document is referenced in this Draft EIR as the *Draft 2005 CWP Update*. See ***Chapter 3.0 Description of the Proposed Project*** for a complete description of this document.

Geology, Mineral Resources and Hazardous Materials Technical Background Report, March 2002, Updated November 2005

This report evaluates the existing geologic (seismic and non-seismic) hazards, mineral resource issues and hazardous material issues affecting Marin County.

Hydrology and Water Quality Background Report, August 2000, Updated November 2005

This report discusses the regulatory environment as it pertains to surface and groundwater quality, water supply, and habitat preservation; assesses the current hydrologic conditions and water quality in the waters of the county, as well as the status of the region's drinking water supplies; evaluates the performance of the policies and programs pertinent to water resources in the Environmental Quality Element of the existing Countywide Plan; and recommends revisions or refinements to the existing CWP policies and programs which would enhance water quality and aquatic habitat, improve channel stability, and maximize the County's ability to mitigate the effects of future development on water resources.

Flooding Background Report, March 2002, Updated November 2005

This report describes the existing hydrologic environment, the flooding regime and historical floods, applicable County regulations, the basis of the National Floodplain Insurance Program, the composition and responsibilities of the Marin County Flood Control and Water Conservation District (MCFCWCD), and the delineation and status of flood protection in the County Flood Control Zones, as well as an assessment of the County's performance vis-à-vis the policies adopted in the 1994 *Marin Countywide Plan*.

Air Quality Background Report, April 2002, Updated December 2005

This report provides a discussion of current air quality conditions and future planning efforts. Climate and meteorological conditions that affect air quality in the project area are also described. This report describes the existing regulatory environment regarding air quality in Marin County, existing air quality conditions (including criteria air pollutants, toxic air contaminants, existing sources of air pollution and sensitive receptors) plus a review of existing Countywide Plan policies.

Final Transportation Background Report, March 2003, Updated November 2005

This report describes the existing transportation system in Marin County, including major highways and arterials, transit service and alternative modes, and airport facilities. Existing levels of service for highways and arterials are also discussed in addition to transportation projects and studies now underway.

Biological and Wetland Protection Technical Background Report, April 2002, Updated January 2006

This report provides a description of the regulatory framework related to sensitive biological and wetland resources, a general description of resources within the County, and a review of the current policies of the current Countywide Plan

Noise Technical Background Report, April 2002, Updated October 2005

This report describes the current noise environment in Marin County and reviews existing Countywide Plan goals and policies. Existing noise sources due to traffic, commercial aircraft overflight and stationary sources are described.

Community Facilities Element Technical Report, February 7, 2003

This technical report presents information about provision of four major community services and facilities: police, fire, water and sewer. In addition, other community facilities are described: school facilities, hospital care, solid and hazardous waste disposal, child care, libraries, gas and electric services, jails, and telecommunications.

Cultural Resources Technical Background Report, February 2003

This report provides information regarding archaeological sites in Marin County, discusses reliability of the existing information, discusses cultural resource evaluation, reviews existing policies and ordinances and makes recommendations regarding policies and procedures.

Marin County Agricultural Economic Analysis, November 2003

This report analyzes the economic issues currently facing agriculture in Marin County, with a primary focus on the impact of estate developments on agricultural lands. The primary purpose of the report is to assist County decision-makers in formulating policies and programs that would maintain and support the future of Marin County's agriculture.

Community Development Element Technical Report #1 Land Use Modeling and Buildout, October 2006

As a part of the Countywide Plan Update process the Marin County Planning Department created a parcel database that serves planning purposes and provides information in support of the Countywide Plan. This report describes the database and the processes developed for ongoing Marin County planning efforts.

Energy Technical Background Report, March 2004

The purpose of this report is to provide information and a methodology to help translate the County's goal of energy sustainability in to successful practice.

Marin County Targeted Industries Study, January 6, 2004

This report was prepared to provide a set of economic, social, and environmental criteria to help Marin County evaluate which types of industries should be encouraged, or discouraged, using a variety of policy instruments available to the County. A list of target industries that meet these criteria was developed.

Parks and Recreation Technical Background Report, January 2005

This report describes existing park and recreation facilities in the County, discusses park and recreation issues and alternatives and discusses options for funding acquisition and operation of parks and recreation facilities.

Trails Element Technical Background Report, January 2004

This report provides information regarding trails in Marin County. It provides information regarding existing conditions, trails acquisitions, acquisition issues, and trails development.

Marin County Watershed Management Plan Administrative Draft, April 2004

The primary purpose of the Marin County Watershed Management Plan is to guide County staff, resource managers and policy makers, and community organizations to protect and restore the beauty and natural function of Marin County's watersheds. The plan provides specific recommendations on practices to improve and sustain a healthy, productive environment.

Built Environment Element Transportation Technical Report #1 The Transportation System and Transportation Modeling, July 2002

This report describes the transportation modeling process used for the Countywide Plan Update process.

2005 Marin County Congestion Management Program, September 2005

This is the Congestion Management Program for Marin County.

Report on Greenhouse Gas Emissions for Marin County, June 2003

This report is the County's first analysis of greenhouse gas emissions levels in Marin County. As a part of this work, the County gathered information on greenhouse gas emissions in three years – 1990, 1995, and 2000 – to understand trends in the county's greenhouse gas emissions.

Measuring Effects of the Countywide Plan on Marin's Ecological Footprint, March 2006

This report attempts to evaluate how consumption of ecological resources and services will change using a measure known as the Ecological Footprint, to determine the effectiveness of the *Draft 2005 CWP Update's* policies and programs on reducing Marin's demands on ecosystems.

Key Trends, Issues, and Strategies Report, January 2003

This report identifies issues, and strategies affecting the future of Marin County in the three broad categories that provide an organizing framework for the Countywide Plan update: natural systems; the built environment; and the economy, equity, and culture.

Copies of the above cited reports are available for public review at the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157, and on the County's website at www.future-marin.org.

1.4 PUBLIC REVIEW AND COMMENT

Copies of the Draft Marin Countywide Plan Update and this Draft EIR are available through the Marin County Community Development Agency and online at www.future-marin.org. Marin County will also circulate the document to public agencies, relevant organizations and interested individuals.

Comments may be submitted in writing or orally at a public hearing to be held by the Marin County Planning Commission. Comments should be focused on the adequacy and completeness of the EIR or should address questions about the environmental consequences of project implementation. In this case, "adequacy" is defined as the thoroughness of the EIR in addressing significant environmental effects, identifying mitigation measures for those impacts, and supplying enough information for public officials to make decisions about the merits of the project. In order to keep the document

succinct and useful as a decision-making tool, the *State CEQA Guidelines* charge that an EIR focus on a project's significant environmental impacts and not address every imaginable less-than-significant effect.

Comments on the Draft EIR must be made before the close of the public review period and sent or delivered to:

Marin County Community Development Agency
Attn: Tim Haddad
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Comments can be sent by email to: THaddad@co.marin.ca.us

After the close of the public review period, a Final EIR will be prepared that contains all the comments received by the County during the public review period and responses to those comments. This document will be made available to public agencies and the general public so those parties can review the Final EIR before the County certifies it as complete.

No action can be taken on the *Draft 2005 CWP Update* until the Final EIR is certified; however, County acceptance of the EIR upon certification does not signal or require approval of the *Draft 2005 CWP Update*.

1.5 PURPOSE OF THE EIR

PURPOSE AND INTENDED USE OF THE EIR

This program EIR is intended to provide information to public agencies, the general public, and decisions makers regarding potential environmental impacts related to adoption and implementation of the *Draft 2005 CWP Update*. The purpose of an EIR is "to identify the significant effects on the environmental of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided." (Public Resources Code Section 21002.1(a)).

The principal action considered in this EIR is adoption and implementation of the *Draft 2005 CWP Update*. The EIR will be used by the Board of Supervisors in considering adoption of the proposed Project.

As discussed above, this program EIR can be incorporated by reference into subsequently prepared environmental documents to address issues such as cumulative impacts and growth inducing impacts, allowing the subsequent documents to focus on new or site-specific impacts.

AGENCIES EXPECTED TO USE THE EIR

State CEQA Guidelines Section 15124 provides that an EIR should contain a statement briefly describing the intended uses of the EIR and, to the extent that it is known to the Lead Agency, a list of agencies expected to use the EIR in their decision making, permits or other approvals implementing the project and related environmental review and consultation required by law or regulation.

A wide variety of federal, State, regional and local agencies may use this EIR in their planning process, issuance of their permits or exercise of their regulatory authority over resources or jurisdictional actions within Marin County. Agencies may use the EIR as a program EIR for subsequent parts of their program actions subject to CEQA, tiering their project CEQA studies to the EIR, or utilizing the EIR in whole or part to apply to a required CEQA study in conjunction with specific agency project approval actions.

As the lead agency for this "project," Marin County will be responsible for considering certification of the EIR and adoption of the *Marin Countywide Plan 2005*. The County may utilize this EIR as a program EIR, tiered EIR, or project EIR in subsequent actions on Countywide Plan implementing programs, amendments to the Countywide Plan or elements, Development Code, Community Plans, other County plans such as the Airport Land Use Plan, the Telecommunications Facilities Policy Plan, Marin County Local Coastal Program, Regional Integrated Waste Management Plan or other relevant County planning actions.

Cities and Towns in Marin County will need to consider the Countywide Plan aspects of this EIR, impact analysis and mitigations as it pertains to consistency with adopted City and Town General Plans and other planning actions. In addition to Marin County and each of the eleven cities and towns, there are a number of other jurisdictional and permit-granting agencies that have control over specific environmental concerns in the planning area. The following is a listing of agencies that may utilize this EIR. Because it is not practical or possible for Marin County to know or ascertain all of the possible specific uses for which the agencies may subsequently utilize this EIR, the listing attempts to provide a brief summary disclosure of the applicable types of actions or authorities for which the cited agency may use this EIR as follows:

Federal Agencies

National Marine Fisheries Service - Administers Endangered Species Act and Marin Mammal Protection Act as they pertain to marine species.

U.S. Fish and Wildlife Service - Administers Endangered Species Act and Marin Mammal Protection Act.

U.S. Environmental Protection Agency - Issues permits for point source discharges.

National Oceanic and Atmospheric Administration, Gulf of the Farallones National Marine Sanctuary - Governs activities within the Sanctuary which includes Bodega Bay, Tomales Bay, etc.

U.S. Army Corps of Engineers - Controls dredge and fill of U.S. waters including wetlands under Section 404 of the Clean Water Act; controls navigable waters under Section 10 of the River and Harbors Act; and establishes wetlands boundaries.

State Agencies

California Coastal Commission - Reviews amendments to the Local Coastal Program; issues permits for development within 1,000-foot Coastal Zone under authority of the California Coastal Act.

Department of Housing and Community Development - Reviews the adequacy of Housing Elements and funding for affordable housing programs.

State Lands Commission - Responsible for tidelands and historic waterways.

California Department of Transportation - CalTrans is responsible for the management of the statewide transportation network.

The Native American Heritage Commission - Mandated to preserve and protect places of special religious or cultural significance pursuant to Section 5097 et seq of the Public Resources Code.

California Department of Fish and Game - Reviews fish and wildlife issues.

Bay Conservation and Development Commission - Issues permits for areas subject to tidal actions, sloughs and submerged lands.

California Department of Conservation - Division of Mines and Geology has special expertise in evaluating geologic and seismic hazards as well as mineral resource issues.

The California Regional Water Quality Control Board - Concerned with the effects of wastewater disposal on water quality and supply.

Bay Area Air Quality Management District - BAAQMD monitors air quality and has permit authority over certain types of facilities, including dry-cleaning plants, service stations, land fills, sewage plants and industrial plants as examples.

Regional Agencies

Association of Bay Area Governments - ABAG prepares regional plans, including regional housing needs determinations that must be addressed in local housing elements.

The Metropolitan Transportation Commission - Responsible for developing the regional transportation system in the Bay Area.

Local Agencies

Marin County Cities and Towns - Novato, San Rafael, Fairfax, San Anselmo, Ross, Larkspur, Corte Madera, Mill Valley, Tiburon, Belvedere, and Sausalito - Responsible for future development within their communities.

Special Districts

There are many special districts in Marin County. Water districts such as the Marin Municipal Water District; and the North Marin County Water District which supply potable and reclaimed water. Sanitary districts such as the Las Gallinas Valley Sanitary District, etc. are responsible for sanitary services. Fire districts in the county are responsible for fire protection.

Additionally, it is important for the success of any plan that it be coordinated with other organizations and agencies making plans for, or within, the same area. The following table identifies those agencies that will need to be consulted with respect to the *Draft 2005 CWP Update EIR*:

- State Clearinghouse
- ABAG Clearinghouse
- Marin County Community Development Agency
- Marin County Dept of Public Works
- Marin Co. Parks, Open Space & Cultural Services
- Marin Co. Dept of Health &Human Services
- Marin County Airport
- Marin County Farm Advisor
- Marin County Farm Bureau
- Marin County Office of Education
- Marin County Resource Conservation District
- Marin County Transit District
- Marin County Environmental Health Services
- Marin County Open Space District
- Marin County Housing Authority
- Marin County Counsel
- Marin County Sheriff's Department
- Marin County Fire Department
- Marin County Libraries
- Marin County School Districts
- Marin County Fire Districts
- Marin County Water & Sewer Districts
- Marin County Cities and Departments
- Adjacent Counties and Departments
- Local, State & Federal Elected Officials
- Resources Agency
- California Coastal Commission
- Local Agency Formation Commission
- California Coastal Conservancy
- CA Dept. of Conservation Div of Mines & Geology
- California Dept. of Fish and Game
- CA Office of Historic Preservation
- CA Dept. of Parks and Recreation
- Reclamation Board
- SF Bay Conservation & Development Commission
- Division of Aeronautics
- California Highway Patrol
- CA Dept. Housing & Community Development
- CA Dept. of Food & Agriculture
- California Dept. of Health Services
- CA Environmental Protection Agency
- California Integrated Waste Management Board
- Regional Water Quality Control Board, Region 2
- Youth & Adult Correctional Agency
- CA Energy Commission
- CA Native American Heritage Commission
- CA Public Utilities Commission
- CA State Lands Commission
- US Army Corps of Engineers
- US Fish & Wildlife
- Office of Housing & Urban Development
- Golden Gate National Recreation Area
- Pt. Reyes National Seashore
- National Marine Fisheries Service
- Interested Parties

1.6 REPORT ORGANIZATION

After this introduction, the EIR is organized into the following sections.

Chapter 2.0 – Summary

Outlines the proposed project and provides, in table format, a listing of the impacts, mitigation, and level of significance after mitigation. This chapter also discusses areas of controversy, effects of no significance and major EIR conclusions and issues to be resolved.

Chapter 3.0 – Description of the Proposed Project

Describes the project in greater detail and provides an overview of the general plan update process and objectives.

Chapter 4.0 – Environmental Setting, Impacts, and Mitigation Measures

Provides the environmental analysis for each of the 12 impact areas, listing the setting and relevant *Draft 2005 CWP Update* policies, environmental impacts, levels of significance, mitigation measures, and level of significance after mitigation.

Chapter 5.0 – Alternatives

Discusses the project alternatives and their associated environmental impacts.

Chapter 6.0 – Growth Inducing and Cumulative Impacts

Beyond the impact discussion in ***Chapter 4.0***, this chapter discusses growth-inducing and cumulative impacts.

Chapter 7.0 – Report Preparation

Identifies the people responsible for preparing the report, people consulted during preparation of the EIR and references.

Appendix 1

Appendix 1 to the Draft EIR includes the background reports discussed in ***Section 1.3 Information Used to Prepare the EIR*** above.

Appendix 2

Appendix 2 to the Draft EIR includes technical or procedural materials that are pertinent to the analysis contained in the body of this document. **Appendix 2** includes the Notice of Preparation (NOP), NOP Comments and Disposition of NOP Responses, and other technical supporting material.

2.0 SUMMARY

2.0 SUMMARY

This chapter summarizes the findings of this Draft EIR. It highlights the project's effects, identifies the alternatives studied, and presents the impact overview discussions required by the California Environmental quality Act (CEQA).

2.1 PROJECT SUMMARY

The Marin Countywide Plan Update (CWP Update) proposes a comprehensive update of the *1994 Marin Countywide Plan* (*1994 CWP*). The subject of this Draft EIR is the *Draft 2005 CWP Update* [1] prepared by Marin County. The CWP Update encompasses the unincorporated territory of Marin County. Marin's total land and water area is approximately 606 square miles, of which about 87 percent (527 square miles) is unincorporated.

The purposes of the CWP Update are to set policy guidelines for future conservation and development in the county and to address changed conditions since adoption of the *1994 CWP*. The CWP Update establishes an overall framework and set of goals for countywide development in the unincorporated area of Marin County.

The overarching theme presented in the *Draft 2005 CWP Update* is sustainability. To address this theme, the *1994 CWP* has been substantially reformatted into three main elements: the Natural Systems and Agriculture Element, the Built Environment Element, and the Socioeconomic Element. The seven mandatory General Plan elements required by the State Planning and Zoning Laws (Conservation, Open Space, Land Use, Circulation, Housing, Noise, and Safety) and the five optional elements in the *1994 CWP* (Agriculture, Community Facilities, Parks and Recreation, Trails, and Economic), have been updated and incorporated into the three main elements reformatted of the *Draft 2005 CWP Update*. The recent update of the Housing Element [2] of the CWP was adopted prior to this *Draft 2005 CWP Update*.

In the first Countywide Plan, adopted in 1973, three environmental corridors were designated. These included the Coastal Recreation Corridor, Inland Rural Corridor and City-Centered Corridor. The *Draft 2005 CWP Update* retains the "corridor" concept dividing the county into regional units based on specific geographic and environmental characteristics and natural boundaries formed by north/south trending geomorphic ridges (see **Exhibit 3.0-2**). This update proposes to add a fourth corridor, the Baylands Corridor, for baylands protection and restoration. The update also renames the Coastal Recreation Corridor to the Coastal Corridor recognizing that issues, opportunities, and constraints in the corridor go far beyond recreation. The Baylands Corridor encompasses tidelands, marshes, and diked lands along the Bay shoreline designated to provide for increased protection of environmental characteristics of the historic bay margins.

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1 *Marin Countywide Plan Revised Public Review Draft*, Marin County Community Development Agency, August 2005.

2 The Housing Element was certified by the State Department of Housing and Community Development on July 24, 2003 and is no the subject of this CWP update.

A detailed project description and background is contained in ***Chapter 3.0 Description of the Proposed Project***.

2.2 SUMMARY OF IMPACTS AND MITIGATIONS

This Draft EIR considers the projected development related to the *Draft 2005 CWP Update* and assesses the effects of implementing the project alone and combined with other cumulative development expected in the vicinity. **Exhibit 2.0-1** summarizes the environmental impacts identified in ***Chapter 4.0 Environmental Setting, Impacts, and Mitigation Measures*** where the impacts are discussed in detail. The following levels of significance were used to identify impacts in **Exhibit 2.0-1** and elsewhere in this Draft EIR.

- ***Significant Impact (S)*** – An adverse change in the environment, where the change exceeds a specific significance threshold. These thresholds are described under the "Significance Criteria" in sections 4.1 through 4.12.

- ***Significant Unavoidable Impact (SU)*** – A significant impact that cannot be avoided with mitigation. These include impacts which could be partly mitigated but could not be reduced to a less-than-significant level.

- ***Less-than-Significant Impact (LTS)*** – A change in the environment that does not exceed specific significance thresholds, or no change at all.

Topical sections in ***Chapter 4.0 Environmental Setting, Impacts, and Mitigation Measures*** list the thresholds and criteria used to determine significance for the respective environmental subject.

Exhibit 2.0-1
Summary of Impacts and Mitigation Measures

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
Land Use, Population, and Housing			
4.1-1 Conflict with Applicable Land Use or Other Plans Goals, policies, and programs of the *Draft 2005 CWP Update* would not conflict with other adopted plans. The plan consistency analysis has not found any plan inconsistencies with the *Draft 2005 CWP Update* that would result in adverse physical impacts.	LTS	No mitigation would be required.	LTS
4.1-2 Growth and Concentration of Population Land uses and development consistent with the *Draft 2005 CWP Update* would induce substantial growth within the unincorporated portion of Marin County.	S	***4.1-2*** Add the following policies and programs to the Community Development Section of the Built Environment Element. Policy **CD-(new)** *Provide Adequate Infrastructure Capacity.* Plan the circulation system and public infrastructure and services to provide capacity for the unincorporated County's realistic buildout. Policy **CD-(new)** *Correlate Development and Infrastructure.:* For health, safety and general welfare, new development should only occur when adequate infrastructure is available consistent with the following findings: a) Project related traffic will not cause level of service established in the circulation element to be exceeded; b) Any circulation improvements needed to maintain the level of service standard established in the Circulation Element have been programmed and funding has been committed; c) Any circulation improvements needed to maintain the level of service standard established in the Circulation Element have been programmed and funding has been committed;	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.1-2 Growth and Concentration of Population cont.		d) Environmental review of needed circulation improvement projects has been completed; e) The time frame for completion of the needed circulation improvements will not cause the level of service in the Circulation element to be exceeded. e) Wastewater, water and other infrastructure improvements will be available to serve new development by the time the development is constructed. Program **CD-(new)** *Monitor Growth and Circulation.* At least every five years review the unincorporated County's growth, planned land use, traffic capacity, funded traffic improvements, traffic mitigation list and traffic fees. Assess growth assumptions and modify land use and circulation policies as needed to ensure adequate circulation capacity to serve development. Program **CD-(new)** *Review and Correlate Countywide Growth and Infrastructure*. Work with the proposed City- County Committee or a similar collaborative venue (to be established pursuant to Policy CD-4) to review the countywide growth, planned land use and traffic and service capacity. As warranted by the monitoring information, encourage all jurisdictions to amend their respective general plans and zoning from allowing "theoretical full buildout" of non-residential uses to allowing "realistic buildout" to ensure correlation of planned land uses and traffic capacity and the capacity of all essential public services. Program **CD-(new)** *Development Review:* Through the development and environmental review processes, ensure that policy provisions are evaluated and implemented. If required by statute or case law, the County Review Authority may waive or modify policy requirements determined to have removed all economically viable use of the property.	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.1-3 Land Use Conflicts between Agricultural and Urban Uses Implementation of the *Draft 2005 CWP Update* could result in the intrusion of residential uses into agricultural areas and result in the exposure of residents to noise, odors, dust, and other nuisances generated by agricultural operations. Such residential development may be incompatible with existing agricultural operations. However, the *Draft 2005 CWP Update* and the Marin County Code contain policies and ordinances to reduce this impact to a less-than-significant level.	LTS	No mitigation would be required.	LTS
4.1-4 Agricultural Processing, Retail Sales, and Visitor-Serving Uses Implementation of the *Draft 2005 CWP Update* could result in new or expanded agricultural processing, retail sales, or visitor-serving uses on agricultural lands in unincorporated Marin County. Such uses could result in land use conflicts with existing agricultural operations and residential areas as well as result in indirect impacts such as additional noise and traffic.	S	***4.1-4(a)*** Revise Program **AG-2.c** of the *Draft 2005 CWP Update* as follows **AG-2c** *Prepare Criteria and Standards*. ~~Prepare criteria and standards to identify compatible agricultural activities and applicable development code requirements.~~ Amend the Development Code to include criteria and standards to encourage agricultural processing and strengthen Marin's agricultural industry, including limitations on uses that are not compatible with sustainable agriculture. Continue to support the efforts of the UC Cooperative Extension, Marin Resource Conservation District, the Marin County Farm Bureau, Marin Agricultural Land Trust, Marin Organic, Marin County Agriculture Commissioner, and the Marin County Farmer's Market to plan for agriculture in Marin and ensure that the new criteria and standards are consistent with the County's goals of improved agricultural viability and preservation and restoration of the natural environment. ***4.1-4(b)*** The County shall obtain funding for Program **AG-2.c**.	LTS
4.1-5 Development of Residential Land Uses Incompatible with Established Land Use Development of some of the identified Housing Overlay Designation sites would be inconsistent with the proposed *Draft 2005 CWP Update* criteria and result in land use conflicts.	S	***4.1-5*** In order to reduce impacts associated with development of Housing Overlay Designation sites, those individual parcels that do not meet the criteria listed in Policy CD-2.3 shall be removed from further consideration.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.1-6 Jobs-to-Housing Ratio Development consistent with the *Draft 2005 CWP Update* would decrease the employed residents per job ratio.	LTS	No mitigation would be required.	LTS
Transportation			
4.2-1 Increase in Vehicle Miles Traveled Land uses and development consistent with the *Draft 2005 CWP Update* would result in a significant increase in vehicle miles traveled in Marin County.	S	***4.2-1*** Add a new policy and program to the Transportation section of the *Built Environment Element*: **Policy TR-1.(new)** *Reduce Vehicle Miles Traveled (VMT).* Reduce vehicle miles traveled per person by single-occupant automobile by ten percent. **Program TR-1.(new)** *VMT Reduction Monitoring*. Develop a program for monitoring VMT and implementing targeted strategies for reducing VMT per person including: All new residential projects over 50 units shall be within five miles of a major public transportation node. Require that all new multi-family residential projects over ten dwelling units have TDM measures in place such as charging parking fees separate from rent, subsidized public transportation passes, or ride-matching programs based on site specific review. New residential development should provide safe, convenient connections to existing pedestrian and bicycle facilities and should provide secure bicycle parking. Complete key regional bikeways including the Cal-Park Hill Path and Tunnel. Require that new employers of 50 employees or more implement TDM programs such as parking cash out, subsidized transit passes, ridesharing incentives, and bicycle storage facilities.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.2-2 Unacceptable LOS on U.S. 101 at Golden Gate Bridge (Screenline #1) Land uses and development consistent with *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on U.S. 101 at the Golden Gate Bridge.	S	***4.2-2*** Several policies and programs contained in the *Draft 2005 CWP Update* would help mitigate this impact. Goal **TR-3**, which seeks to provide efficient, affordable public transportation service countywide, and its supporting policies and programs would help reduce congestion on the Golden Gate Bridge by attracting more commuters to public transit services by increasing bus service, improving bus facilities, providing reduced cost transit passes, participating in regional transit initiatives, and promoting transit-oriented development. Though these initiatives would reduce congestion on the Golden Gate Bridge, the mitigating effects would not be substantial enough to reduce this impact to a less-than-significant level.	SU
4.2-3 Unacceptable LOS on State Route 1 from U.S. 101 to Almonte Boulevard (Screenline #3) Land uses and development consistent with *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on State Route 1 between U.S. 101 and Almonte Boulevard.	S	***4.2-3*** Widen State Route 1 between U.S. 101 and Almonte Boulevard from one to two lanes in each direction, which would increase roadway capacity from 800 vehicles per hour to 1,600 vehicles per hour in each direction. This would improve conditions to LOS E, which would at least provide capacity that exceeds traffic demand, but would still not satisfy the LOS D criteria for this roadway. Though full mitigation would require three full traffic lanes in each direction, this improvement is unlikely due to significant environmental impacts and lack of community support. Currently there are no plans or funds for this improvement; therefore, it is unlikely it would be completed within the time frame of the *Draft 2005 CWP Update*.	SU
4.2-4 Unacceptable LOS on State Route 131 from U.S. 101 to Strawberry Drive (Screenline #4) Land uses and development consistent with *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on State Route 131 between U.S. 101 and Strawberry Drive. This would be a significant project and cumulative impact.	S	***4.2-4*** Expand State Route 131 from two to three lanes in the eastbound direction from southbound U.S. 101 to Strawberry Drive. This would expand roadway capacity in the eastbound direction from 1,920 to 2,880 vehicles per hour creating, at worst-case, LOS C operating conditions and thus providing an acceptable LOS.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.2-5 Unacceptable LOS on Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6) Land uses and development consistent with *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on Sir Francis Drake Boulevard between Bon Air Road and Wolfe Grade. This would be a significant cumulative impact.	S	***4.2-5*** Expand Sir Francis Drake Boulevard between Bon Air Road and Wolfe Grade in the westbound direction from two to three lanes. This would expand capacity from 2,400 to 3,600 vehicles per hour, providing under worst-case conditions an acceptable LOS A. Note that under worst-case conditions traffic only exceeds the significance threshold by 42 vehicles per hours.	SU
4.2-6 Unacceptable LOS on Sir Francis Drake Boulevard from U.S. 101 to Eliseo Drive (Screenline #7) Land uses and development consistent with *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on Sir Francis Drake Boulevard between U.S. 101 and Eliseo Drive. This would be a significant project and cumulative impact.	S	***4.2-6*** Widen Sir Francis Drake Boulevard from two to three lanes in each direction from U.S. 101 to Eliseo Drive in order to mitigate this impact via roadway expansion. This would increase roadway capacity from 2,400 to 3,600 vehicles per hour in each direction and under the worst-case scenario provide LOS D operations, which would satisfy the LOS requirements for this roadway.	SU
4.2-7 Unacceptable LOS on East Sir Francis Drake Boulevard from Larkspur Ferry to San Quentin (Screenline #8) Land uses and development consistent with *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on East Sir Francis Drake Boulevard between the Larkspur Ferry and San Quentin. This would be a significant cumulative impact.	S	***4.2-7*** Expanding East Sir Francis Drake Boulevard between the Larkspur Ferry Terminal and San Quentin from one to two lanes in each direction would expand capacity from 960 to 1,920 vehicles per hour, providing under worst-case conditions an acceptable LOS B.	SU
4.2-8 Unacceptable LOS on I-580 at the Richmond Bridge (Screenline #9) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that cumulatively contributes to unacceptable LOS on I-580 at the Richmond Bridge. This would be a significant cumulative impact.	S	***4.2-8*** Expand I-580 from two to three lanes in the westbound direction from the Richmond Bridge to Sir Francis Drake Boulevard. This would expand roadway capacity from 4,400 to 6,600 vehicles per hour thus providing acceptable LOS C operations under worst-case conditions.	SU
4.2-9 Unacceptable LOS on U.S. 101 from I-580 to Sir Francis Drake Boulevard (Screenline #11) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that cumulatively contributes to unacceptable LOS on U.S. 101 between I-580 and Sir Francis Drake Boulevard. This would be a significant cumulative impact.	S	***4.2-9*** Expand U.S. 101 between I-580 and Sir Francis Drake Boulevard from three to four mixed-flow lanes in the southbound direction. This would expand roadway capacity from 6,600 to 8,800 vehicles per hour and provide acceptable LOS D operations under worst-case traffic conditions.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.2-10 Unacceptable LOS on U.S. 101 from Second Street to I-580 (Screenline #12) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on U.S. 101 between Second Street and I-580. This would be a significant cumulative impact.	S	***4.2-10*** Widen U.S. 101 northbound and southbound from three lanes and one auxiliary lane to four lanes one auxiliary lane between Second Street and I-580 which would expand roadway capacity from 7,700 to 9,900 vehicles per hour. This would provide additional capacity to accommodate the 1557 vehicles per hour, under worst-case conditions, in excess of the acceptable LOS threshold.	SU
4.2-11 Unacceptable LOS on South Novato Boulevard from U.S. 101 to Sunset Parkway (Screenline #17) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that cumulatively contributes to unacceptable LOS on South Novato Boulevard from U.S. 101 to Sunset Parkway. This would be a significant cumulative impact.	S	***4.2-11*** Currently South Novato Boulevard is only one lane in each direction which provides 960 vehicles per hour of capacity. Under worst-case conditions, traffic volumes are forecast to exceed this capacity by 235 vehicles per hour and exceed the acceptable LOS threshold by 427 vehicles per hour. Thus, expanding South Novato Boulevard from one to two lanes in each direction from U.S. 101 to Sunset Parkway, which would expand roadway capacity to 1,920 vehicles per hour in each direction, would provide enough additional capacity to for an acceptable LOS.	SU
4.2-12 Unacceptable LOS on Lucas Valley Road from Las Gallinas Avenue to Los Gamos (Screenline #15) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on Lucas Valley Road from Las Gallinas Avenue to Los Gamos. This would be a significant project and cumulative impact.	S	***4.2-12*** Currently, Lucas Valley Road is one lane in each direction and provides 800 vehicles per hour of capacity in each direction. Under worst-case conditions, traffic volumes are forecast to exceed this capacity and acceptable LOS by 270 vehicles per hour. In order to accommodate this excess capacity via roadway expansion, Lucas Valley Road would need to be expanded from one to two lanes in both directions from Las Gallinas Ave. to Los Gamos which would expand roadway capacity from 800 to 1600 vehicles per hour.	SU
4.2-13 Unacceptable LOS on U.S. 101 at the Sonoma / Marin County Line (Screenline #19) Land uses and development consistent with *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS on U.S. 101 at the Sonoma/Marin County line. This would be a significant project and cumulative impact.	S	***4.2-13*** Currently, U.S. 101 at this screenline is two lanes in each direction and provides 4,400 vehicles per hour of capacity. Under worst-case conditions, traffic volumes are forecast to exceed this capacity and acceptable LOS by 1,323 vehicles per hour. In order to accommodate this excess capacity via roadway expansion, U.S. 101 would need to be expanded from two to three lanes in each direction from north of Atherton Avenue, where U.S. 101 drops to two lanes, to the Sonoma County Line. This expansion would increase roadway capacity from 4,400 to 6,600 vehicles per hour.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.2-14 Unacceptable LOS at Intersection of State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road (Intersection C) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS at the intersection of State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road. This would be a significant cumulative impact.	S	***4.2-14*** Add an eastbound through lane on Tiburon Boulevard and a northbound right turn lane on the Redwood Highway Frontage Road.	SU
4.2-15 Unacceptable LOS at Intersection of Second Street and Grand Avenue (Intersection D) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS at the intersection of Second Street and Grand Avenue. This would be a significant cumulative impact.	S	***4.2-15*** Add a right turn lane to the northbound Grand Avenue approach at the Second Street and Grand Avenue intersection. This improvement is included as part of a fully funded roadway improvement project listed in the *San Rafael General Plan 2020*. This would be the responsibility of the City of San Rafael and it is both feasible and reasonable to expect them to implement this improvement.	SU
4.2-16 Unacceptable LOS at Intersection of Third Street and Grand Avenue (Intersection E) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS at the intersection of Third Street and Grand Avenue. This would be a significant cumulative impact.	S	***4.2-16*** Add a westbound through lane on Third Street at the intersection of Third Street and Grand Avenue.	SU
4.2-17 Unacceptable LOS at Intersection of Miller Creek Road and Las Gallinas Avenue (Intersection F) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS at the intersection of Miller Creek Road and Las Gallinas Avenue. This would be a significant cumulative impact.	S	***4.2-17*** Signalize the Miller Creek Road and Las Gallinas intersection plus add a westbound left turn pocket on Miller Creek Road.	SU
4.2-18 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 Southbound Off-Ramp (Intersection G) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS at the intersection of Miler Creek Road and U.S. 101 SB off-ramp. This would be a significant cumulative impact.	S	***4.2-18*** Signalize the Miller Creek Road and U.S. 101 SB off-ramp intersection.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.2-19 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 Northbound Off-Ramp (Intersection H) Land uses and development consistent with the *Draft 2005 CWP Update* would result in traffic that contributes to unacceptable LOS at the intersection of Miler Creek Road and U.S. 101 NB off-ramp. This would be a significant cumulative impact.	S	***4.2-19*** Signalize the Miller Creek Road and U.S. 101 NB off ramp intersection plus add eastbound and northbound left turn pockets.	SU
4.2-20 St. Vincent's / Silveira / Marinwood Development in the St. Vincent's / Silveira / Marinwood area consistent with the *Draft 2005 CWP Update* would result in significant project and cumulative traffic and intersection impacts.	S	***4.2-20(a)*** Signalize the Miller Creek Road and Las Gallinas intersection plus add a westbound left turn pocket on Miller Creek Road. ***4.2-20(b)*** Signalize the Miller Creek Road and U.S. 101 SB off-ramp intersection. ***4.2-20(c)*** Signalize the Miller Creek Road and U.S. 101 NB off ramp intersection plus add eastbound and northbound left turn pockets. ***4.2-20(d)*** Currently Lucas Valley Road is one lane in the each direction which provides 800 vehicles per hour of capacity in each direction. Under worst-case conditions, traffic volumes are forecast to exceed this capacity and acceptable LOS by 270 vehicles per hour. In order to accommodate this excess capacity via roadway expansion, Lucas Valley Road would need to be expanded from one to two lanes in the both directions from Las Gallinas Avenue to Los Gamos. This would expand roadway capacity from 800 to 1600 vehicles per hour.	SU
4.2-21 San Rafael Rock Quarry Development at the San Rafael Rock Quarry consistent with the *Draft 2005 CWP Update* would result in significant cumulative intersection impacts.	S	***4.2-21(a)*** Add a right turn lane to the northbound Grand Avenue approach at the Second Street and Grand Avenue intersection. This improvement is included as part of a fully funded roadway improvement project listed in the *San Rafael General Plan 2020.* ***4.2-21(b)*** Add a westbound through lane on Third Street at the intersection of Third Street and Grand Avenue.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.2-22 Kentfield Development in the Kentfield area consistent with the *Draft 2005 CWP Update* would result in significant project and cumulative traffic impacts.	S	***4.2-22(a)*** Expand Sir Francis Drake Boulevard between the Bon Air Road and Wolfe Grade in the westbound direction from two to three lanes. This would expand capacity from 2400 to 3600 vehicles per hour, providing an acceptable LOS A under worst-case conditions. Note that under worst-case conditions traffic only exceeds the significance threshold by 42 vehicles per hour. ***4.2-22(b)*** Widen Sir Francis Drake Boulevard from two to three lanes in each direction from U.S. 101 to Eliseo Drive in order to mitigate this impact via roadway expansion. This would increase roadway capacity from 2,400 to 3,600 vehicles per hour in each direction and provide LOS D operations, under the worst-case scenario. This would satisfy the LOS requirements for this roadway.	SU
4.2-23 Strawberry Development in the Strawberry area consistent with the *Draft 2005 CWP Update* would result in significant project and cumulative traffic and intersection impacts.	S	***4.2-23(a)*** Expand State Route 131 from two to three lanes in the eastbound direction from U.S. 101 to Strawberry Drive. This would expand roadway capacity in the eastbound direction from 1,920 to 2,880 vehicles per hour providing and acceptable LOS C under worst-case conditions. ***4.2-23(b)*** Add an eastbound through lane on Tiburon Boulevard and a northbound right turn lane on the Redwood Highway Frontage Road.	SU
4.2-24 Tam Valley / Almonte Development in the Tam Valley / Almonte area consistent with the *Draft 2005 CWP Update* would result in significant project and cumulative traffic impact.	S	***4.2-24*** Widen State Route 1 between U.S. 101 and Almonte Boulevard from one to two lanes in each direction, which would increase roadway capacity from 800 vehicles per hour to 1,600 vehicles per hour in each direction. This would improve conditions to LOS E, which would at least provide capacity that exceeds traffic demand, but would still not satisfy the LOS D criteria for this roadway. Though full mitigation would require three full traffic lanes in each direction, this improvement is unlikely due to significant environmental impacts and lack of community support. Currently there are no plans or funds for this improvement; therefore, it is unlikely it would be completed within the timeframe of the *Draft 2005 CWP Update*.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.2-25 Marin City Development in the Marin City area consistent with the *Draft 2005 CWP Update* would result in a less-than-significant impact.	LTS	No mitigation would be required.	LTS
4.2-26 Increased Demand for Bicycle and Pedestrian Facilities and Impacts on Safety and Access Land uses and development consistent with *Draft 2005 CWP Update* would result in increased urban land uses and, consequently, demand for bicycle and pedestrian facilities. At the same time, additional automobile traffic would increase conflicts between bicycle, pedestrians and automobiles. Implementation of policies included in the *Draft 2005 CWP Update* would result in improvements in bicycle and pedestrian facilities that would accommodate increased bicycle and pedestrian demand and improve safety and access.	LTS	No mitigation would be required.	LTS
4.2-27 Increased Demand for Public Transit Services Land uses and development consistent with *Draft 2005 CWP Update* would result in increased demand for transit services. However, implementation of policies included in the *Draft 2005 CWP Update* would result in improved transit services.	LTS	No mitigation would be required.	LTS
Air Quality			
4.3-1 Inconsistency with Clean Air Plan The *Draft 2005 CWP Update* would not be consistent with the BAAQMD Thresholds of Significance since County projected VMT would increase at a faster rate than population.	S	***4.3-1*** Implement Mitigation Measure 4.2-1 of *Impact 4.2-1 Increase in Vehicle Miles Traveled* to reduce VMT per person.	SU
4.3-2 Inconsistency with Clean Air Plan Transportation Control Measures *Draft 2005 CWP Update* policies would not support all efforts to implement TCMs that are to be implemented by counties.	S	***4.3-2(a)*** Add a new program to the Design Section of the Built Environment Element as follows: **DES-2.(new)** Require new office developments with more than 50 parking spaces to offer a *Parking "Cash-Out" Program*. ***4.3-2(b)*** It would be necessary to identify a funding source, make a higher priority or implemented sooner Programs **AIR-3.a** (funding source, higher priority, implement sooner), **AIR-3.d**	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.3-2 Inconsistency with Clean Air Plan Transportation Control Measures cont.		(higher priority), **AIR-3.e** (higher priority), **TR-2.g** (higher priority, implement sooner), **TR-2.k** (higher priority, implement sooner), and **TR-1.c** (funding sources, higher priority, implement sooner).	
4.3-3 Buffer Zones for Potential Source of Odor/Toxics Land use maps associated with the *Draft 2005 CWP Update* do not propose new sources of odors or toxic air contaminants. However, they show sensitive land uses near sources of odors and toxic air contaminants.	S	***4.3-3(a)*** Revise Policy **AIR 2-1** of the Natural Systems & Agriculture Element as follows: **AIR-2.1** *Buffer Emission Sources and Sensitive Land Uses.* Consider potential air pollution and odor impacts from land uses that may emit pollution and/or odors when locating (a) air pollution ~~point~~ sources, and (b) residential and other pollution-sensitive land users in the vicinity of air pollution ~~point~~ sources (which may include freeways, manufacturing, extraction, hazardous materials storage, landfill food processing, wastewater treatment, and other similar uses). ***4.3-3(b)*** Revise Program **AIR-2.a** of the Natural Systems & Agriculture Element as follows: **AIR-2.a** *Require Separation Between Air Pollution ~~Point~~ Sources and Other Land Uses.* Only allow (a) emission ~~point~~ sources or (b) other uses in the vicinity of air pollution or odor ~~point~~ sources if the minimum screening distances between sources and receptors established in the BAAQMD CEQA Guidelines can be met, unless detailed project-specific studies demonstrate compatibility with adjacent uses despite separations that do not meet the screening distance requirements. … ***4.3-3(c)*** Add a new program to the Natural Systems & Agriculture Element as follows: **AIR-2.(new)** *Health Risk Analysis for Sensitive Receptors.* Require that projects involving sensitive receptors proposed within 150 feet of freeways shall include an analysis of the potential health risks. Mitigation measures which comply with adopted standards of the BAAQMD for control of odor / toxics for sensitive receptors shall be identified to reduce these risks to acceptable levels.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.3-4 Carbon Monoxide Concentrations Along Roadways Traffic increases under the *Draft 2005 CWP Update* would result in carbon monoxide concentrations that would be below ambient air quality standards at the most congested intersections.	LTS	No mitigation would be required.	LTS
4.3-5 Fugitive Dust Associated with Construction Projects Construction associated with land uses and development consistent with the *Draft 2005 CWP Update* would result in emissions of dust and possibly toxic air contaminants. However, existing regulations and air quality policies and programs contained in the *Draft 2005 CWP Update* would reduce this to a less-than-significant impact.	LTS	No mitigation would be required.	LTS
4.3-6 Increase in Greenhouse Gas Emissions Land uses and development consistent with the *Draft 2005 CWP Update* would result in an increase in greenhouse gas emissions over existing levels.	S	***4.3-6(a)*** Revise Program **AIR-4.f** of the Natural Systems & Agriculture Element as follows: **AIR-4.f** *Establish a Climate Change Planning Process*. Approve and begin implementation of the *Marin County Greenhouse Gas Reduction Plan.* Integrate *Marin County Greenhouse Gas Reduction Plan*~~climate change planning and program implementation~~ into long range and current planning functions and other related agencies. Establish and maintain a process to implement, measure, evaluate, and modify implementing programs, using the Cities for Climate Protection Campaign as a model. ***4.3-6(b)*** Implement proposed State programs to reduce greenhouse gas emissions including the Renewable Portfolio Standards, California Fuel Efficiency (CAFÉ) standards and a carbon cap and trade programs.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
Noise			
4.4-1 Increased Traffic Noise Land uses and development consistent with the *Draft 2005 CWP Update* would increase transportation activity in the county. Vehicles would be added to the existing roadway system. Although small noise level increases would occur, including at existing receptors, this would be a less-than-significant impact.	LTS	No mitigation would be required.	LTS
4.4-2 Increased Noise from Airports and Heliports Noise sensitive land uses would not be exposed to increased noise levels from airport and heliport operations.	LTS	No mitigation would be required.	LTS
4.4-3 Stationary Noise Sources The *Draft 2005 CWP Update* does not envision the development of any new industrial sources or other significant stationary noise sources in the county.	LTS	No mitigation would be required.	LTS
4.4-4 Future Noise Sensitive Development The *Draft 2005 Marin CWP Update* proposes a Housing Overlay Designation that would concentrate residential development along U.S. 101 and other major roadways where the development could potentially be exposed to noise levels greater than those considered normally acceptable.	LTS	No mitigation would be required.	LTS
4.4-5 Construction Noise Construction of new development would temporarily elevate noise levels at adjacent noise sensitive land uses.	S	***4.4-5*** Revise Program **NO-1.i** of the *Draft 2005 CWP Update* as follows: **NO-1.i**; *Regulate Noise Sources* ~~Adopt a noise ordinance that sets~~ Sections 6.70.030(5) and 6.70.040 of the Marin County Code establish allowable hours of operation for construction-related activities. As a condition of permit approval for projects generating significant construction noise impacts during the construction phase, construction management for any project shall develop a construction noise reduction plan and designate a disturbance coordinator at the construction site to implement the provisions of the plan.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
Hydrology, Water Quality, and Flood Hazards			
4.5-1 Water Quality Standards Land uses and development consistent with the *Draft 2005 CWP Update* would introduce additional pollutants to downstream waters. Such pollutants would result in adverse changes to the water quality of Marin County's natural and artificial drainageways and ultimately to Richardson, San Francisco, and San Pablo Bays.	S	***4.5-1*** In order to reduce impacts to water quality from septic system operation to a less-than-significant level, the County would amend Program **WR-2.i** to reduce adverse effects to water quality to the maximum extent practical for new development and redevelopment projects and to continue to implement existing ordinances. ***4.5-1(a)*** Revise Program **WR-2.i** of the *Draft 2005 CWP Update* as follows: **WR-2.i;** ~~*Consider*~~ *Establish~~ing~~ a Septic Inspection, Monitoring, and Maintenance District*. Establish a countywide Septic Management and Monitoring District that would include all portions of unincorporated areas with septic systems. Modify applicable codes to enable the inspection and monitoring of on-site septic systems in a risk-based, comprehensive and cost effective way. <u>Establishment requires a petition or election to put the district in place.</u> ***4.5-1(b)*** Continue to implement County ordinances addressing nonpoint source pollution, erosion and sediment control, and surface runoff pollution control plans to ensure that project related and cumulative impacts to water quality standards are minimized or avoided through conditions on project approval as required by the ordinances.	LTS
4.5-2 Water Quality – Soil Erosion and Downstream Sedimentation Related to Construction Development consistent with the *Draft 2005 CWP Update* would involve construction and grading activities that could result in erosion and downstream sedimentation of Marin County waterways. Sediment and other associated pollutants entering receiving waters would result in adverse changes to water quality. However, existing regulations and water quality policies and programs contained in the *Draft 2005 CWP Update* would reduce this to a less-than-significant impact.	LTS	No mitigation would be required.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.5-3 Groundwater Recharge Land uses and development consistent with *Draft 2005 CWP Update* would result in additional impervious surfaces and the diversion of groundwater to surface water (i.e., through subsurface drainage features or localized dewatering measures), thereby reducing groundwater recharge in some Marin County watersheds. Reductions in groundwater recharge and / or local dewatering measures could affect the yield of downslope wells and have adverse effects on sensitive plant communities.	S	***4.5-3(a)*** Revise the timeframe of implementation of Program **PFS-2.o** to the medium-term or sooner. ***4.5-3(b)*** Continue to implement County ordinances that maintain continued groundwater recharge, require surface runoff pollution control plans and best management practices for new developments and redevelopments to ensure that project related and cumulative impacts to groundwater recharge are minimized or avoided through conditions on project approval as required by the ordinances.	LTS
4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation Land uses and development consistent with the *Draft 2005 CWP Update* could result in an alteration of local drainage patterns and / or the modes of stormwater conveyance that would increase watershed peak flow rates. Increased peak flow rates may exacerbate hillside or channel / floodplain erosion and downstream sedimentation.	S	***4.5-4*** In order to reduce impacts from erosion and downstream sedimentation in Marin County drainageways to a less-than-significant level, the County would add an additional policy to minimize the adverse affects of increased peak flow rates and storm drain discharges from development. ***4.5-4(a)*** Add a new policy to the Natural Systems & Agricultural Element **BIO-4.(new)** *Maintain Channel Stability.* Project applicants for new development / redevelopment projects shall, where evidence is presented to the County demonstrating the need for an assessment, be required to prepare a hydraulic and / or geomorphic assessment of on-site and downstream drainageways that are affected by project area runoff. Characteristics pertinent to channel stability would include hillslope erosion, bank erosion, excessive bed scour or sediment deposition, bed slope adjustments, lateral channel migration or bifurcation, channel capacity and the condition of riparian vegetation. The hydraulic and / or geomorphic assessment shall include on-site channel or drainageway segments over which the applicant has control and access. In the event that project development would result in or further exacerbate existing channel instabilities, the applicant could either propose their own channel stabilization program, or defer to the mitigations generated during any environmental review required by the County for the project, which could include pre-project peak flow maintenance. Any proposed	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation cont.		stabilization measures shall anticipate any project-related changes to the drainageway flow regime. ***4.5-4(b)*** Continue to implement NPDES Phase II permit requirements relating to peak flow controls to ensure that project related and cumulative impacts to peak flows are minimized or avoided through conditions on project approval as required by the ordinances. ***4.54(c)*** Implement Mitigation Measure 4.5-1(b) of *Impact 4.5-1 Water Quality Standards* and 4.5-3(b) of *Impact 4.5-3 Groundwater Recharge* relating to infiltration and peak flow rate control upon adoption of the *Draft 2005 CWP Update*.	
4.5-5 Stormwater Drainage System Capacities Implementation of the *Draft 2005 CWP Update* would increase peak flow rates, erosion, and downstream sedimentation in and around new development. Such increases would reduce the capacity of drainageways and could result in flood flows that exceed existing downstream channel or stormwater system capacities.	S	***4.5-5*** To minimize the potential impact of flooding from undersized stormwater drainage system capacity, Mitigation Measures 4.5-1(b) of *Impact 4.5-1 Water Quality Standards*, 4.5-3(b) of *Impact 4.5-3 Groundwater Recharge*, and 4.5-4(b) of *Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation* should be implemented upon adoption of the *Draft 2005 CWP Update*.	LTS
4.5-6 Stormwater Drainage System Expansions Development consistent with the *Draft 2005 CWP Update* would require the expansion of existing stormwater drainage systems. Depending on the routes selected for the storm drain alignments and other right-of-way and environmental factors, such construction could result in secondary impacts to hydrology and water quality.	S	***4.5-6*** Implement Mitigation Measures 4.5-1(b) of *Impact 4.5-1 Water Quality Standards*, 4.5-3(b) of *Impact 4.5-3 Groundwater Recharge*, and 4.5-(b) of *Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation* upon adoption of the *Draft 2005 CWP Update*.	LTS
4.5-7 Exposure of People or Structures to Flood Hazards Implementation of the *Draft 2005 CWP Update* could result in the development of residential or commercial structures in floodplains, and expose occupants and / or structures to flood hazards. Similar development could occur in shoreline areas and would be subject to flooding due to extreme high tides or coincident high tides and watershed flooding. Sea level rise associated with the warming of the earth's atmosphere would exacerbate these risks.	S	***4.5-7*** In order to reduce the exposure of people or structures to flood hazards to a less-than-significant level, the County would need to address issues related to channel stability, and sea level rise. ***4.5-7(a)*** Implement Mitigation Measures 4.5-3(b) of *Impact 4.5-3 Groundwater Recharge*, and 4.5-4(a) and 4.5-4(b) of *Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation* upon adoption of the *Draft 2005 CWP Update*.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.5-7 Exposure of People or Structures to Flood Hazards cont.		***4.5-7(b)*** Obtain additional funding necessary to implement Program **AIR-5.c**. In addition, County staff would need to amend the Marin County Development Code to include construction standards for areas threatened by future sea level rise. ***4.5-7(c)*** Continue to implement County ordinances that regulate floodplain development to ensure that project related and cumulative impacts to flooding are minimized or avoided through conditions on project approval as required by the ordinances.	
Biological Resources			
4.6-1 Special-Status Species Land uses and development consistent with *Draft 2005 CWP Update* could result in loss of populations or essential habitat for special-status species.	S	***4.6-1*** Add a new policy to the Biological Resources section as follows: **BIO-2.(new)**: Continue to actively participate in the FishNet4C program and work cooperatively with participating agencies to implement recommendations to improve and restore aquatic habitat for listed anadromous fish species and other fishery resources.	LTS
4.6-2 Sensitive Natural Communities Development and land use activities consistent with *Draft 2005 CWP Update* could result in loss of sensitive natural communities.	S	***4.6-2*** In order to reduce the impact to sensitive natural communities to a less-than-significant level, the County would obtain funding for Program **BIO-1.b** *(Develop Habitat Monitoring Programs)*, revise its priority to medium, and improve the timeframe of its implementation to the medium-term or sooner.	LTS
4.6-3 Wetlands and Other Waters Development and land use activities consistent with *Draft 2005 CWP Update* could result in direct or indirect impacts to wetlands and jurisdictional other waters.	LTS	No mitigation would be required.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.6-4 Wildlife Habitat and Movement Opportunities Development and land use activities consistent with *Draft 2005 CWP Update* would result in a reduction of existing natural habitat, contribute to habitat fragmentation, and result in obstruction of movement opportunities. Aspects of the applicable policies contained in *Draft 2005 CWP Update* would serve to partially address these impacts, but the conversion, fragmentation, and obstruction would be a significant impact.	S	***4.6-4(a)*** Adopt Option 2 in **Map 2-5a** of the *Draft 2005 CWP Update* to provide for greater consideration of the remaining sensitive biological features on larger undeveloped properties including the St. Vincent's / Silveira properties and in the vicinity of Gnoss Field. This larger corridor would ensure that any future development applications must consider how individual biological features contribute to the overall habitat values of the larger baylands ecosystem, provide adequate setbacks for areas qualifying for protection under the WCA and SCA, and ensure protection of essential linkages to permanently protected habitat. By extending the boundary of the proposed Baylands Corridor on the St. Vincent's / Silveira properties to U.S. 101, additional emphasis would be given on providing essential linkages between the entire Miller Creek corridor, the scattered seasonal wetlands, and the oak woodlands along Pacheco Ridge. The Baylands Corridor under Option 2 would also encompass the entire 300-foot distance landward of the historic bay marshlands on the St. Vincent's / Silveira properties recommended as a minimum setback distance from historic tidelands in the *Baylands Ecosystem Habitat Goals* report. Including the historic tidelands and adjacent uplands as part of the Baylands Corridor on the St. Vincent's / Silveira properties would provide for recognition of the potential for possible future restoration and enhancement of the baylands on the undeveloped portion of this property. Any efforts to restore or enhance wetlands located west of Gnoss Field would have to be balanced with the possible safety concerns that increased activity by birds and other wildlife may have on airport operations. ***4.6-4(b)*** In order to reduce impacts to wildlife habitat and movement opportunities, the County would obtain additional funding for Program **BIO-2.b** *(Conduct Habitat Connectivity Assessment)* and revise the timeframe of its implementation to the medium-term or sooner.	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.6-5 Conflict With Local Policies or Ordinances Some aspects of development and land use activities consistent with *Draft 2005 CWP Update* may conflict with goals, policies and ordinances intended to protect of sensitive resources. However, adequate mitigation would presumably be required when the potential conflicts are determined to be significant and would reduce this to a less-than-significant impact.	LTS	No mitigation would be required.	LTS
4.6-6 Conflict With Adopted Habitat or Natural Community Conservation Plans Development and land use activities consistent with *Draft 2005 CWP Update* would not conflict with any adopted Habitat or Natural Community Conservation Plans.	LTS	No mitigation would be required.	LTS
Geology			
4.7-1 Surface Fault Rupture Land uses and development consistent with the *Draft 2005 CWP Update* would expose people and new structures to the risk of loss, injury, or death involving ground surface rupture of a known active fault.	S	***4.7-1*** In order to reduce this impact to a less-than-significant level, it would be necessary to revise Policy **EH-2.2** *(Comply with the Alquist-Priolo Act)* and Program **EH-2.d** *(Limit Building Sites in Alquist-Priolo Zones)* to require that any development and redevelopment within the San Andreas Earthquake Fault Zones be properly evaluated and sited. In addition, a new program would be implemented to develop strategies to reduce the impact of surface fault rupture on critical public lifelines and access (i.e., evacuation) routes. ***4.7-1(a)*** Revise Policy **EH-2.2** *(Comply with the Alquist-Priolo Act*) and Program **EH-2.d** *(Limit Building Sites in Alquist-Priolo Zones)* of the *Draft 2005 CWP Update* as follows: **Policy EH-2.2**; *Comply with the Alquist-Priolo Act*. Continue to implement and enforce the Alquist-Priolo Earthquake Fault Zoning Act. ~~prohibit specified types of any structures for human occupancy in State-designated active fault areas.~~ **Program EH-2.d**; *Limit Building Sites in Alquist-Priolo Zones*. Prohibit new building sites in an~~y~~ Alquist-Priolo Earthquake Fault Z~~z~~one, unless a geotechnical report prepared by a ~~certified engineering~~ professional geologist establishes that the ~~and~~	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-1 Surface Fault Rupture		~~sufficient and suitable land area for~~ development ~~pursuant to~~ will comply with all applicable State and County earthquake standards and regulations. ***4.7-1(b)*** Add a new program to the *Draft 2005 CWP Update* in order to reduce adverse effects of surface fault rupture to critical public lifelines and access (i.e., evacuation) routes that cross an active fault trace. **Program EH-2.(new)** *Reliability of Lifelines and Access (Evacuation) Routes*. In cooperation with utility system providers, emergency management agencies, and others, assist in the development of strategies to reduce adverse effects of geologic hazards, especially fault surface rupture and landslides to critical public lifelines and access (i.e., evacuation) routes in an emergency. ***4.7-1(c)*** Continue to implement County ordinances requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify the presence of surface fault rupture.	
4.7-2 Seismic Ground Shaking Land uses and development consistent with the *Draft 2005 CWP Update* would expose people, new development and redevelopment to substantial adverse seismic effects, including the risk of loss, injury, or death involving strong seismic ground shaking.	S	***4.7-2*** Revise the following policy and programs related to seismic safety, retrofit, and the location of emergency service facilities and create a new program to systematically assess damaged and collapsed buildings after a damaging earthquake. In addition, the County would obtain funding and revise the timeframe of implementation of Program **EH-2.e** *(Retrofit County Buildings)*, to the medium-term or sooner. ***4.7-2(a)*** Revise Policy **EH-2.3** *(Ensure Safety of New Structures)* and Programs **EH-2.e** *(Retrofit County Buildings)*, **PS-3.f** *(Promote Structural Safety)*, and **PS-3.g** *(Locate Emergency Services Facilities Appropriately)* to ensure seismic safety of all new structures, to address the proper location and retrofit of County buildings and essential critical facilities, and to promote structural and nonstructural safety (e.g., proper securing of nonstructural items within buildings).	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-2 Seismic Ground Shaking cont.		**Policy EH-2.3;** *Ensure Seismic Safety of New Structures.* ~~would require that structures to be occupied by large groups, such as offices, restaurants, hotels, senior housing and multi-family housing are designed to be as safe as technically feasible from seismic ground shaking.~~ Design and construct all new buildings to be earthquake resistant. The minimum level of design necessary would be in accordance with seismic provisions and criteria contained in the most recent version of the State and County Codes. Construction would require effective oversight and enforcement to ensure adherence to the earthquake design criteria. **Program EH-2.e;** *Retrofit County Buildings and Critical Facilities.* Identify and remedy any County owned structures and critical facilities in need of seismic retrofit or other geotechnical / structural improvements, including ~~by~~ eliminating any potentially hazardous features, and / or relocating services if necessary. **Program PS-3.f;** *Promote Structural and Nonstructural Safety*. Provide and inform the public of the available educational guides promoting structural and nonstructural earthquake safety. Encourage installation of automatic natural gas shut-off valves in buildings. Encourage retrofit of older buildings and securing nonstructural elements of a building to prevent the falling or throwing of objects. ~~Encourage retrofitting seismically vulnerable buildings.~~ **Program PS-3.g;** *Locate Emergency Services Facilities Appropriately*. Locate and design emergency buildings and vital utilities, communication systems and other public facilities so that they remain operational during and after an emergency or disaster. Encourage that these structures and facilities are designed to be earthquake proof to ensure continuous operation even during extreme seismic ground shaking.	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-2 Seismic Ground Shaking cont.		***4.7-2(b)*** Add a new program to the *Draft 2005 CWP Update* that would create a process for systematic assessment of damaged and collapsed buildings immediately following a significant earthquake in order to determine recovery needs. This should begin with evaluation of essential service buildings and facilities and then continue with other structures. **Program EH-2.(new);** *Post-earthquake Damage Assessment.* Undertake immediate damage assessment of essential service buildings and facilities and then other buildings as part of the County's emergency response plan in response to a damaging earthquake. ***4.7-2(c)*** Obtain funding for the revised Program **EH-2.e** *(Retrofit County Buildings and Critical Facilities)* and revise the time frame of its implementation to the medium-term or sooner. ***4.7-2(d)*** Continue to implement County ordinances to ensure new construction utilize California Building Code seismic design requirements, seismic shut off devices, and anchoring of liquid petroleum gas tanks as well as require geological assessment (e.g., Soils Investigation and Geologic / Geotechnical reports) for grading permits to determine the effects of seismic ground shaking on proposed grading.	
4.7-3 Seismic-Related Ground Failure Land uses and development consistent with the *Draft 2005 CWP Update* would expose people and structures to substantial adverse seismic effects, including the risk of loss, injury, or death from seismic-related ground failures.	S	***4.7-3*** In order to reduce the exposure of people and structures to seismic-related ground failure to a less-than-significant level, the County would revise Programs **EH-2.a** *(Require Geotechnical Reports)* and **EH-2.b** *(Require Construction Certification)* and add a new program upon adoption of the *Draft 2005 CWP Update*. ***4.7-3(a)*** Revise Programs **EH-2.a** *(Require Geotechnical Reports)* and **EH-2.b** *(Require Construction Certification)* of the *Draft 2005 CWP Update* as follows: **Program EH-2.a;** *Require Geotechnical Reports.* Continue to require any applicant for land division, master plan, development approval, or new construction in a geologic hazard area to submit a geotechnical report prepared by a State-certified ~~engineering geologist (unless waived), in conformance with the State Seismic~~	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-3 Seismic-Related Ground Failure cont.		~~Hazards Mapping Act (PRC Div. 2, Chapter 7.8), that~~ Engineering Geologist or a Registered Geotechnical Engineer that: • Evaluates soil, slope, and other geologic hazard conditions; • Commits to appropriate and comprehensive mitigation measures sufficient to reduce risks to acceptable levels, including post-construction site monitoring, if applicable; and • Addresses ~~on-site structural engineering,~~ the impact of the project on adjacent lands, and potential impacts of off-site conditions. ~~When available, post and disseminate information from Seismic Hazard Zone maps in conformance with the Act.~~. **Program EH-2.b;** *Require Construction Observation and Certification.* Require any work or construction oversight undertaken to correct slope instability or mitigate other geologic hazard conditions ~~to~~ be supervised and certified by a geotechnical engineer and / or~~, when necessary,~~ an engineering geologist, as deemed necessary. ***4.7-3(b)*** Add a new program to the *Draft 2005 CWP Update* that would continue to create Geologic Hazard Area maps based on the most up to date geologic and geotechnical information as it becomes available. This would be incorporated into County GIS data so that updates can be implemented as new information is obtained. **Program EH-2.(new)**; *Geologic Hazard Areas.* Continue to create Geologic Hazard Area maps that utilize updated information as it becomes available. These maps should be used to determine the need for geologic and geotechnical reports for a proposed development or redevelopment.	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-3 Seismic-Related Ground Failure cont.		***4.7-3(c)*** Continue to implement County ordinances requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with seismic-related ground failure.	
4.7-4 Landsliding Land uses and development consistent with the *Draft 2005 CWP Update* would expose people and structures to adverse effects of landsliding, including the risk of loss, injury, or death from slow or rapid gravity driven earth movement. This hazard is prevalent in the hillsides of Marin County.	S	***4.7-4(a)*** In order to reduce adverse effects from the exposure of people and structures to landslides to a less-than-significant level, the County would adopt and implement revised programs (i.e., Programs **EH-2.a** [*Require Geotechnical Reports*] and **EH-2.b** [*Require Construction Observation and Certification*]) and the new program (i.e., **EH-2.(new)** [*Geologic Hazard Areas*]) in Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*. ***4.7-4(b)*** Continue to implement County ordinances requiring a Stability Report for new construction in specified areas on County slope stability maps, assessment of storm related landslide damage, limits to slope steepness. In addition, continue to implement County ordinances requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with landsliding.	SU
4.7-5 Subsidence and Settlement Land uses and development consistent with the *Draft 2005 CWP Update* would expose structures to ground subsidence and settlement. Damage to structures and improvements could be substantial as deposits prone to subsidence and settlement are present throughout the Marin County, especially in the flatland areas adjacent to the bay.	S	***4.7-5(a)*** In order to reduce adverse effects from the exposure of people and structures to subsidence and settlement to a less-than-significant level, the County would adopt and implement the revised programs (i.e., Programs **EH-2.a** [*Require Geotechnical Reports*] and **EH-2.b** [*Require Construction Observation and Certification*]) and the new program (i.e., **EH-2.(new)** [*Geologic Hazard Areas*]) in Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*. ***4.7-5(b)*** Revise the timeframe of implementation of Program **EH-2.g** to the medium-term or sooner. ***4.7-5(c)*** Continue to implement County ordinances that provide guidelines for subsidence evaluations of land that are or could be prone to subsidence as well as requiring geological assessment	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-5 Subsidence and Settlement cont.		(e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with subsidence and settlement..	
4.7-6 Expansive Soils Land use and development consistent with the *Draft 2005 CWP Update* would expose structures to substantial adverse effects of expansive soils, including the risk of damage and possible loss of structures and property improvements. This hazard is prevalent in Marin County, especially in the flatland areas adjacent to the bay.	S	***4.7-6(a)*** In order to reduce adverse effects from the exposure of structures to expansive soils to a less-than-significant level, the County would adopt and implement the revised programs (i.e., Programs **EH-2.a** [*Require Geotechnical Reports*] and **EH-2.b** [*Require Construction Observation and Certification*]) and the new program (i.e., **EH-2.(new)** [*Geologic Hazard Areas*]) in Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*. ***4.7-6(b)*** Continue to implement County ordinances that provide soil classification guidelines and design considerations for development in areas of expansive soils as well as requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with expansive soils.	LTS
4.7-7 Septic Suitability of Soils Land uses and development consistent with the *Draft 2005 CWP Update* would require the use of on-site waste disposal systems such as septic tank systems or other alternative wastewater disposal systems. Some soils are incapable of adequately supporting these systems. Therefore, their use would cause damage to improvements and would adversely affect surface and groundwater resources.	S	***4.7-7*** In order to reduce adverse effects from septic system use in unsuitable soils to a less-than-significant level, the County would obtain funding for Program **WR-2.e** *(Continue Providing High-Priority Inspections)* in order to continue no-cost inspections of septic systems in high priority areas.	LTS
4.7-8 Tsunamis and Seiches Land use and development consistent with the *Draft 2005 CWP Update* could expose people and structures in some low-lying areas of Marin County to substantial adverse effects of tsunamis and seiches, including the risk of loss, injury, or death from this hazard. Seiches could occur within enclosed bodies of water and could cause damage to property. Tsunamis along the coastal corridor could cause significant damage, injury and death.	S	***4.7-8*** In order to reduce impacts associated with tsunamis and seiches to a less-than-significant level, the County would revise Policy **EH-2.4** *(Protect Coastal Areas from Tsunamis)* to address tsunami wave runup and inundation impacts when reviewing proposed development along coastal areas of Marin County when inundation maps become available. In addition the County would revise Programs **EH-3.a** *(Regulate Development in Flood and Inundation Areas)* and **EH-3.g** *(Locate Critical Facilities Safely)*	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-8 Tsunamis and Seiches cont.		to continue to require that new development / or improvements be more resistant to damage and that critical facilities be located outside of tsunami hazard areas. In addition, it would be necessary for the County to participate in the National Weather Service's *TsunamiReady* program, which promotes tsunami hazard preparation in coastal communities. ***4.7-8(a)*** Revise Policy **EH-2.4** *(Protect Coastal Areas from Tsunamis)* and Programs **EH-3.a** *(Regulate Development in Flood and Inundation Areas)* and **EH-3.g** *(Locate Critical Facilities Safely)* as follows. **Policy EH-2.4;** *Protect Coastal Areas from Tsunamis.* ~~Consider~~ When inundation maps become available, address tsunami wave runup and inundation impacts when reviewing proposed development along coastal areas of Marin County. **Program EH-3.a:** *Regulate Development in Flood and Inundation Areas*. Continue to require all improvements in Bayfront, Floodplain, Tidelands, and Coastal High Hazard Zones to be designed to ~~withstand impacts~~ be more resistant to damage from flooding, tsunamis, seiches, and related waterborne debris, and to be located so that buildings and features such as docks, decking, floats, and vessels would be more resistant to damage. ~~do not become dislodged.~~ **Program EH-3.g;** *Locate Critical Facilities Safely.* Amend the Development Code to prohibit placement of public safety structures within tsunami inundation or flood-prone areas. ***4.7-8(b)*** Add a new program to the *Draft 2005 CWP Update* that would require Marin County's participation in the National Weather Service's *TsunamiReady* program to create public awareness and community preparedness in hazard areas. Certification would be accomplished by satisfying criteria including 1) establishing an emergency operations center; 2) creating multiple ways of receiving National Weather Service tsunami warnings; 3) the ability to disseminate a tsunami warning; 4) having a tsunami hazard plan; and 5) creating a community	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.7-8 Tsunamis and Seiches cont.		awareness program. **Program EH-2.(new)**; *Make Marin County TsunamiReady.* Become a National Weather Service *TsunamiReady* community in order to promote public awareness, community preparedness, and facilitate quick recovery in the event of a tsunami.	
Agriculture			
4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses Implementation of the *Draft 2005 CWP Update* would result in conversion of both County and State designated farmlands to non-agricultural uses. While these changes primarily would reflect existing State and federal ownership of these lands as part of their respective park and recreational areas, conversion would still occur.	S	***4.8-1*** Implement Mitigation Measure 4.1-4(a) and 4.1-4(b) for *Impact 4.1-4 Agricultural Processing, Retail Sales, and Visitor-Serving Uses.*	SU
4.8-2 Conflicts with Williamson Act Contracts Implementation of the *Draft 2005 CWP Update* would change the land use designation of parcels under Williamson Act contracts from an agricultural designation (e.g., AG1, AG2, AG3) and zoning to an Open Space (e.g., OS) designation. Such changes would recognize acquisition of these lands by the National Park Service as part of the Point Reyes National Seashore. Continued use of these lands as open space would be compatible with the provisions of the Williamson Act.	LTS	No mitigation would be required.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
Water Supply and Demand			
4.9-1 Adequacy of Water Supply During a Normal Year Land uses and development consistent with the *Draft 2005 CWP Update* would increase the demand for water. As a result, water supplies would be insufficient to serve some of the unincorporated and incorporated areas in normal rainfall years. Development of additional water resources would be required.	S	***4.9-1(a)*** Revise Programs **PFS-2.c**, **PFS-2.d**, **PFS-2.g**, **PFS-2.h**, **PFS-2.j**, **PFS-2.m**, **PFS-2.o**, **PFS-2.p**, **PFS-2.q**, **WR-2.k**, and **WR-3.b** of the *Draft 2005 CWP Update* as follows: **PFS-2.c;** *Promote Ahwahnee Principles for Water Supply*. ~~Encourage~~Support guidelines for local water providers to enact programs that promote the Ahwahnee Principles for water supply. These should include investigations of new sustainable sources such as groundwater, surface water, recycled water, graywater or desalination facilities that match water quantity and quality to the beneficial uses and the perfection or securing of additional water rights for the water purveyors. **PFS-2.d;** *Support Water Demand Planning*. ~~Work with the~~ Provide Countywide Plan buildout information in the form of letters to water supply ~~companies~~ purveyors to use in the development of their respective Urban Water Management Plans (UWMPs)~~ to use the Countywide Plan and cities' and towns' General Plans ultimate build-out numbers~~. Assist the water purveyors in the preparation of these UWMPs by reviewing these documents and providing comments. Initiate discussion with or letters to small water systems, which are not required by the California Water Code to prepare UWMPs because they have fewer than 3,000 connections, urging them to adopt use of the UWMP format for planning. The water shortage contingency plan portion of the UWMP would provide the means to identify shortages on a consistent basis, to define water shortage stages and appropriate response measures, and to develop relevant ordinances, resolutions, or rules to manage water shortages. **PFS-2.g;** *Promote Xeriscaping, Site Appropriate Landscaping and Native Plants*. Amend the Development Code to require site appropriate, drought-tolerant, low water use, native landscaping and ultra-efficient irrigation systems where appropriate for development applications and re-landscaping projects. ~~and l~~Limit the amount of water intensive landscaping particularly lawn area	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.9-1 Adequacy of Water Supply During a Normal Year cont.		allowed to reduce the amount of water needed~~required~~ for irrigation. **PFS-2.h;** *Promote Site Appropriate, Low-water Use and Drought Tolerant Native Plants in Public Facilities*. Restore and promote the native plants ~~garden~~ at the Civic Center~~,~~ and incorporate~~the development of~~ similar landscaping for all public facilities. Create a Landscaping Master Plan for Public Facilities that specifies appropriate species, methods, and technologies for water-wise landscaping. **PFS-2.j;** *Upgrade West Marin Systems*. ~~Encourage~~Promote assistance to water service providers to upgrade the water delivery systems in West Marin to reduce the incidence of saltwater intrusion and leakage~~.~~ by reviewing plans and initiating discussion among West Marin water providers of viable programs. The County should promote the upgrade and improvement of water supply development (e.g., wells), water treatment, water delivery and water storage facilities for the purpose of providing supplemental and backup water supplies for peaking and emergency purposes. Upgrade of water systems should be consistent with the Ahwahnee Principles for water supply that encourage a diverse water portfolio, matching of water supply with intended use, protection of natural systems and water resources, and evaluation of the multiple benefits of a water system upgrade program, among others. **PFS-2.m;** *Promote Onsite Rainwater Capture and Retention ~~Catchments~~*. ~~Encourage~~ Support the use of on-site rainwater ~~catchments~~ capture, storage, and infiltration for irrigation and other non-potable uses, where appropriate. ~~and work with service providers to e~~Establish standards for rainwater quality and use, and include provisions to prevent contaminating local groundwater and surface water or damaging local septic and water systems. **PFS-2.o;** *Assess Project Impacts to Surface Water and Groundwater*. Require documentation that new development projects with the potential to degrade or deplete surface water or	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.9-1 Adequacy of Water Supply During a Normal Year cont.		groundwater resources will not adversely affect a basin or subbasin, where appropriate. **PFS-2.p;** *Investigate and Consider Appropriate Small-Scale Wastewater Reduction, Treatment, and Use Technologies*. Work with water agencies to identify and resolve conflicting regulations regarding pre-treated septic drip dispersal systems and appropriate graywater use, ~~to~~ evaluate the potential of small-scale portable graywater converter systems as ~~possible~~ sources for landscaping water, and ~~to~~ modify regulations as necessary to encourage safe graywater use (such as by allowing dual systems that employ graywater to support landscaping). Include the potential to use composting toilets, waterless urinals and other appropriate water saving technologies. **PFS-2.q;** *Adopt Tiered Billing Rates*. ~~Encourage~~ Provide letters of support to Marin County water agencies without tiered billing rates ~~all Marin County water agencies~~ to adopt the California Urban Water Conservation Council's Best Management Practice of tiered billing rates to encourage water conservation. The tiers should be based on conserving levels of per capita water use, rather than those based on historical non-conserving levels. Offer comprehensive conservation incentive programs to assist customers to achieve conserving levels of use. **WR-2.k;** *Establish Educational Partnerships to Protect Water Quality*. ~~Coordinate~~ Initiate discussions with the Regional Water Quality Control Boards, Marin Resource Conservation District, University of California Cooperative Extension, Natural Resources Conservation Service, Marin County Stormwater Pollution Prevention Program, watershed groups, the public, stakeholders and other interested parties to develop and implement public education programs and provide technical assistance to find alternatives and minimize erosion and sedimentation, pathogen and nutrient, and chemical sources of water pollution. This would begin with letters to establish a lead agency to direct the effort. This would include soliciting the input from ~~Coordinate with~~ local, State, and federal recreation	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.9-1 Adequacy of Water Supply During a Normal Year cont.		management agencies to educate boaters and other recreational groups regarding proper management and disposal of human waste. **WR-3.b;** *Support and Integrate Water District Conservation Efforts*. ~~Support~~ Assist the efforts of the water districts to reduce waste and increase reuse through integrated planning of programs and complementary land use and building regulations. Assess and remove barriers to integrated water planning and mitigate the demand for water in new development. Assess the degree of demand hardening. (Also, see policies and programs under Goals AG-1 in the Agricultural and Food section of this Element, and PF-2 in the Public Facilities and Services section of the Built Environment Element). ***4.9-1(b)*** Add the following policies to the Public Facilities and Services section of the Built Environment Element. **PFS-2.(new)** *Sustainable Water Supply Required*. No new development project shall be approved without a specific finding, supported by facts in the administrative record, that an adequate, long-term, and sustainable water supply is available to serve the project. **PFS-2.(new)** *Offset New Water Demand*. In water districts where there is insufficient water to serve new development, the County shall require new development to offset demand so that there is no net increase in demand through one or more the of the following measures: use of reclaimed water; water catchments and reuse on site; water retention serving multiple sites; retrofits of existing uses in the district to offset increased demand; other such means. These measures should be achieved in partnership with the applicable water district.	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.9-1 Adequacy of Water Supply During a Normal Year cont.		***4.9-1(c)*** The County would be required to obtain funding for Programs **PFS-2.e**, **PFS-2.k**, **PFS-2.n**, **PFS-2.p**, **WR-2.k**, **WR-3.a**, and **WR-3.b**, set the priority of **PFS-2.k**, **WR-2.k**, and to "medium" or higher, and revise the time frame of implementation of **PFS-2.f**, **PFS-2.n**, **PFS-2.o**, and **WR-2.k** to the medium-term or sooner.	
4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years Land uses and development consistent with the *Draft 2005 CWP Update* would increase the demand for water. As a result, water supplies would be insufficient to serve some of the unincorporated and incorporated areas, especially in dry years. Development of additional water resources would be required.	S	***4.9-2*** Same as Mitigation Measure 4.9-1(a), 4.9-1(b) and 4.9-1(c) for *Impact 4.9-1 Adequacy of Water Supply During a Normal Year*.	SU
4.9-3 Require New or Expanded Water Supply Facilities Land uses and development consistent with the *Draft 2005 CWP Update* would increase water demand that could exceed the capacity of available distribution, treatment, and / or storage facilities for a number of water agencies during short, peak demand periods. Such an increase could result in the need for new or expanded / retrofitted water supply facilities. While construction of new or expanded water supply facilities could result in adverse effects to the environment, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts.	LTS	No mitigation would be required.	LTS
4.9-4 Impact to Groundwater Supply Land uses and development consistent with the *Draft 2005 CWP Update* would result in increased rural demand for groundwater supply. Installation of private wells for domestic and / or agricultural use would result in adverse impacts on groundwater levels in wells and decreased well yields, especially in drought. Due to the lack of comprehensive information regarding the county's groundwater resources, it is uncertain if groundwater supplies would be sufficient to meet rural water demands, especially in drought.	S	***4.9-4(a)*** Revise Programs **PFS-2.m**, **PFS-2.p**, **WR-2.d**, and **WR-2.h** of the *Draft 2005 CWP Update* and add a new program to the Water Resources section as follows: **PFS-2.m;** *Promote Onsite Rainwater Capture and Retention~~Catchments~~*. ~~Encourage~~ Support the use of on-site rainwater ~~catchments~~ capture, storage, and infiltration for irrigation and other non-potable uses, where appropriate. ~~and work with service providers to e~~Establish standards for rainwater quality and use, and include provisions to prevent contaminating local groundwater and surface water or damaging local septic and water	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.9-4 Impact to Groundwater Supply cont.		systems. **PFS-2.p;** *Investigate and Consider Appropriate Small-Scale Wastewater Reduction, Treatment, and Use Technologies*. Work with water agencies to identify and resolve conflicting regulations regarding pre-treated septic drip dispersal systems and appropriate graywater use, ~~to~~ evaluate the potential of small-scale portable graywater converter systems as ~~possible~~ sources for landscaping water, and ~~to~~ modify regulations as necessary to encourage safe graywater use (such as by allowing dual systems that employ graywater to support landscaping). Include the potential to use composting toilets, waterless urinals and other appropriate water saving technologies. **WR-2.d**; *Monitor and Maintain Septic Systems and Wells*. Establish watershed-wide septic maintenance programs to ensure proper septic system monitoring, repair, and function as warranted. Establish the frequency of required inspections based on the risks to the environment and to groundwater supplies associated with the location of the septic system. For example, a high-priority system near a waterway may need to be inspected as frequently as every two years, while a system in a well drained, dry upland may need inspection only every 5-10 years. Septic program and permitting procedures must at a minimum comply with State law. Document local wells and groundwater use as part of this program, and include monitoring of groundwater quality, as warranted. **WR-2.h;** ~~*Pursue*~~ *Establish~~ment of Marshall~~ Additional County Service Areas*. ~~Pursue~~ ~~e~~Establish~~ment of~~ a Marshall County Service Area to relocate septic systems away from Tomales Bay, and to instigate ~~establish septic~~ monitoring of on-site septic systems in a risk based, comprehensive and cost effective manner. The proposed boundary of the County Service Area should include the entire East Shore planning area. Additional County Service Areas should include the rural communities of Tomales and Nicasio. In addition to wastewater services, County service areas should provide water supply services.	

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.9-4 Impact to Groundwater Supply cont.		**WR-2.(new);** *Establish a Groundwater Monitoring Program for Unincorporated County Areas.* Establish a countywide groundwater monitoring program that would include all or portions of unincorporated areas that use groundwater. Conduct periodic water level measuring and water quality sampling with regular reporting (at least annual) to the Board of Supervisors. ***4.9-4(b)*** The County would be required to obtain funding for Programs **PFS-2.k**, **PFS-2.n**, **PFS-2.p**, **WR-2.d**, **WR-2.h**, **WR-2.i**, and the new programs. The County would also be required to set the priority of Program **PFS-2.k**, and the new program to "medium" or higher, and revise the time frame of implementation of Program **PFS-2.n**, and the new program to the medium-term or sooner.	
4.9-5 Interference with or Degradation of Water Supply Land uses and development consistent with the *Draft 2005 CWP Update* would increase water demands and result in interference with water supply quantity and/or degradation of water supply quality.	S	Mitigation Measure 4.9-5 Same as Mitigation Measures 4.9-1(a), 4.9-1(b) and 4.9-1(c) for *Impact 4.9-1 Adequacy of Water Supply During a Normal Year* and 4.9-4(a) and 4.9-4(b) for *Impact 4.9-4 Impact to Groundwater Supply*.	SU
4.9-6 Secondary Impacts Land uses and development consistent with the *Draft 2005 CWP Update* would result in increased use of water supplies and result in secondary impacts such as environmental impacts.	S	Mitigation Measure 4.9-6 Same as Mitigation Measures 4.9-1(a), 4.9-1(b) and 4.9-1(c) for *Impact 4.9-1 Adequacy of Water Supply During a Normal Year*, Mitigation Measure 4.9-3 for *Impact 4.9-3 Require New or Expanded Water Supply Facilities* and 4.9-4(a) and 4.9-4(b) for *Impact 4.9-4 Impact to Groundwater Supply*.	SU
Public Services			
4.10-1 Release of Hazardous Materials Land uses and development consistent with the *Draft 2005 CWP Update* would result in the transport, use or disposal of hazardous materials that could expose the public and environment to a significant hazard through either their routine use or an accidental release.	S	***4.10-1(a)*** Add a new program to facilitate public education regarding the safe use, transport, and disposal of hazardous materials and to encourage the use of less-toxic or non-toxic materials as a substitute. **Program PS-4.(new);** *Hazardous Materials Education.* Continue to educate the public about the safe use, transport, and disposal of hazardous materials and encourage the use of less-toxic substances in residential and County operations.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.10-1 Release of Hazardous Materials cont.		***4.10-1(b)*** Add a new program to inform and encourage the public to use the available hazardous waste disposal facilities in Marin County. **Program PS-4.(new)**; *Hazardous Materials Disposal.* Promote, educate and encourage the public and businesses to properly dispose of any hazardous materials or waste at the Marin County's permanent household hazardous waste collection facility.	
4.10-2 Hazardous Emissions, Materials or Waste near School Sites Land uses and development consistent with the *Draft 2005 CWP Update* could result in schools being located within one-quarter mile of locations that use or emit hazardous materials.	S	***4.10-2(a)*** Revise Policy **EJ-1.1** in order to ensure that mapping would locate known sources of hazardous materials. **Policy EJ-1.1**; *Identify and Target Impacted Areas.* Use available measurement data to map locations with ~~high levels of~~ known toxins and other health-threatening pollutants. ***4.10-2(b)*** In order to reduce impacts related to hazardous emissions, materials, and waste, near Marin County's schools to a less-than-significant level, the County would need to obtain funding for program **EJ-1.a** *(Investigate a Possible Nexus)* and revise the time frame of implementation for programs **PS-4.a** *(Regulate Development Near Waste Sites)*, **EJ-1.g** *(Deny Pollution-Source Proposals)*, and **EJ-1.h** *(Require Pollution Analysis)* to the medium-term or sooner.	LTS
4.10-3 Development on a Hazardous Waste Site Land uses and development consistent with the *Draft 2005 CWP Update* would not be located on a site currently included on a list of known hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, unknown hazardous materials could be encountered at a future development site and subsequently require such a listing.	S	***4.10-3*** Revise Policy **EJ-1.1** (*Identify and Target Impact Areas*) in order to ensure that mapping would locate known sources of hazardous waste. **Policy EJ-1.1**; *Identify and Target Impacted Areas.* Use available measurement data to map locations with ~~high levels of~~ known toxins and other health-threatening pollutants.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.10-4 Increased Wastewater Treatment Demand Development in unincorporated Marin County would increase wastewater treatment demand to service providers. While sufficient capacity is projected to meet this demand, implementation of the *Draft 2005 CWP Update* would generate wastewater flows that would exceed the capacity of the Bolinas Community Public Utilities District.	S	***4.10-4*** In order to reduce this impact to a less-than-significant level, the County shall continue to cooperate with the Bolinas Community Public Utilities District to maintain the existing moratorium on new development and deny discretionary projects until such time the district is able to construct new or expanded facilities with sufficient capacity to accommodate such growth.	LTS
4.10-5 New or Expanded Wastewater Facilities Land uses and development consistent with the *Draft 2005 CWP Update* may result in the need for new or improved wastewater treatment facilities, the construction of which could result in adverse effects to the environment. However, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts resulting from development of new wastewater treatment facilities.	LTS	No mitigation would be required.	LTS
4.10-6 Increased Solid Waste Disposal Demand Implementation of the *Draft 2005 CWP Update* would not affect the ability of the County to provide at least 15 years of permitted disposal capacity. The increase in the amount of solid waste generated in Marin County under the *Draft 2005 CWP Update* would not exceed the capacity of the Redwood Landfill, which accepts 90 percent of Marin County's solid waste. The *Draft 2005 CWP Update* would be consistent with the Regional Integrated Waste Management Plan (RIWMP) Countywide Siting Element.	LTS	No mitigation would be required.	LTS
4.10-7 Energy Consumption and Land Use Patterns Implementation of the *Draft 2005 CWP Update* would increase energy consumption and require additional energy resources in order to meet this demand. However, the proposed land use pattern would focus future development within or adjacent to existing developed areas and reallocate residential and commercial uses to the City-Centered Corridor. This land use pattern would reduce the future reliance upon single occupancy motor vehicles, a major user of energy.	LTS	No mitigation would be required.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
Impact 4.10-8 Energy Consumption from Building Construction and Retrofit Land uses and development consistent with the *Draft 2005 CWP Update* could result in inefficient and excessive use of energy resources from building constriction and retrofit.	S	***4.10-8*** In order to reduce energy impacts related to energy consumption from building construction and retrofit to a less-than-significant level, the County would be required to obtain additional funding for and implement **EN-1.a** *(Establish a Permanent Sustainable Energy Planning Process)* and **EN-3.h** *(Adopt LEED Standards for Public Buildings)* in a timely manner.	SU
4.10-9 Increased Demand for Fire Protection and Emergency Services Facilities Implementation of the *Draft 2005 CWP Update* would increase the demand for County fire protection and emergency services and may result in the need for new or improved facilities, the construction of which could result in adverse effects to the environment. However, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts resulting from the development of these facilities.	LTS	No mitigation would be required.	LTS
4.10-10 Wildland Fire Hazards Implementation of the *Draft 2005 CWP Update* would expose people and structures to the risk of loss, injury, or death involving wildland fires.	LTS	No mitigation would be required.	LTS
4.10-11 Demand for Additional Criminal Justice Facilities Implementation of the *Draft 2005 CWP Update* would increase the demand for police and detention services provided by the Marin County Sheriff's Department and may result in the need for new or improved facilities, the construction of which could result in adverse effects to the environment. However, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts resulting from development of these facilities.	LTS	No mitigation would be required.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.10-12 Demand for Public Education Services Implementation of the *Draft 2005 CWP Update* would generate a demand for school services beyond the existing public school capacity and would result in the need for additional facilities, the construction of which could cause adverse affects to the environment. However, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts resulting from development of these facilities.	LTS	No mitigation would be required.	LTS
4.10-13 Increased Demand for Park and Recreation Services and Facilities Implementation of the *Draft 2005 CWP Update* would require new or expanded Community and Neighborhood Parks in order to achieve recognized park planning standards. Construction of these facilities could result in adverse physical effects on the environment. However, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts resulting from development of these facilities.	LTS	No mitigation would be required.	LTS
4.10-12 Demand for Public Education Services Implementation of the *Draft 2005 CWP Update* would generate a demand for school services beyond the existing public school capacity and would result in the need for additional facilities, the construction of which could cause adverse affects to the environment. However, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts resulting from development of these facilities.	LTS	No mitigation would be required.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.10-13 Increased Demand for Park and Recreation Services and Facilities Implementation of the *Draft 2005 CWP Update* would require new or expanded Community and Neighborhood Parks in order to achieve recognized park planning standards. Construction of these facilities could result in adverse physical effects on the environment. However, the *Draft 2005 CWP Update* contains policies that would substantially reduce construction related impacts resulting from development of these facilities.	LTS	No mitigation would be required.	LTS
Cultural Resources			
4.11-1 Historical Resources Land uses and development consistent with the *Draft 2005 CWP Update* could result in the disturbance of historical resources.	S	***4.11-1*** In order to reduce impacts to historical resources to a less-than-significant level, the County would be required to obtain additional funding for programs **HAR-1.g** *(Create a County Historical Commission)*, **HAR1.l** *(Adopt Preservation Guidelines)*, and **HAR-1.m** *(Require Design Compatibility)* and revise the time frame of their implementation to the medium-term or sooner.	LTS
4.11-2 Archeological and Paleontological Resources and Human Remains Land uses and development consistent with the *Draft 2005 CWP Update* could result in the disturbance of subsurface archeological and paleontological resources as well as human remains, including those interred outside of formal cemeteries.	LTS	No mitigation would be required.	LTS
Visual Resources			
4.12-1 Scenic Resources Land uses and development consistent with the *Draft 2005 CWP Update* could degrade the visual quality of Marin County's scenic resources. However, existing provisions of the Marin County Development Code, design review of discretionary projects, and proposed policies and programs contained in the *Draft 2005 CWP Update* would substantially reduce adverse changes to visual resources.	LTS	No mitigation would be required.	LTS

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.12-2 Community Character Land uses and development consistent with the *Draft 2005 CWP Update* would adversely affect the visual quality and character of Marin County's unincorporated communities and rural areas.	S	***4.12-2*** In order to reduce impacts to the visual character of Marin County's communities to a less-than-significant level, the County would be required to obtain funding for program **DES-1.a** and revise the time frame of its implementation to the medium-term or sooner. In addition, the Marin County Community Development Agency would be responsible for revising design guidelines of community plans to be consistent with the *Draft 2005 CWP Update*.	LTS
4.12-3 Views from Highways Land uses and development consistent with the *Draft 2005 CWP Update* could degrade the quality and character of views from Marin County's highways. However, policies and programs contained in the *Draft 2005 CWP Update* would substantially reduce such adverse visual changes, especially along State Route 1.	LTS	No mitigation would be required.	LTS
4.12-4 Light Pollution and Nighttime Sky Land uses and development consistent with the *Draft 2005 CWP Update* would create additional sources of lighting resulting in sky glow, light trespass, and glare.	S	***4.12-4*** In order to minimize light trespass, light pollution, and glare, new development and projects that would make significant parking lot improvements or add new lighting would be required to prepare a lighting plan for design review by County staff. Therefore, the following new program would need to be added to the Built Environment Element of the *Draft 2005 CWP Update*: Program **DES-1.(new)** *Lighting Design Guidelines*. Amend the Development Code to include lighting design guidelines. Require new development and projects that would make significant parking lot improvements or add new lighting to submit a lighting plan consistent with these guidelines for design review by County staff. Lighting design guidelines should address: ● Efficiency – Cost effective energy efficient standards for outdoor lighting shall be developed to conserve energy thereby reducing excessive lighting, light pollution, light trespass, and glare; ● Reasonableness of Intensity – Acceptable standards shall be defined for various land uses and development types specifying the maximum allowable total lumens per acre; ● Directional Control – Standards shall be developed to	SU

Impact	***Significance Before Mitigation***	***Mitigation Measure***	***Significance After Mitigation***
4.12-4 Light Pollution and Nighttime Sky cont.		minimize the upward transmission and intensity of light at various distances from its source through the use of full-cutoff lighting, downward casting, shielding, visors etc; ● Signage – Standards with respect to illuminated signs shall be developed that prohibit or limit the size, spacing, design, upward transmission of light, and hours of operation. In addition, signs should be white or light colored lettering on dark backgrounds; ● Night Lighting – Hours of operation for various uses shall be specified in order to prohibit all-night lighting except when warranted for public safety reasons. On demand lighting shall be encouraged; ● Education – A voluntary educational component of this program shall include the distribution of informational materials for use by county residents, developers, and lighting supply retailers. These materials shall provide specific methods and product information necessary for compliance of new development as well as aiding the conversion of existing lighting sources; ● Incentives – The County shall develop incentives for residents and businesses encouraging the conversion of existing lighting sources to compliant ones; and ● Enforcement – These standards shall be incorporated into the County Development Code and design review process for new development.	

2.3 SUMMARY OF ALTERNATIVES ANALYSIS

This Draft EIR examines four alternatives to the *Countywide Plan Update* as presently proposed.

- *Alternative 1 (No Project / No Action Alternative)* – This alternative assumes that no updated Countywide Plan is adopted for Marin County and future development would continue to be guided by the *1994 CWP* and zoning. This alternative reflects growth under the *1994 CWP* policies, assuming availability of infrastructure improvements and community services.

- *Alternative 2* – This alternative is based on the Economic Vitality scenario considered as a part of the County's Countywide Plan visioning process.

- *Alternative 3* – This alternative is based on the Environmental Preservation scenario considered as a part of the County's Countywide Plan visioning process.

- *Alternative 4 – (Mitigated Alternative)* – This alternative was developed in response to the analyses of the *Draft 2005 CWP Update* in order to avoid or substantially lessen the identified significant impacts of the proposed project.

A complete description of the alternatives is contained in ***Chapter 5.0 Alternatives***. Each alternative proposes varying development levels for specific project sites. **Exhibit 5.0-1** shows the comparison of development by housing units and nonresidential floor area for the *Draft 2005 CWP Update* and each of the four alternatives. **Exhibit 5.0-2** shows the distribution of housing units under existing conditions and for each of the four alternatives by planning area. **Exhibit 5.0-3** shows the distribution of nonresidential floor area by planning area.

The *State CEQA Guidelines* require that an EIR's analysis of alternatives identify the "Environmentally Superior Alternative" among all of those considered. Based on a comparison of impacts discussed in ***Chapter 5.0 Alternatives***, the EIR finds that *Alternative 4 (Mitigated Alternative)* would be the environmentally superior alternative.

2.4 SUMMARY OF SIGNIFICANT UNAVOIDABLE, GROWTH-INDUCING, AND SIGNFICANT IRREVERSBLE IMPACTS

This section summarizes the significant unavoidable adverse impacts, growth inducing impacts and significant irreversible effects of the *Draft 2005 CWP Update*.

Summary of Significant Unavoidable Impacts

This section identifies project and cumulative impacts that could not be eliminated or reduced to an insignificant level by mitigation measures included as part of the proposed project or other mitigation measures that could be implemented. These impacts are described in detail in ***Chapter 4.0 Environmental Setting, Impacts, and Mitigation Measures***.

LAND USE, POPULATION, AND HOUSING

Impact 4.1-2 Growth and Concentration of Population (project and cumulative)

TRANSPORTATION

Impact 4.2-1 Increase in Vehicle Miles Traveled (project and cumulative)

Impact 4.2-2 Unacceptable LOS on U.S. 101 at Golden Gate Bridge (project and cumulative)

Impact 4.2-3 Unacceptable LOS on State Route 1 from U.S. 101 to Almonte Boulevard (project and cumulative)

Impact 4.2-4 Unacceptable LOS on State Route 131 from U.S. 101 to Strawberry Drive (project and cumulative)

Impact 4.2-5 Unacceptable LOS on Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (cumulative)

Impact 4.2-6 Unacceptable LOS on Sir Francis Drake Boulevard from U.S. 101 to Eliseo Drive (project and cumulative)

Impact 4.2-7 Unacceptable LOS on East Sir Francis Drake Boulevard from Larkspur Ferry to San Quentin (cumulative)

Impact 4.2-8 Unacceptable LOS on I-580 at the Richmond Bridge (cumulative)

Impact 4.2-9 Unacceptable LOS on U.S. 101 from I-580 to Sir Francis Drake Boulevard (cumulative)

Impact 4.2-10 Unacceptable LOS on U.S. 101 from Second Street to I-580(cumulative)

Impact 4.2-11 Unacceptable LOS on South Novato Boulevard from U.S. 101 to Sunset Parkway (cumulative)

Impact 4.2-12 Unacceptable LOS on Lucas Valley Road from Las Gallinas Avenue to Los Gamos (project and cumulative)

Impact 4.2-13 Unacceptable LOS on U.S. 101 at the Sonoma / Marin County Line (project and cumulative)

Impact 4.2-14 Unacceptable LOS at Intersection of State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road (cumulative)

Impact 4.2-15 Unacceptable LOS at Intersection of Second Street and Grand Avenue (cumulative)

Impact 4.2-16 Unacceptable LOS at Intersection of Third Street and Grand Avenue (cumulative)

Impact 4.2-17 Unacceptable LOS at Intersection of Miller Creek Road and Las Gallinas Avenue (cumulative)

Impact 4.2-1 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 southbound off-ramp (cumulative)

Impact 4.2-19 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 northbound off-ramp (cumulative)

Impact 4.2-20 St. Vincent's / Silveira / Marinwood Traffic Impacts (project and cumulative)

Impact 4.2-21 San Rafael Rock Quarry Traffic Impacts (cumulative)

Impact 4.2-22 Kentfield Traffic Impacts (project and cumulative)

Impact 4.2-23 Strawberry Traffic Impacts (project and cumulative)

Impact 4.2-24 Tam Valley / Almonte Traffic Impacts (project and cumulative)

AIR QUALITY

Impact 4.3-1 Inconsistency with Clean Air Plan (project and cumulative)

Impact 4.3-6 Increase in Greenhouse Gas Emissions (project and cumulative0

NOISE

Impact 4.4-5 Construction Noise (project and cumulative)

BIOLOGICAL RESOURCES

Impact 4.6-4 Wildlife Habitat and Movement Opportunities (project and cumulative)

GEOLOGY

Impact 4.7-1 Surface Fault Rupture (project and cumulative)

Impact 4.7-2 Seismic Ground Shaking (project and cumulative)

Impact 4.7-3 Seismic-Related Ground Failure (project and cumulative)

Impact 4.7-4 Landsliding (project and cumulative)

Impact 4.7-8 Tsunamis and Seiches (project and cumulative)

AGRICULTURE

Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses (project and cumulative)

WATER SUPPLY AND DEMAND

Impact 4.9-1 Adequacy of Water Supply During a Normal Year (project and cumulative)

Impact 4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years (project and cumulative)

Impact 4.9-4 Impact to Groundwater Supply (project)

Impact 4.9-5 Interference with or Degradation of Water Supply (project and cumulative)

Impact 4.9-6 Secondary Impacts (project and cumulative)

PUBLIC SERVICES

Impact 4.10-8 Energy Consumption form Building Construction and Retrofit (project and cumulative)

VISUAL RESOURCES

Impact 4.12-4 Light Pollution and Nighttime Sky (project and cumulative)

Summary of Growth Inducting Impacts

The *State CEQA Guidelines* (Section 15126.2(d)) requires that an EIR evaluate the growth-inducing impacts of a proposed project. Specifically, an EIR must discuss the ways in which a proposed project could foster population growth or the construction of additional housing near the project and how that growth would, in turn, affect the surrounding environment. Growth can be induced either by eliminating obstacles to growth or by stimulating economic activity within the region. For a general plan the project is a long-term comprehensive plan to balance projected growth of population, housing, and employment with necessary public services and infrastructure. Under CEQA, growth is not considered necessarily detrimental or beneficial.

Based on Government Code section 65300, the *Draft 2005 CWP Update* is required to serve as a comprehensive, long-term plan for the physical development of Marin County. By definition, the *Draft 2005 CWP Update* intends to provide for and address future growth in the unincorporated portions of the county. Even though the *Draft 2005 CWP Update* does not propose any specific development projects, it could still have growth-inducing impacts. Indirect growth-inducing impacts would occur because the land use maps and designations, as well as the goals, policies, and programs, of the *Draft 2005 CWP Update* are designed to provide a framework for future growth and development in the unincorporated area of Marin County.

Land uses and development consistent with the *Draft 2005 CWP Update* would result in additional housing, agricultural, commercial, industrial, and public services and infrastructure development within the unincorporated area. Implementation of the proposed goals, policies, and programs of the *Draft 2005 CWP Update* would intend to manage this growth in ways that protect the environment and quality of life in Marin County.

The *Draft 2005 CWP Update* would result in growth that would lead to significant unavoidable adverse impacts. Implementation of the goals, policies, and programs of the *Draft 2005 CWP Update* would incrementally increase the demand and / or require new facilities for public services and utilities including water supply, wastewater treatment, fire protection and other emergency services, public education, and parks and recreation facilities. Accordingly, the *Draft 2005 CWP Update* would be growth inducing. Physical environmental Impacts and mitigation measures associated with the growth expected with the *Draft 2005 CWP Update* are analyzed in the appropriate sections throughout this EIR.

Significant Irreversible Impacts

CEQA requires that significant irreversible environmental changes caused by a plan must be addressed in an EIR. Specifically, the EIR must consider whether "uses of non-renewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or non-use thereafter unlikely." [3] *Nonrenewable resources*, in this discussion, refer to the physical features of the natural environment, such as land, air, and waterways.

The land use designations proposed by the *Draft 2005 CWP Update* would result in commitment of these areas to the designated uses for the foreseeable future. Additionally, proposed land use designation changes would allow the development of differing uses that may not have been previously anticipated by the *1994 CWP*. However, as discussed in ***Section 4.1 Land Use, Population, and Housing***, the proposed amendments would not result in significant changes to land use designations from the *1994 CWP*.

Additionally, irreversible changes would likely occur due to future excavation, grading, and construction activities associated with uses permitted by the *Draft 2005 CWP Update*. Although these changes can generally be addressed by mitigation measures, the potential for disturbance would represent an irreversible change. The *Draft 2005 CWP Update* would also result in irreversible changes by increasing densities and introducing development onto the remaining sites that are designated for use, but that are presently undeveloped.

Land uses and development consistent with the *Draft 2005 CWP Update* would result in changes to traffic and circulation, and would thus increase air pollution and noise emissions. Other irreversible changes associated with the *Draft 2005 CWP Update* would be the future use of non-renewable resources during construction, including concrete, glass, plastic, and petroleum products. Operation of future uses would also consume energy as well as water.

Land uses and development consistent with the *Draft 2005 CWP Update* as well as policies to protect biological resources would result in the conversion of agricultural lands to non-agricultural uses. While these changes primarily would reflect existing State and federal ownership of these lands as part of their respective park and recreational areas, any conversion of agricultural lands would be a significant irreversible environmental change.

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[3] *CEQA Guidelines*, Section 15126.2(c).

2.5 AREAS OF CONTROVERSY

Marin County prepared a Notice of Preparation (NOP) in February 2004 and sent it to governmental agencies, special service districts, organizations, and individuals with an interest in or jurisdiction over the project in order to provide early consultation on the scope of the EIR. With the preparation of a revised Initial Study in July 2005, Marin County distributed a revised NOP in August 2005. Several letters were received in response to the two NOPs. [4] After reviewing comments relevant to the *Draft 2005 CWP Update*, the County identified the following areas of controversy that are further evaluated in this Draft EIR.

Land Use, Population, and Housing – Impact of projected growth and development to the existing land use patterns in Marin County. Impact of the proposed Housing Overlay Designation and concern that the Countywide Plan focuses on unincorporated lands while most development would occur within the cities. Impact of allowing or not allowing development on the St. Vincent's / Silveira properties.

Transportation – Impact of the proposed land uses to the county's transportation system. Of particular concern is to evaluate the impacts related to future development in the unincorporated area only. Analysis, however, must also evaluate impact on transportation system due to cumulative development in the cities.

Air Quality – Consistency with the population / employment assumptions in the development of the Clean Air Plan and consistency with the regional Transportation Control Measures.

Noise – Concern with increased noise due to increased traffic.

Hydrology, Water Quality, and Flood Hazards – Impact to county streams and effectiveness of Stream Conservation Areas to protect streams.

Biological Resources – Impact to county's biological and wetland resources including not only special-status species but also other sensitive natural communities. Concern regarding the Baylands Corridor, both that it is too extensive and also that it needs to be expanded. Do proposed policies adequately protect streamside conservation areas and wetlands?

Geology – Assess potential geologic, seismic, and soil impacts.

Agriculture – Impact of agricultural operations on other natural resources in the county. Impacts of options regarding residential building size in agricultural areas.

Public Services – Assess whether projected land uses and development consistent with the *Draft 2005 CWP Update* would result in the demand for public services such that new facilities would need to be constructed and identify associated environmental impacts.

Cultural Resources – Impact to cultural resources in Marin County.

Visual Resources – Impact to visual resources and aesthetic character of Main County.

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4 These letters are included in **Appendix 2** to the Draft EIR.

Alternatives – Need a wide range of alternatives including potential development of the St. Vincent's / Silveira properties as well as permanent protection.

2.6 EFFECTS OF NO SIGNFICANCE

As discussed in ***Chapter 1.0 Introduction***, the scope of this Draft EIR was determined through a process that included the preparation of an Initial Study in February 2004 and a revised Initial Study in July 2005. The Initial Studies concluded that an EIR would be required for the proposed project and identified a number of topics for analysis in the EIR. Responses to the two Notices of Preparation further refined the scope of the EIR, as did comments made during the scoping process. Based on this scoping process and the analysis prepared as part of the Draft EIR it has been determined that a number of potential *Draft 2005 CWP Update* impacts would not be significant.

The following topics were dismissed from further analysis by the Revised Initial Study which determined that the project's effect would be less-than-significant with respect to: [5]

1. LAND USE AND PLANNING

d. Disrupt or divide the physical arrangement of an established community (including a low-income or minority community).

e. Result in substantial alteration of the character or functioning of the community, or present or planned use of an area.

f. Substantially increase the demand for neighborhood or regional parks or other recreational facilities, or affect existing recreational opportunities.

2. POPULATION AND HOUSING

a. Increase density that would exceed official population projections for the planning area within which the project site is located as set forth in the Countywide Plan and/or community plan.

c. Displace existing housing, especially affordable housing.

5. AIR QUALITY

c. Alter air movement, moisture, or temperature, or cause any change in climate.

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[5] Numbers refer to items in the County's July 2005 Initial Study prepared for this project. Both the February 2004 and July 2005 Initial Studies are available at the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157. The Initial Study describes the reasons for determining that the project would result in a less-than-significant impact.

6. TRANSPORTATION / CIRCULATION

c. Inadequate emergency access or access to nearby uses.

d. Insufficient parking capacity on-site or off-site.

8. ENERGY AND NATURAL RESOURCES

b. Use of non-renewable resources in a wasteful and inefficient manner.

c. Loss of significant mineral resource sites designated in the Countywide Plan from premature development or other land uses which are incompatible with mineral extraction.

9. HAZARDS

a. A risk of accidental explosion or release of hazardous substances including, but not necessarily limited to: 1) oil, pesticides; 2) chemicals; or 3) radiation.

b. Possible interference with an emergency response or emergency evacuation plan.

c. The creation of any health hazard or potential health hazard.

11. PUBLIC SERVICES

e. Impact to other government services, such as libraries and solid waste collection.

12. UTILITIES AND SERVICE SYSTEMS

b. Communications systems.

15. SOCIAL AND ECONOMIC EFFECTS

Any physical changes which can be traced through a chain of cause and effect to social or economic impacts.

Other Social and Economic Impacts Found Not To Be Significant

State CEQA Guidelines section 15382 provides that "[a]n economic or social change by itself shall not be considered a significant effect on the environment." However, physical impacts associated with social or economic changes may be considered significant. Pursuant to *State CEQA Guidelines* section 15382, purely economic or social impacts would not be considered significant impacts of the *Draft 2005 CWP Update*, and are not, therefore, addressed in this EIR. This EIR evaluates all physical impacts that would result from the proposed project and has not identified any physical impacts associated with social or economic changes.

2.7 MAJOR EIR CONCLUSIONS AND ISSUES TO BE RESOLVED

Major EIR Conclusions

The EIR reaches the following major conclusions:

- Land uses and development consistent with the *Draft 2005 CWP Update* would result in 42 significant unavoidable impacts. The majority of these significant unavoidable impacts are associated with transportation issues. The EIR identified mitigation measures for each impact. In some instances, the mitigation would not be sufficient to reduce the impact to a less-than-significant level. In other cases, it is noted that the recommended improvements are neither funded nor designed, thus implementation of the improvement within the planning period of the *Draft 2005 CWP Update* would likely not occur. Several significant unavoidable geology impacts are identified. The EIR notes that the recommended mitigation measures would reduce the level of risk with existing conditions and reduce adverse effects of mild to moderate seismic events. For severe seismic events these impacts would remain significant unavoidable impacts.

- Policy **CD-2.3** would establish a Housing Overly Designation to encourage construction of housing units to meet the need for workforce housing, especially for very low- and low-income households and for special needs housing. These housing units would be located in the City-Centered Corridor. Up to 1,694 housing units may be approved with the Housing Overlay Designation in addition to the development permissible through the underlying approval process. The EIR concludes that some of the Housing Overlay Designation sites included in the *Draft 2005 CWP Update* would be inconsistent with proposed criteria in Policy **CD-2.3** and would result in land use conflicts.

- Based on the results of the Marin Travel Model completed for the *Draft 2005 CWP Update*, vehicle miles traveled (VMT) in Marin County would grow faster than projected population growth during the planning period of 2005 to 2030. Numerous policies and programs in the *Draft 2005 CWP Update* would focus on reducing the rate of vehicle miles traveled from trips in Marin County. Anticipated transportation benefits of these policies and the resulting land use changes include slightly reduced VMT per person and a slight increase in the number of transit trips compared to the buildout of the *1994 CWP*.

  One reason that a more significant reduction in the VMT would not be achieved with the *Draft 2005 CWP Update* is simply because the number of new housing units reallocated to the City-Centered Corridor (i.e., through the Housing Overlay Designation) would be small relative to both the growth in housing units and the total number of housing units. A more substantial decrease in VMT per person and increase in the use of alternative transport modes would require focusing a larger percentage of future development into denser, transit-oriented developments, a significant investment in improving alternate modes of transport, significant incentives for using alternative modes of transport, and significant disincentives for traveling by single occupant auto.

- The EIR evaluates weekday AM and PM peak hour roadway operations at 19 key locations, called *screenlines* (see **Exhibits 4.2-16** and **4.2-18**). Cumulative development in Marin County (i.e., development consistent with the *Draft 2005 CWP Update* plus development consistent with the general plans of the 11 cities and towns) would result in significant impacts at seven of the screenlines in the AM peak hour and 11 of the screenlines in the PM peak hour. Weekday AM and PM peak hour intersection operations were evaluated at eight intersections (see **Exhibits 4.2-**

17 and **4.2-18**). Significant traffic impacts would result at five of the intersections in the AM peak hour and five of the intersections in the PM peak hour.

- The EIR evaluates three options proposed in the *Draft 2005 CWP Update* for the Baylands Corridor boundary. The EIR concludes that Option 2 would provide the greatest biological protection because of greater consideration of the remaining sensitive biological features on the St. Vincent's / Silveira properties and in the vicinity of Gnoss Field.

- With implementation of the policies and programs of the *Draft 2005 CWP Update*, substantial agricultural resource areas would be protected in unincorporated Marin County. However, conversion of agricultural land to non-agricultural uses would still occur. Changes of County land use designations from agricultural to non-agricultural land use designations would primarily reflect existing State and federal ownership of lands as part of their respective park and recreational areas. As a result of these land use amendments, 54 acres of farmlands classified by the State as Farmland of Statewide Importance, Farmland of Local Importance, or Grazing Lands would be converted to an urban use. This would occur on the St. Vincent's / Silveira properties. Policies of the *Draft 2005 CWP Update* and existing provisions of the Marin County Development Code would encourage and allow the development of agricultural processing, retail sales, and visitor-serving uses on agricultural lands. Such development would remove some agricultural land from production.

- With respect to water supply and demand issues, the EIR comes to the following conclusions:

  - Water supply is estimated to increase slightly from current supplies to 2030 supplies; most of this new supply would be from recycled water. Imported Sonoma County Water Agency (SCWA) water use is projected to decrease for the Marin Municipal Water District (MMWD) and increase for the North Marin Water District (NMWD) resulting in a slight net decrease by 2030. Based upon available water supply data, surface water and groundwater use are projected to remain stable.

  - NMWD-Novato and MMWD have current water supply deficits and NMWD-West Marin and MMWD have projected 2030 supply deficits under average or normal water supply conditions.

  - Six of the county's nine water service areas have supply / demand concerns associated with the summer peak. On an annual basis, it may appear that the water providers have enough water, but the systems are strained to meet summer peak demands. Two of these suppliers have connection moratoria that are not anticipated to be lifted in the near future.

  - Most of the water suppliers would experience supply deficits during extended drought periods.

  - The County's estimate of the number of current housing units is about six percent higher than water supplier estimates. Most of the differences are due to the method of counting multifamily and second units.

  - Water supply deficits are projected to occur in NMWD-West Marin, MMWD, Bolinas Community Public Utility District (BCPUD), and (Stinson Beach County Water District (SBCWD) at 2030 under the *Draft 2005 CWP Update*.

- Implementation of the *Draft 2005 CWP Update* would allow new residential development on the St. Vincent's / Silveira properties. Policy **SV-2.4** would make five percent of the land of each

property available for future development. This would amount to 37 acres on the St. Vincent property and 17 acres on the Silveira property for a combined future development area of 54 acres. Options 1 through 4 discussed in the *Draft 2005 CWP Update* would permit a range of housing units from 221 to 501 on the properties.

Environmental impacts associated with development at the St. Vincent's / Silveira properties are discussed in the EIR. The limitation on the amount of land available for future development (i.e., 54 acres) appears to be a greater factor in the extent of environmental impact than the difference between the numbers of allowable units.

The three closest screenlines to the St. Vincent's / Silveira properties evaluated in the Draft EIR are screenlines #14, #15, and #16 (see *Impact 4.2-20 St. Vincent's / Silveira / Marinwood*). The Marin Travel Model forecasts no significant project impacts for screenline #14 or #16, thus development in this area would not overburden U.S. 101 during either peak in either direction. However significant cumulative and project impacts would be occur on Lucas Valley Road between Las Gallinas Avenue and Los Gamos. Traffic generated by development at St. Vincent's / Silveira would also contribute to significant impacts to the three nearest intersections (i.e., Miller Creek Road with both the north and southbound U.S. 101 on- and off-ramps and Miller Creek Road at Las Gallinas Avenue) studied in *Impact 4.2-20 St. Vincent's / Silveira / Marinwood*.

Development at the St. Vincent's / Silveira properties would convert 54 acres of State designated Farmland of Local Importance to urban uses (*Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses*), the same for each development option. Development at the St. Vincent's / Silveira properties could result in adverse changes to visual quality of the site (*Impact 4.12-1 Scenic Resources*). Impacts to visual quality would primarily depend on the density of development that would occur.

- *Alternative 4* (*Mitigated Alternative*) has been crafted to reduce identified significant impacts of the *Draft 2005 CWP Update*, including significant impacts to water supply and traffic. *Alternative 4* includes refinements to the Housing Overlay Designation and construction of the Marin-Sonoma Narrows (MSN) road improvement. *Alternative 4* includes development of up to 501 housing units on the St. Vincent's / Silveira properties and adoption of the boundary for Option 2 for the Baylands Corridor.

Issues to be Resolved

- As discussed above, the EIR identified several significant unavoidable impacts associated with land uses and development consistent with the *Draft 2005 CWP Update*. Decision-makers will need to make findings of overriding considerations if they determine that the benefits outweigh the significant unavoidable impacts of the project.

- The *Draft 2005 CWP Update* recommends the establishment of a Baylands Corridor and provides three options for the final boundary. *Alternative 4* (*Mitigated Alternative*) recommends adoption of Option 2 because it provides the greatest biological benefits. Decision makers will need to make a determination as to the boundary of the Baylands Corridor.

- The *Draft 2005 CWP Update* proposes to limit the size of residential buildings in agricultural areas based on certain criteria. There are four options regarding the criteria to establish

maximum dwelling unit sizes. *Alternative 4* (*Mitigated Alternative*) recommends adoption of a modified version of Option 2. Decision makers will need to make a determination as to criteria to establish maximum dwelling unit sizes in agricultural areas.

- The *Draft 2005 CWP Update* establishes criteria for development of the St. Vincent's / Silveira properties and provides four development options ranging from 221 to 501 housing units, with development of some nonresidential floor area in exchange for some housing units. Any future development on the St. Vincent's / Silveira properties would be subject to the *Draft 2005 CWP Update* policies and programs, including the clustering of future development. *Alternative 4* (*Mitigated Alternative*) recommends the development of 501 housing units but could include some nonresidential floor area in exchange for some housing units. Decision makers will need to make a determination as to the level of urban development on the St. Vincent's / Silveira properties.

- The *Draft 2005 CWP Update* recommends the establishment of a Housing Overlay Designation and a Housing Bank with up to 1,694 housing units. In order to reduce impacts related to the Housing Overlay Designation, *Alternative 4* (*Mitigated Alternative*) recommends that the number of housing units in the Housing Bank to reduced to 758 housing units. Decision makers will need to make a determination as to the number of housing units to include in the Housing Bank.

2.8 MITIGATION MONITORING PROGRAM

In conformance with California Resources Code Section 21081.6, a Mitigation Monitoring and Reporting Program has been prepared for the proposed *Countywide Plan Update*, if approved. The purpose of the program would be to ensure compliance with and assess the effectiveness of mitigation measures incorporated into the Countywide Plan and set forth in the EIR. The Mitigation Monitoring and Reporting Program is presented in **Appendix 2-C**.

3.0 DESCRIPTION OF THE PROPOSED PROJECT

3.0 DESCRIPTION OF THE PROPOSED PROJECT

This chapter of the EIR provides a detailed description of the *Draft 2005 CWP Update* project (i.e., the proposed project), and discusses the project objectives, guiding principles and framework.

In several instances, the *Draft 2005 CWP Update* provides options for consideration by Marin County policy makers. This occurs with respect to the following:

- Three boundary options are provided by the *Draft 2005 CWP Update* for the proposed Baylands Corridor (Goal **BIO-5** *Baylands Conservation*).

- Four housing unit size options are provided to limit the size of residential buildings in agricultural areas. These four options utilize different sets of criteria for the establishment of maximum dwelling unit sizes. (Program **AG-1.a** *Limit Residential Building Size*)

- In regard to the St. Vincent's and Silveira Ranch properties (St. Vincent's / Silveira properties), the *Draft 2005 CWP Update* establishes criteria for development of the St. Vincent's / Silveira properties and provides four development options (Policy **SV-2.5** *Establish Land Use Categories*).

Because the *Draft 2005 CWP Update* includes these options, depending on the final selection of the options there would be different distributions of housing units countywide.[1] Based on various combinations of the options, this Draft EIR evaluates three scenarios which assume varying degrees of development on the St. Vincent's / Silveira properties and the San Rafael Rock Quarry. Each of the three **scenarios** are described and discussed in this chapter and analyzed in this Draft EIR.

In recognition of the fact that certain changes have taken place since the August 2005 publication of the *Draft 2005 CWP Update*, the following provides updates and clarification to the proposed project.

San Quentin State Prison – San Quentin was established in July 1852 at Point Quentin in Marin County on approximately 432 acres. San Quentin's first condemned row was established in 1893. In 2005, the California Department of Corrections approved an expansion of the prison to include a new housing complex and associated support facilities to house the condemned male inmate population at the prison. In 2005, Marin County filed two unsuccessful legal challenges of this expansion project. The *Draft 2005 CWP Update* includes a Vision Plan for San Quentin. However, it is the clear intent of the State of California to continue and expand the use of the San Quentin site as a State Prison for the foreseeable future. Therefore, the Vision Plan is no longer under consideration for inclusion in the Countywide Plan and is not discussed in this EIR. The Vision Plan will be removed prior to adoption of the Countywide Plan.

Existing and Buildout Development Figures – During the preparation of the Draft EIR, Marin County staff worked closely with each of the county's 11 cities and towns to verify existing and buildout numbers for both housing units and nonresidential floor area. County staff also updated existing and buildout figures for the unincorporated area. As a result, existing and buildout numbers for both housing units and nonresidential floor area in this Draft EIR are updated from those presented

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[1] Distribution of housing units for the *Draft 2005 CWP Update* is shown in **Exhibits 3.0-8** and **3.0-14**.

in the *Draft 2005 CWP Update*. Consequently, a smaller number of housing units in the Housing Bank are described in this project description and analyzed in this EIR than the number presented in the *Draft 2005 CWP Update.*

Local Coastal Program – In addition to updating the Countywide Plan, Marin County had previously planned to simultaneously update the 1980-81 Local Coastal Plan (LCP) Units I and II. Subsequently, the County decided to delay the LCP Update until after the adoption of the Countywide Plan Update as part of its implementation program.

3.1 PROJECT LOCATION

Marin County's total land and water area is approximately 606 square miles, of which about 87 percent (527 square miles) is unincorporated. Marin County is one of the nine counties that comprise the San Francisco Bay Area. It is linked to San Francisco by the Golden Gate Bridge and to the East Bay via the Richmond-San Rafael Bridge (see **Exhibit 3.0-1)**. The *Draft 2005 CWP Update* encompasses the unincorporated territory of Marin County.

3.2 PROJECT OBJECTIVES

The *Draft 2005 CWP Update* proposes a comprehensive update of the *1994 Marin Countywide Plan (1994 CWP).* [2] In 2004, Marin County completed a draft update of the *1994 CWP*, entitled the *Draft 2004 CWP Update*. In February 2004, an Initial Study was prepared and circulated for the *Draft 2004 CWP Update*. The Marin County Planning Commission subsequently initiated a preliminary review of the *Draft 2004 CWP Update* and proposed revisions and clarifications to the Countywide Plan. The Commission's proposed revisions to the *Draft 2004 CWP Update* were then reviewed in a joint meeting of the Planning Commission and the Board of Supervisors. Based on that preliminary review, a revised and reorganized comprehensive update of the *1994 CWP*, the *Draft 2005 CWP Update* [3] was prepared.

The updated Countywide Plan (CWP) has been significantly reorganized and revised. The purpose of the CWP is to set policy guidelines for future conservation and development in the unincorporated portion of Marin County and to deal with changed conditions since the last revision of the CWP. The CWP establishes an overall framework and set of goals for countywide development. While cities within Marin County retain control over specific development within their jurisdictions, the County is responsible for specific development decisions in the unincorporated areas. In addition, the updated CWP has been enlarged to include such social equity and cultural issues as public health, environmental justice, child care, the economy, and arts and culture.

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2 *The Marin Countywide Plan*, Marin County Planning Department, adopted by the Marin Board of Supervisors, January 18, 1994.

3 *Marin Countywide Plan Revised Public Review Draft*, Marin County Community Development Agency, August 2005.

Exhibit 3.0-1
Marin County and San Francisco Bay Area

Source: County of Marin Community Development Agency, 2006.

The objectives of the proposed project are to adopt a revised Countywide Plan that achieves the following:

- Preserved and restored natural environment. Marin watersheds, natural habitats, wildlife corridors, and open space shall be protected, restored, and enhanced.

- Sustainable agriculture community. Marin's working agricultural landscapes shall be protected and the agricultural community shall remain viable and shall successfully produce and market a variety of healthy foods and produces.

- High-quality built environment. Marin's community character, architectural heritage of its downtowns and residential neighborhoods, and the vibrancy of its business and commercial centers shall be preserved and enhanced.

- More affordable housing. Marin's members of the workforce, the elderly, and special needs groups shall have increased opportunities to live in well-designed, socially and economically diverse affordable housing strategically located in mixed use sites near employment or public transportation.

- Less traffic congestion. Marin community members shall have access to flexible work schedules, car pools and additional transportation choices for pedestrians, bicycles, and transit users that reduce traffic congestion.

- A reduced ecological footprint. Marin residents and businesses shall increasingly use renewable energy, fuel-efficient transportation choices, and green building and businesses practices similar to the level of Western Europe.

3.3 DESCRIPTION OF THE DRAFT 2005 CWP UPDATE

Guiding Principles and Goals

Planning sustainable communities is the overarching theme of the *Draft 2005 CWP Update*. Guiding principles were created by a working group of local residents and accepted by the Board of Supervisors. These guiding principles were compared to the stated objectives of the *Draft 2005 CWP Update* to assess the degree of alignment with environmental, social equity and economic systems. Countywide goals reflect core community values and identify what fundamental outcomes are desired. Although these overarching goals are not quantifiable or time dependent, implementation of the policies and programs of the CWP is intended to assist the larger Marin community in achieving the following:

- A preserved and restored natural environment;
- A sustainable agricultural community;
- A high-quality built environment;
- More affordable housing;
- Less traffic congestion;

- A vibrant economy;
- A reduced ecological footprint;
- Collaboration and partnerships;
- A healthy and safe lifestyle; and
- A creative, diverse and just community.

Environmental Regions / Corridors

Adopted in 1973, the first Countywide Plan designated three environmental corridors: the Coastal Recreation Corridor, the Inland Rural Corridor, and the City-Centered Corridor. The *Draft 2005 CWP Update* retains the "corridor" concept dividing the county into regional units based on specific geographic and environmental characteristics and natural boundaries formed by north / south trending geomorphic ridges (see **Exhibit 3.0-2**). This update proposes to add a fourth corridor, the Baylands Corridor, for baylands protection and restoration. The update also renames the Coastal Recreation Corridor as the Coastal Corridor in recognition of the fact that the issues, opportunities, and constraints of the corridor go beyond recreation. The four proposed corridors are:

THE COASTAL CORRIDOR

Originally named the Coastal Recreation Corridor, this corridor is adjacent to the Pacific Ocean and is primarily designated federal parklands, recreational uses, agriculture, and the preservation of existing small coastal communities.

THE INLAND RURAL CORRIDOR

This corridor is in the central and northwestern part of the county, primarily designated for agriculture and compatible uses and for preservation of existing small communities.

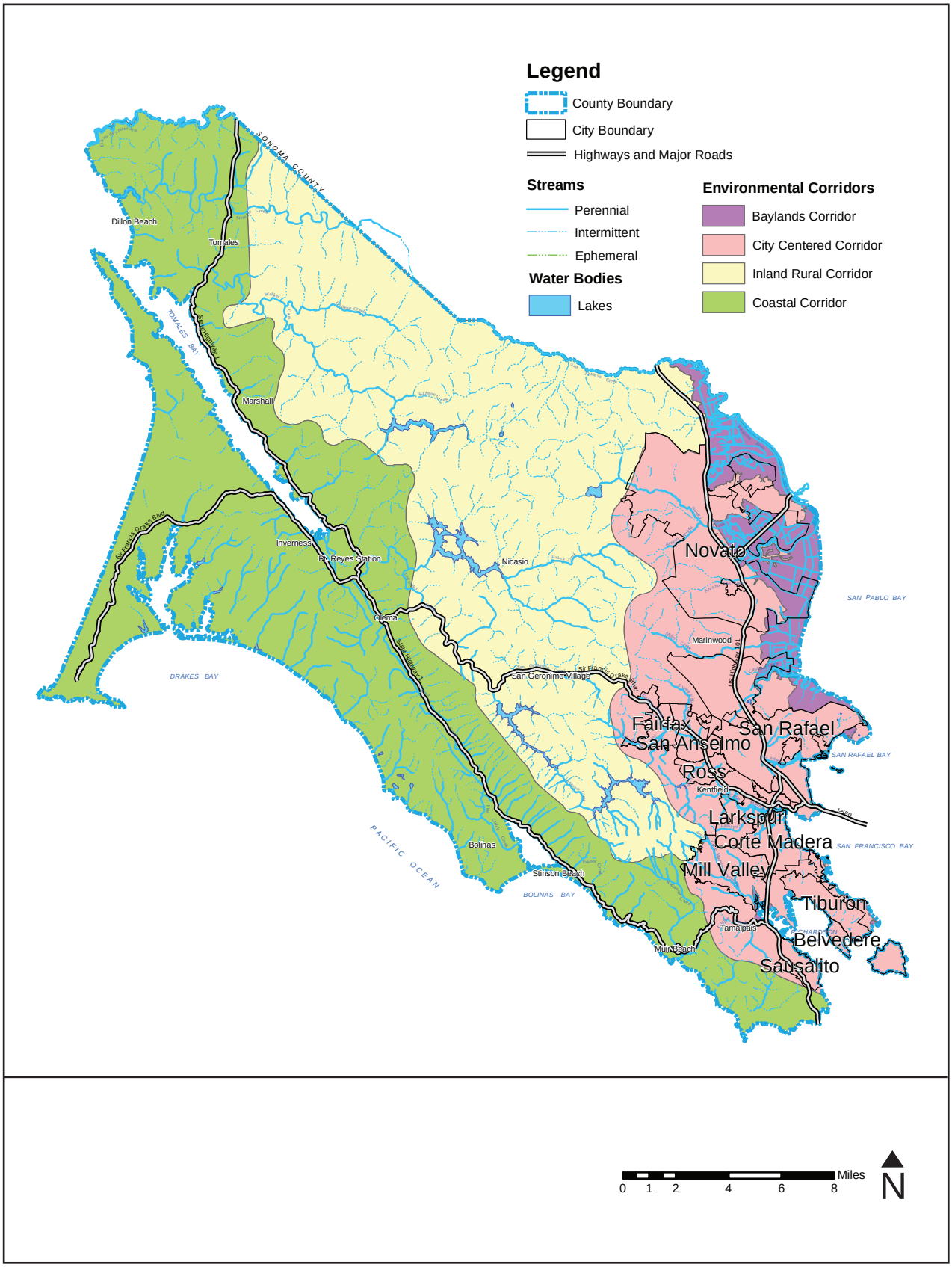
THE CITY-CENTERED CORRIDOR

Along U.S. 101 in the eastern part of the county near San Francisco and San Pablo Bays, this corridor is primarily designated for urban development and for the protection of environmental resources. This corridor is divided into six planning areas generally based on watersheds.

THE BAYLANDS CORRIDOR

This corridor would encompass lands along the shoreline of San Francisco and San Pablo Bays and would provide increased recognition of the unique environmental characteristics of this area and the need to protect its important resources. The area generally contains marshes, tidelands, and diked lands that were once wetlands or part of the bays, and adjacent largely undeveloped uplands. Non-tidal portions of small, privately-owned parcels would not be included in the Baylands Corridor.

Exhibit 3.0-2
Environmental Corridors



Source: County of Marin Community Development Agency, 2006.

Framework

The overarching theme presented in the *Draft 2005 CWP Update* is sustainability. To address this theme, the CWP has been substantially reformatted into three main elements: the Natural Systems and Agriculture Element, the Built Environment Element, and the Socioeconomic Element. The seven mandatory General Plan elements required by the State Planning and Zoning Laws (Conservation, Open Space, Land Use, Circulation, Housing, Noise, and Safety) and the five optional elements in the *1994 CWP* (Agriculture, Community Facilities, Parks and Recreation, Trails, and Economic), have been updated and incorporated into the reformatted three main elements of the *Draft 2005 CWP Update*. The recent update of the Housing Element [4] of the CWP was adopted prior to this *Draft 2005 CWP Update*.

Most of the mandatory General Plan elements have been incorporated into the Natural Systems and Agriculture and the Built Environment elements of this *Draft 2005 CWP Update*, while most optional subjects have been concentrated in the Socioeconomic Element. Each section includes plan goals, policies, and programs for every subject listed below. Indicators, benchmarks, and non-binding targets have been set to establish a feedback loop to aid in monitoring progress in meeting the various goals and policies. Also included at the end of each chapter is a program implementation chart, which summarizes responsibilities, potential funding priorities, and estimated time frames for implementation of the programs. Program implementation is based on adequate funding and staff resources, which may be beyond government control. [5]

NATURAL SYSTEMS AND AGRICULTURE ELEMENT

The Natural Systems and Agriculture Element focuses on "Nature" and life support systems and includes the following main topics:

Biological Resources

This section addresses special status species (i.e., plants and animals legally protected under the State and / or federal Endangered Species Act or other regulations) and other sensitive natural communities, in addition to wetlands, riparian habitat, and baylands. It also addresses State requirements for the Conservation Element of the CWP.

The *Draft 2005 CWP Update* proposes to increase environmental protection and review for streamside areas, wetlands, and special status species. Preservation of large parts of Marin County has served to protect important biological resources and the biodiversity of the region. In 2001, Marin ranked 17th

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4 The Housing Element was certified by the State Department of Housing and Community Development on July 24, 2003 and is not the subject of this CWP update.

5 Preparation of the *Draft 2005 CWP Update* involved developing a series of technical background reports. These reports are summarized in ***Chapter 1.0 Introduction*** and cited in this chapter. Copies of these reports are available for public review at the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157, on the County's website at www.future-marin.org and in **Appendix 1** to the Draft EIR.

among the 58 California counties in the number of listed special status species present. In fact, Lagunitas Creek supports the most important remnant population of federally threatened wild Coho salmon in central California.

The *1994 CWP* includes Bayfront lands protection as implemented by the Bayfront Conservation Zone. As defined in the *1994 CWP*, the Bayfront Conservation Areas are based on the 1971 Nichols-Wright survey and include the entire shoreline of San Francisco Bay and San Pablo Bay, comprising most of the Tidelands Subzone, the Diked Bay Marshland and Agricultural Subzone, and the Shoreline Subzone.

The proposed Baylands Corridor encompasses much of the Bayfront Conservation Zone and uses as its basis the San Francisco Estuary Institute (SFEI) historic baylands boundary. Establishment of a Baylands Corridor along Tomales Bay may be considered during the update of the Marin County LCP. Parcels within the Baylands Corridor fall into one of four categories as follows:

- Large Developed Parcels (greater than two acres in size) – San Francisco Bay Conservation and Development Commission (BCDC) jurisdiction line (100 feet landward of mean high tide), except where undeveloped wetland areas remain. In only these wetland areas, the SFEI boundary line is used with no buffer.
- Large Undeveloped Parcels (greater than two acres in size) – SFEI line is used plus a 300-foot buffer or U.S. 101; whichever is closer to the shoreline.
- Small Parcels (two acres or less in size) – tidal portions of parcels are included, non-tidal portions are excluded.
- Publicly Owned Parcels (i.e., wet or shore proximate) – entire parcel is included.

The Baylands Corridor would extend along the shoreline of San Francisco Bay and San Pablo Bay, excluding only small privately owned parcels not subject to tidal action and developed lands on privately owned parcels. The *Draft 2005 CWP Update* describes three options for designating the extent of the Baylands Corridor (see **Exhibit 3.0-3**) with the primary difference being the location of the western boundary line.

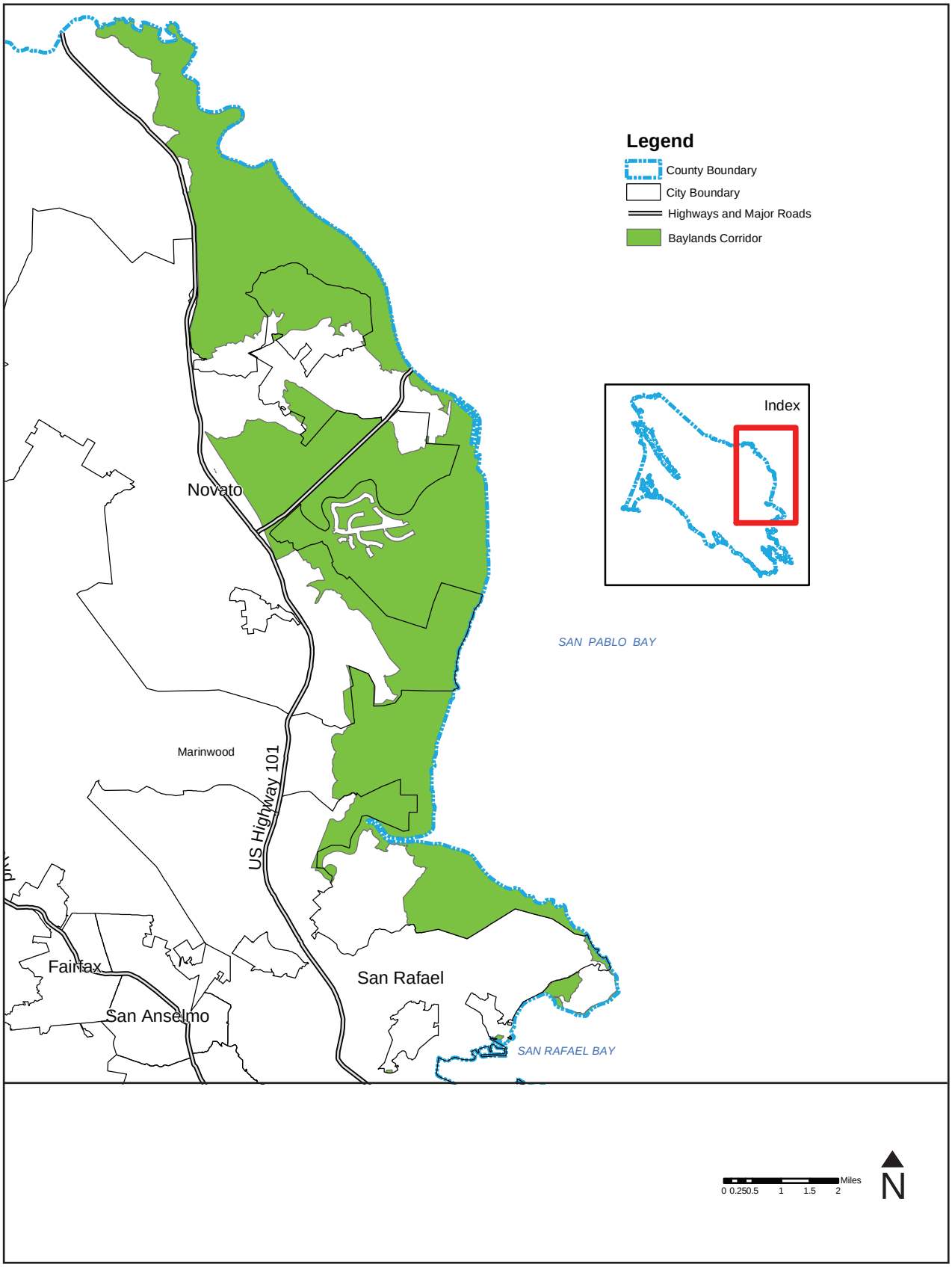
Boundary Option 1 would include large undeveloped parcels (typically more than two acres in size) generally consisting of the areas from 300 feet landward of the historic bay marshlands based on maps prepared by the SFEI.

Boundary Option 2 would extend the Baylands Corridor to U.S. 101 in the Las Gallinas Planning Area.

Boundary Option 3 would extend the Baylands Corridor to the Northwestern Pacific Railroad in the Las Gallinas Planning Area.

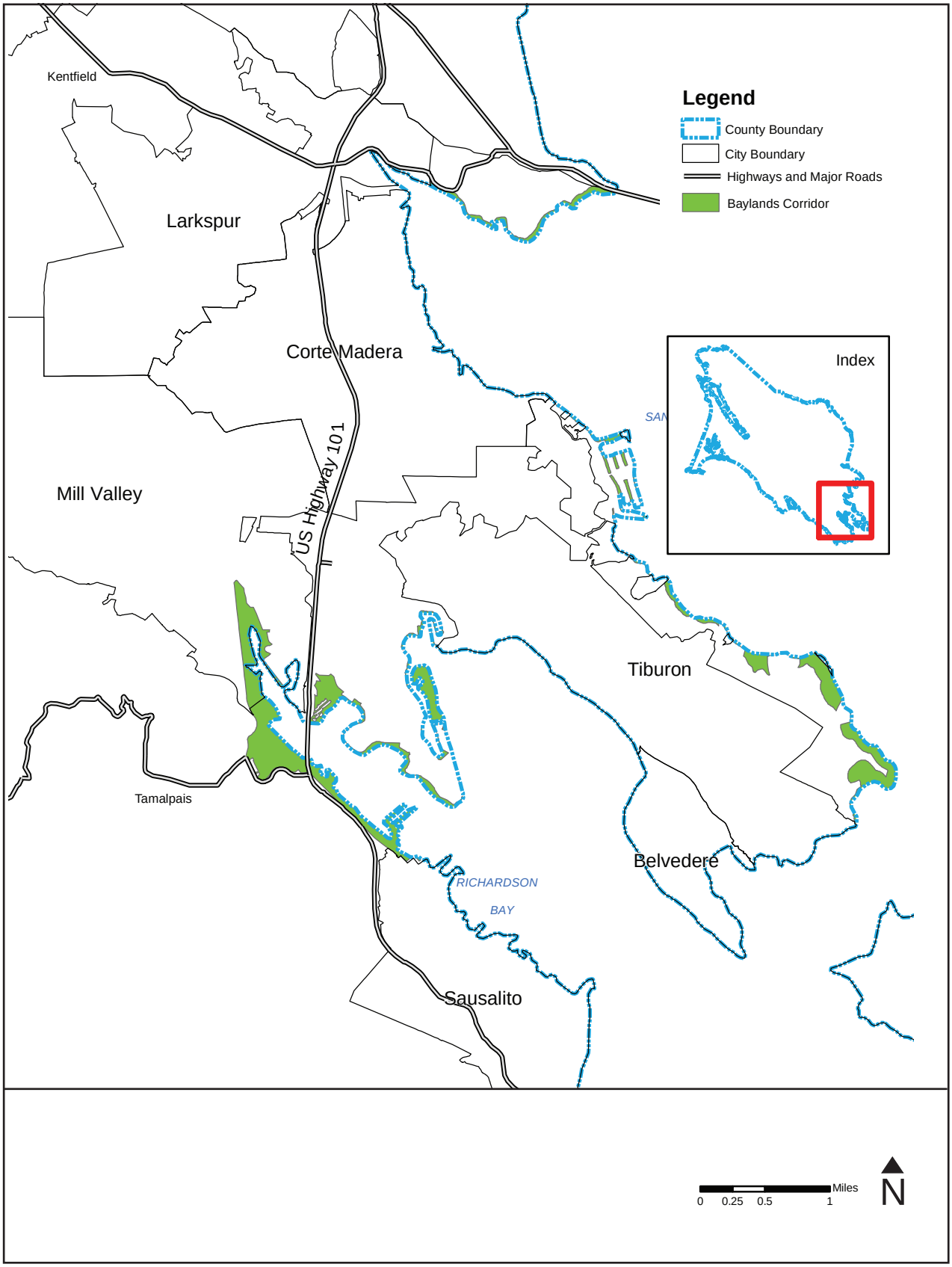
The western boundary line of Option 1 reflects a 300-foot buffer from the historic bay marshlands (as determined by the San Francisco Estuary Institute), throughout the planning areas (See **Exhibit 3.0-3**). Option 2 uses the same buffer criteria to determine the western boundary line, except in the Las Gallinas Planning Area where a portion of the boundary line on the St Vincent's / Silveira properties is extended westward to U.S. 101 (See **Exhibit 3.0-3**). In Option 3, the location of the western boundary line in the Las Gallinas Planning Area is the Northwestern Pacific Railroad creating a more solid, physical edge to the corridor (See **Exhibit 3.0-3**). Another aspect to the third option is the exclusion of Gnoss Field from the Baylands Corridor in the northern portion of the County. Options 1 and 2 include Gnoss Field.

Exhibit 3.0-3(a)
Baylands Corridor - Option 1



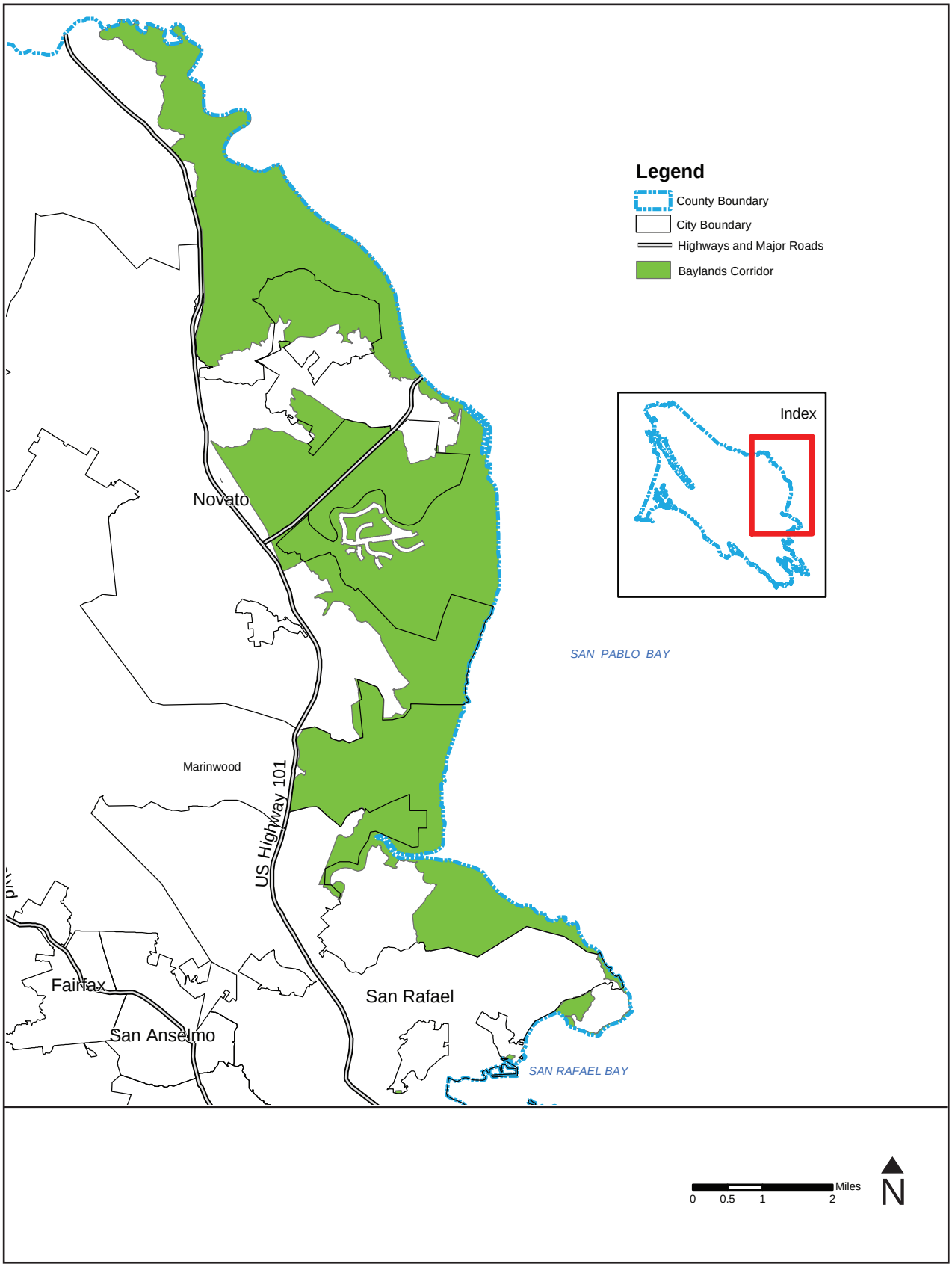
Source: County of Marin Community Development Agency, 2006.

Exhibit 3.0-3(b)
Baylands Corridor - Option 1 Cont.



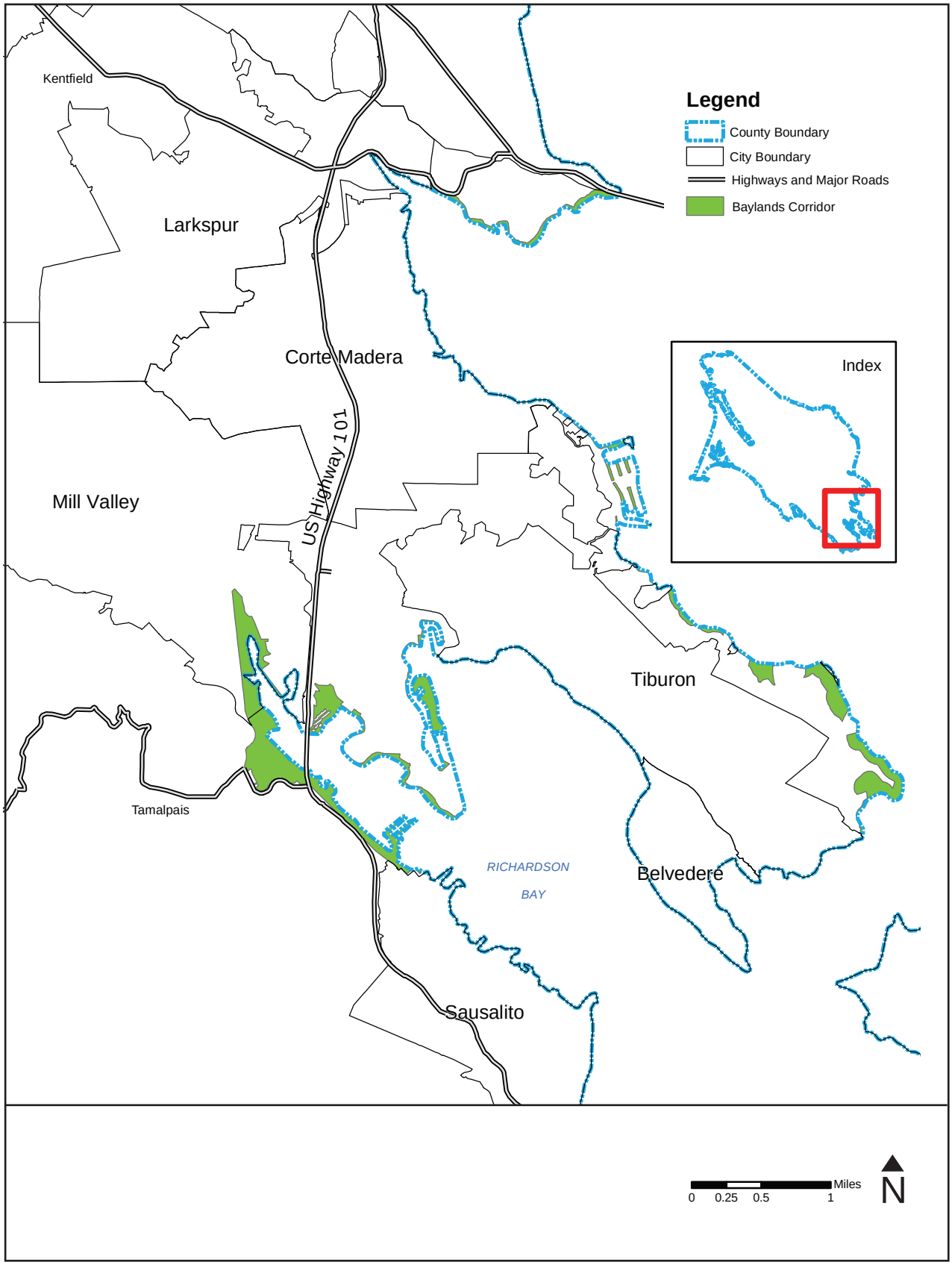
Source: County of Marin Community Development Agency, 2006.

Exhibit 3.0-3(c)
Baylands Corridor - Option 2



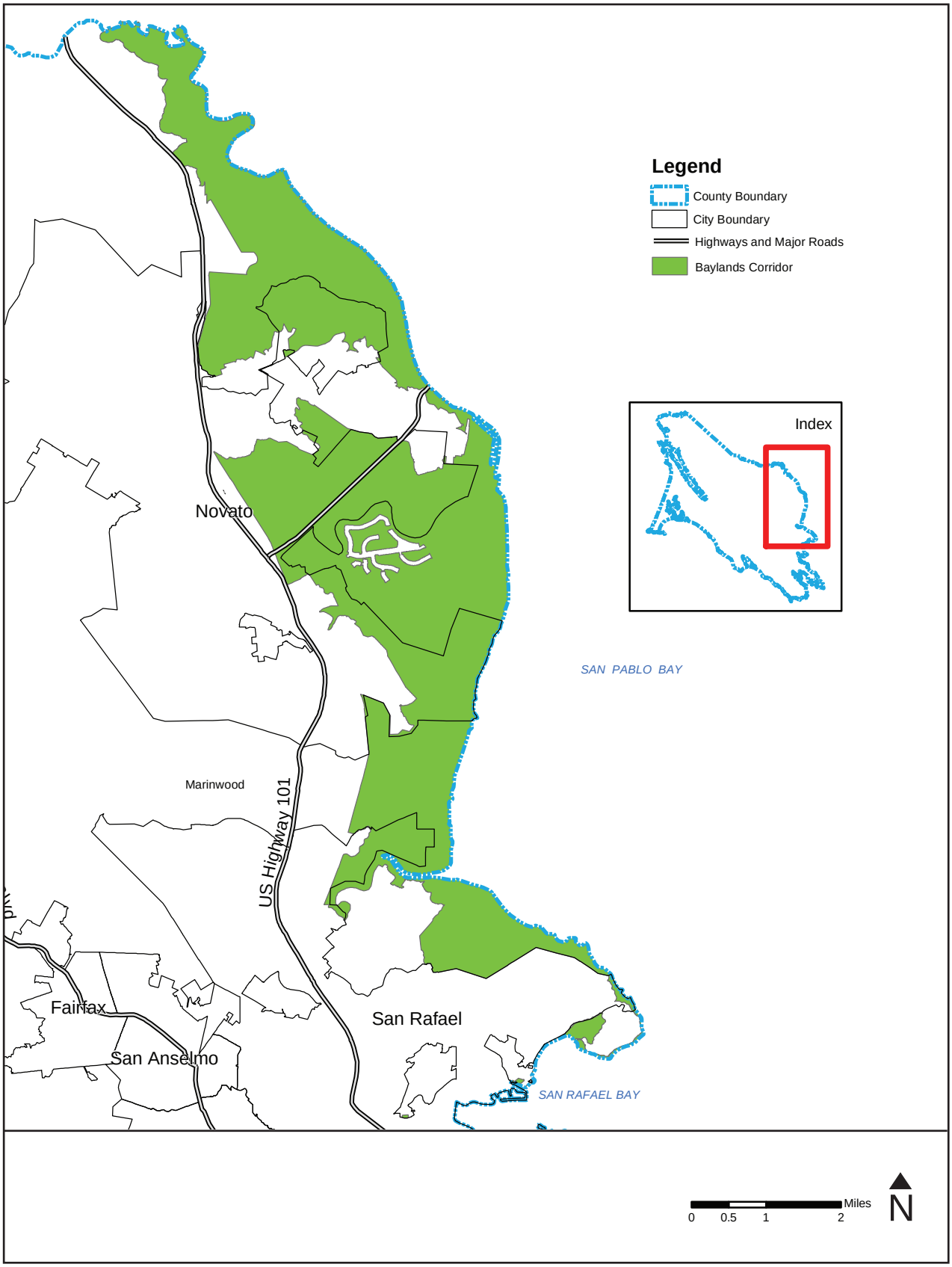
Source: County of Marin Community Development Agency, 2006.

Exhibit 3.0-3(d)
Baylands Corridor - Option 2 Cont.



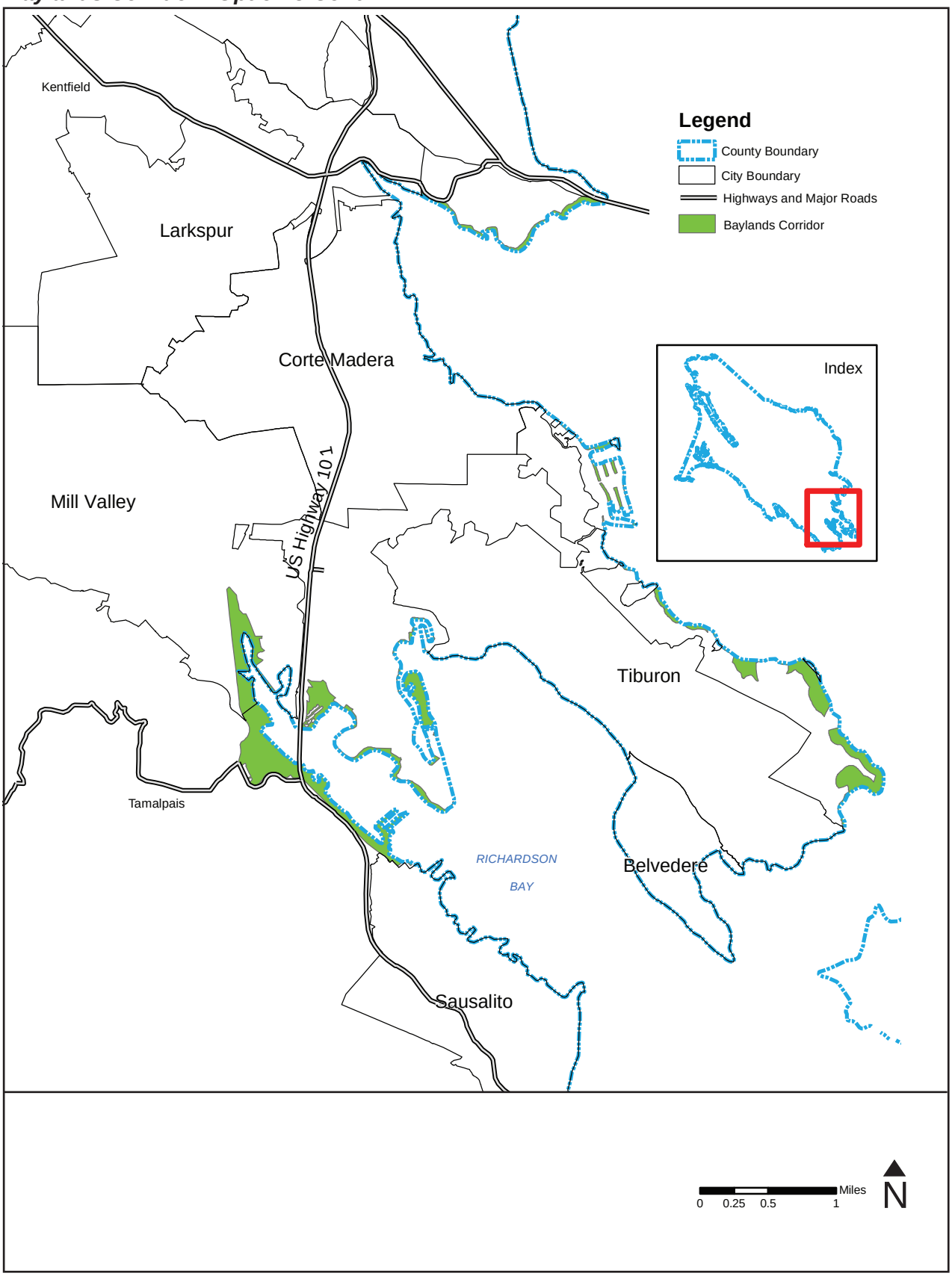
Source: County of Marin Community Development Agency, 2006.

Exhibit 3.0-3(e)
Baylands Corridor - Option 3



Source: County of Marin Community Development Agency, 2006.

Exhibit 3.0-3(f)
Baylands Corridor - Option 3 Cont.



Source: County of Marin Community Development Agency, 2006.

In addition to the establishment of the Baylands Corridor, the *Draft 2005 CWP Update* proposes several measures to increase the protection and review for streamside areas, wetlands, and special status species, including, but not limited to the following:

- Controlled public access to baylands;
- Priority acquisition of baylands to retain as open space;
- Control shoreline modifications to protect biodiversity and promote wildlife movement;
- Protect native habitat, including the protection of native plant species, removal of invasive exotics, and controlling the use of herbicides and insecticides;
- Conduct habitat connectivity assessments to identify fragmentation and connectivity loss areas to promote opportunities for linkages;
- Protect and develop standards to protect woodlands, forests, and tree resources;
- Utilize GIS mapping to monitor habitat loss and restoration and to assist in cumulative analysis; and
- Require ecotone enhancement and preservation for development permits; [6]

Additionally, the *Draft 2005 CWP Update* proposes the following measures to continue to avoid, preserve, and enhance wetlands, streams, and riparian areas:

- If wetland loss cannot be avoided, require on-site mitigation at a ratio of two acres for each acre lost (2:1 replacement ratio) or a minimum 3:1 replacement ratio for off-site mitigation;
- Create restoration and / or habitat creation ratios;
- A wetland no-net-loss policy would continue to be in effect;
- Create 50-foot and 100-foot buffers for parcels greater than 0.5 acres in size. In the City-Centered Corridor, a minimum 50-foot setback from jurisdictional wetlands would be required for parcels between 0.5 and two acres in size, and a minimum 100-foot setback would be required for parcels over two acres. No specific minimum would be set for parcels less then 0.5 acres in size; however, a site assessment would be necessary. In the Coastal Corridor, the Inland Rural Corridor, and the Baylands Corridor a minimum 100-foot setback regardless of parcel size would be required;
- Amend stream policies to include perennial, intermittent, and ephemeral streams;
- Specify functional criteria for land uses in the stream conservation areas;
- Clarify when Stream Conservation Area (SCA) policies apply to ephemeral streams with or without vegetation;

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[6] An *ecotone* is a transition between two adjacent ecological communities or ecosystems.

- Require detailed studies with development applications to assess impacts and recommend mitigation to riparian vegetation;

- Promote natural stream channel functions and restoration and stabilization of stream channels; and

- Conduct a comprehensive study to reevaluate standards used to protect streams and regulate development adjacent to streams.

To view the technical report prepared for the biological resources section of the Countywide Plan Update, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The report is titled *Biological and Wetland Protection Technical Background Report*, April, 2002, updated January 2006.

Water Resources

This section focuses on the environmental aspects of watersheds, hydrology, flooding, septic alternative waste options, and water conservation. It addresses State requirements for the Safety Element.

Watershed-based planning has been used for years in Marin County for land use planning. The *Draft 2005 CWP Update* recognizes Marin watersheds as ridge-bounded ecosystems that drain into the adjacent bays or the Pacific Ocean and as systems that carry water, sediments, and nutrients downstream. Water flows within these watersheds infiltrate the ground to recharge aquifers and springs.

Continued watershed restoration and enhancement is proposed in the *Draft 2005 CWP Update*. Marin County is currently collecting environmental data on the various watersheds in the county, developing watershed management guiding principles, and preparing its first *Watershed Management Plan*. [7] One of the intended purposes of the *Watershed Management Plan* is to support the policies and programs developed during the update of the CWP. Policies in the *Draft 2005 CWP Update* encourage conducting additional watershed assessments, baseline assessments, and monitoring and trends monitoring.

The State of California has listed several water bodies (both streams and bays) in Marin County as impaired due to the presence of pollutants, such as pesticides, pathogens, metals, sediment, and nutrients. [8] These pollutant levels are caused primarily by runoff from urban, agricultural, and former mining uses. To address these impaired water bodies, additional standards are to be developed and implemented with the Regional Water Quality Control Boards to achieve clean water and to develop standards known as Total Maximum Daily Loads. To assure that water quality standards are met, the *Draft 2005 CWP Update* proposes to:

- Monitor septic systems, along with a repair and maintenance program for those systems;

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[7] *Marin County Watershed Management Plan Administrative Draft*, Marin County Community Development Agency, Planning Division, April 2004.

[8] State Water Resources Control Board Resolution No. 2003 – 009 Approval of the 2002 Federal Clean Water Act Section 303(d) list of Water Quality Limited Segments. See **Exhibit 4.5-1** in ***Section 4.5 Hydrology, Water Quality, and Flood Hazards*** for a list of impaired water bodies in Marin County.

- Reduce toxic runoff as well as pathogen and nutrient levels;
- Minimize erosion and sedimentation;
- Research alternative waste options;
- Continued education about toxicity issues;

To view the technical report prepared for the water resources section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The report is titled *Hydrology and Water Quality Technical Background Report*, August, 2000, updated November 2005. To view the administrative draft *Watershed Management Plan* see the County's website at www.future-marin.org. The report is titled *Marin County Watershed Management Plan Administrative Draft*, April 2004.

Environmental Hazards

This section addresses State requirements for the Safety Element. Marin County has several natural hazards including: flooding, sudden oak death, landslides, earthquakes, and fire.

Marin County has three major geological faults: the San Andres Fault runs through West Marin in the Point Reyes Peninsula, the Burdell Mountain Fault runs through East Marin and the Hayward fault is located within the boundaries of Marin County, but it is in San Pablo Bay. There is a 70 percent probability of at least one magnitude 6.7 or greater earthquake occurring before 2030 within the San Francisco Bay Region. This earthquake is likely to occur on one of the seven major fault systems in the bay area and includes the Hayward-Rodgers Creek, San Andreas, and Calaveras fault systems that have the highest probabilities of generating an earthquake with a magnitude greater than 6.7 before 2030. The San Andreas and the Hayward-Rodgers Creek fault systems could have the greatest impacts to Marin County because of their proximity to population centers and the fact that they have the highest probability of rupture in the San Francisco Bay Region.

In addition, the City-Centered Corridor has areas of very high and high potential of liquefaction. Based on liquefaction failures that occurred during past earthquakes, there is an expectation that 80 percent of future liquefaction failures will take place in areas of high or very high susceptibilities.

Local seismic sources may create tsunamis between Cape Mendocino to San Francisco and include the offshore zone of the San Andreas fault and the Point Reyes fault located offshore of the southwest tip of Marin County. All or parts of the mainland states are located near active tsunami zones, but strong earthquakes, accompanied by tsunamis are rare events in most low-lying coastal communities.

Local tsunamis generated by these zones would reach the coasts extremely quickly (i.e., within five to 30 minutes), depending on the distance to the coast. Currently, tsunami inundation maps do not include the Marin County coast; however, a tsunami inundation map has been completed for the San Francisco-San Mateo County area. Seismic networks have been installed which reduced the time required to locate and determine magnitude of an earthquake from eight minutes to two minutes. Tsunami detection buoys have been deployed providing faster and more accurate tsunami data.

Although coastal communities in Marin County are relatively small, the largely recreational use of the coastline by short-term and seasonal visitors presents a special problem if a destructive tsunami occurred at a seasonal peak population time.

By prohibiting structures in active fault traces and limiting building sites in the Alquist-Priolo Earthquake Fault zones,[9] the *Draft 2005 CWP Update* will comply with the Alquist-Priolo Earthquake Fault Zoning Act and Seismic Hazards Mapping Act with an overlay of the San Andreas Fault in the known active near-source zone delineated by the California Department of Conservation, Division of Mines and Geology.[10] Other policy proposals to avoid earthquake hazards include:

- Continue to require geotechnical reports for subdivision, master plan, or development approvals in areas of active earthquake faults. Certain types of buildings with human occupancy would not be allowed in active fault zones;
- Fifty-foot setbacks from the active trace for new development and seismic retrofitting for existing structures within the setback;
- Upgrade of un-reinforced masonry buildings;
- Prohibit development when slope instability and certain soil conditions create construction and personal safety hazards; and
- Improve infrastructure identified in community master drainage plans.[11]

Areas with a high potential for landslides are mostly in the lesser-populated Inland Rural Corridor and are usually triggered by earthquake, or periods of heavy rainfall. Much of the *1994 CWP* policies with respect to landslides are carried over to the *Draft 2005 CWP Update*, which also places a heavier emphasis on limiting uses in areas with high potential for slope instability and strictly limiting the extent of any proposed fill, excavation, or grading in geologic hazard areas. Proposals to avoid landslide hazards include:

- Monitor environmental change from sea level rise in areas with flooding or inundation potential;
- Limit development to the low end of the density range, which further restricts developments in flood prone areas;
- Use of the *Start at the Source: Design Guidance Manual for Stormwater Quality Protection*,[12] which includes a variety of recommendations to reduce impervious surfaces and other recommendations to improve water quality;

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9 The State Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) requires the delineation of zones along active faults in California. In Marin County the San Andreas Fault is the only land fault considered sufficiently active to be zoned under this act.

10 Maps depicting the general areas of the Alquist-Priolo Geologic Hazard Zones Act are available at the Marin County Community Development Agency.

11 In some cases, the master plan level of flood protection does not equal that of the 100-year flood. In some areas, the available options for flood control improvements are limited in their scale and potential by existing right-of-way and environmental constraints (e.g., Corte Madera Creek and Novato Creek.)

12 *Start at the Source: Design Guidance Manual for Stormwater Quality Protection*, EOA, Inc., prepared for the Bay Area Stormwater Management Agencies Association, January 1999.

- Require hydrologic studies if development could increase sedimentation of a watercourse or alter natural drainage patterns, to ensure public health and safety and preserve the hydraulic and geomorphic integrity of the stream system and associated habitat;
- Promote flood ponding for natural flood control in agriculture, open space, and recreation areas;
- Update and allow public access to dam inundation maps;
- Plan and construct emergency operations buildings and other vital utilities and communications systems to allow the County to remain operational during and after a disaster;
- Discourage construction on hillsides, in active fault areas and on known landslides areas;
- Increase the distribution of information to the public on known hazards and to continue to rely on site-specific scientific investigation and recommendations regarding hazards; and
- Neighborhood-level planning and emergency-response.

The absence of large fires in recent history has resulted in areas of trees and brush with high concentrations of dead material, creating a high fuel load. Compounding the problem is Sudden Oak Death, [13] which has created additional tinder. These conditions amplify the potential for wildland fire along the urban interface. Policy proposals to avoid fire hazards include:

- Maintain fuel breaks and emergency access routes in high fire hazard areas;
- Restrict further subdivision in areas without adequate water;
- Require Class A roofing and other fire resistant building materials for new or replacement roofs and buildings;
- Require fire sprinkler systems in structures located in high and extreme fire hazard areas;
- Support the Marin County Fire Plan to reduce the losses from wildfire;
- Prepare and adopt urban-wildlands interface regulations; and
- Review development standards, such was hillside roadway slope and widths, to ensure adequate fire protection.

To view the two technical reports prepared for the environmental hazards section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The reports are titled the *Flooding Technical Background Report* and the *Geology, Mineral Resources and Hazardous Materials Technical Background Report*, March, 2002, updated November 2005.

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[13] Since 1995, large numbers of tan oaks, coast live oaks and black oaks have been dying in California's coastal counties, including Marin County. The epidemic is referred to as Sudden Oak Death. Sudden Oak Death is further discussed in the Biological Resources section of the Natural Systems & Agriculture Element of the *Draft 2005 CWP Update*.

Atmosphere and Climate

Based on the Bay Area Air Quality Management District's monitoring of air pollutants, air quality in Marin is improving. This is due to favorable climate conditions and the lack of large air pollutant sources. Marin County, however, is classified as nonattainment for one pollutant, Particulate Matter (PM_{10}), which results from grading and construction, industrial processes, and motor vehicles. In addition, the entire Bay Area is classified as nonattainment for the finer particulate matter, $PM_{2.5}$. Localized air quality emissions from human activities such as construction activities and traffic contribute to air quality problems.

The Environmental Quality Element of the *1994 CWP* is incorporated into the *Draft 2005 CWP Update* and includes policies addressing air quality, particularly coordinating planning and evaluation efforts with other local, regional, and State agencies, seeking to attain State and federal Ambient Air Quality Standards and requiring air quality impact mitigation. The 1994 policies regarding buffering emission sources and sensitive land uses have been expanded in the *Draft 2005 CWP Update*. New atmosphere and climate policy proposals include:

- Take part in regional programs such as the Cities for Climate Protection and Spare the Air Programs;
- Conduct a public education campaign regarding the purpose and requirements of using best management practices to improve air quality;
- Limit residential wood burning;
- Support employer-based trip reduction programs and the use of new technologies for zero or partial zero emission vehicles;
- Improve arterial roadways to allow more efficient bus operations, including signal preemption; and
- Proposed participation in studying of and development of strategies to address the effect of climate change.

The *Greenhouse Gas Emissions Analysis Report*, June 2003 analyzes the sources of Greenhouse Gas emissions in unincorporated Marin County. Various recommendations are made regarding the reduction of greenhouse gas emissions from transportation, waste disposal, agricultural, and energy. Policy **AIR-5.1** would direct the County to participate in research that examines the effects of climate change on human and natural systems in Marin. Policy **AIR-5.2** would prepare appropriate response strategies that aid systems in adapting to climate change based on sound scientific understanding of the potential impacts.

To view the two technical reports prepared for the atmosphere and climate section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The reports are titled *Air Quality Technical Background Report*, April, 2002, updated December 2005 and *Greenhouse Gas Emissions Analysis Report*, June 2003.

Open Space

This section addresses State requirements for the Open Space Element. Although the Marin County Open Space District is a separate legal entity from the County, the CWP is the tool used to set

guidance for open space in Marin County. The *Draft 2005 CWP Update* recognizes the number of agencies and non-governmental organizations involved in land management and conservation in Marin. Multi-jurisdictional coordination and management will be necessary during the next decade as ownership is varied between public and private agencies. The emphasis in the *Draft 2005 CWP Update* is stewardship and management of open space lands. The *Draft 2005 CWP Update* proposals in this section include:

- Reduce the amount of pesticides and herbicides used in open space management;
- Lands for acquisition and restoration would be focused on targeting gaps on sensitive resource preservation, scenic resources, ridge and upland greenbelt or key recreation lands;
- Utilize a range of tools to fund open space acquisition and stewardship;
- Develop appropriate levels of protection and recreational uses for coastal lands; and
- Document resource monitoring to identify trends in resource quality to guide long-term resource management.

Trails

It is Marin County's goal to both preserve existing trail routes designated for public use on the Trail Plan of the Marin Countywide Plan (see **Map 2-18** [Coastal, Ridge and Bay Trails] and **Maps 2-19a** through **2-19j** [Marin Countywide Trails Plan] in the *Draft 2005 CWP Update*), and to expand the public trail network, for all user groups, where appropriate. It is also the County's goal to design, build, manage, and maintain trials in a manner compatible with natural resource protection. To achieve these goals, the policies proposed in the *Draft 2005 CWP Update* include:

- Maintain the existing countywide trail system and protect the public's right to access it;
- Acquire additional trails to complete the proposed countywide trail system, providing access to or between public lands and enhancing public trail use opportunities for all user groups;
- Locate and design trails taking into account the protection of sensitive habitat and natural resources and avoiding those areas;
- Design and manage trails to avoid trespass and trail construction impacts on adjacent private land; and
- Design trails with multiple access points to maximize accessibility and minimize concentrating access.

To view the technical report prepared for the trails section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The report is titled the *Trails Technical Background Report*, January, 2004.

Agriculture and Food

Because the cost of agricultural land has increased far beyond what agricultural revenues can support, agricultural properties experience a substantial amount of pressure to convert to single family homesteads. This trend has been exacerbated in recent years by the purchase of agricultural land for residential estates by non-agricultural buyers. Those remaining farming families are diversifying their

farming practices and trying to balance their economic interests with the growing demand for on-site affordable farm worker housing and increased pressure for environmental preservation. Increased visitors to West Marin have added pressure to the commercialization of agriculture, as well as traffic and noise in rural areas. The *Draft 2005 CWP Update* programs propose to:

- Discourage subdivision of agricultural lands and limit non-agricultural development in Agricultural Production Zones;
- Support the use of water catchments and the storage of winter sheet flow to address water supply needs for agriculture;
- Develop additional conservation easements and land conservation contracts;
- Revise agricultural zoning districts to assess density in the A-20 District and the appropriateness of Agricultural Residential Planned District (ARP) zoning for agricultural production;
- Modify the existing agricultural zoning district to create a more uniform approach to preservation of agricultural lands;
- Uphold the Right-to-Farm ordinance to protect agriculture and mariculture (i.e., the cultivation of marine organisms for food and other products) operations from nuisance complaints by non-farming property owners;
- Protect water quality to keep mariculture viable through cooperation with other stakeholders, outreach, and education;
- Avoid invasive mariculture species;
- Develop standards and criteria to identify compatible ancillary and subordinate land uses that enhance economic viability of agricultural operations;
- Standardize conservation easements to match those employed by that of the Marin Agricultural Land Trust to meet current industry standards;
- Provide assistance through permit streamlining by County staff, including allowing agricultural signage and training County staff on the operational aspects of agricultural production;
- Support economic viability by small-scale diversification and the distribution and consumption of local or regional food; and
- Support efforts in regard to local food security and develop more diverse and profitable markets, including a permanent public market for locally grown foods.

The *Draft 2005 CWP Update* proposes to limit the size of residential buildings in agricultural areas based on certain criteria. Policy **AG-1.a** proposes four options regarding the criteria to establish maximum housing unit sizes.

Housing Unit Size Option 1 would limit the total floor area of all dwelling units and non-agricultural accessory structures on a parcel to an aggregate of 6,000 square feet and would limit total floor area for any single dwelling unit on a parcel to 3,000 square feet. Such limits would intend to ensure that residential development would not diminish current or future agricultural use of the property or

convert it to primarily residential use. Some structures such as agricultural worker housing, garage space, agricultural accessory structures, and home-office space used in connection with the agricultural operation on the property would be excluded from these limits.

Larger residences (i.e., those up to 6,000 square feet) could be allowed under Option 1 if evidence of a bona fide commercial agricultural operation on the property were submitted to the County to show that the long-term agricultural use of the property would be preserved. In making its determination, the County could require preparation of an Agricultural Production and Stewardship Plan as provided for in Program **AG-1.b** that would be used to demonstrate that existing agricultural infrastructure is adequate (or would be enhanced) to support agricultural production appropriate to the site and that sound land stewardship (e.g., organic certification or habitat restoration) practices would be continued or implemented. Agricultural Production and Stewardship Plans would need to be prepared by a qualified professional to provide evidence that at least 90 percent of the useable land would remain in agricultural production as well as identify stewardship activities to be undertaken to protect agricultural and natural resources. In addition, Option 1 would provide for the dedication or sale of perpetual agricultural conservation easements, which could be voluntarily offered to ensure continued agricultural production.

Under ***Housing Unit Size Option 2***, all dwelling units and accessory structures not used as the primary place of residence by the property owner(s), family members, and agricultural employees would be limited to 2,500 square feet, but the primary place of residence of the property owner(s), family members or lessees who are directly engaged in the production of agricultural commodities for commercial purposes on the property, building and structures accessory to such residences, and agricultural worker housing would be excluded from floor area limits.

Similar to Option 1, larger residences (up to 6,000 square feet) could be allowed under Option 2 if evidence of a bona fide commercial agricultural operation on the property were submitted to the County to show that long-term agricultural use of the property would be preserved. In making its determination, the County could require preparation of an Agricultural Production and Stewardship Plan to demonstrate that the long-term agricultural use of the property would be preserved.

Under ***Housing Unit Size Option 3***, the County would amend the Development Code to establish limits for residential development on contiguous parcels subject to a Williamson Act or Farmland Security Contract. This option could allow up to three existing or new dwelling units (not including agricultural worker housing) per parcel(s) provided they complied with the following standards: (1) the property would be used for the production of an agricultural commodity for commercial purposes; (2) the three dwelling units would be either the primary place of residence for the owner(s) or family members of the parcel(s), the residence of a ranch manager for the parcel(s), or the residence of a person(s) employed in commercial agriculture; (3) the dwelling units would comply with the density requirements of the Countywide Plan and the zoning district; (4) the total floor area for up to three dwelling units on a parcel(s) would be limited to 6,000 square feet; (5) the total floor area for any single dwelling unit on a parcel would be limited to 4,000 square feet; and (6) the dwelling units would comply with the County standards for clustering of non-agricultural buildings on agriculturally zoned lands. Additionally, existing dwelling units not previously authorized by the County could be legalized within a prescribed time period by an amnesty program establishing minimum requirements for public health and safety.

Under Housing Unit Size Option 3, new dwelling units could be exempt from Design Review if the total building area would not exceed 3,500 square feet and would comply with the development standards for the governing zoning district. The Design Review exemption would be contingent upon the property owner(s) demonstrating that the project complies with the County's Single Family

Residential Design Guidelines, and policies and standards for Stream Conservation Areas, wetlands, visually prominent ridgelines, and protection of special-status species. An Agricultural Production and Stewardship Plan could also be required to demonstrate that the property is being used for commercial agricultural production and to justify the development of additional worker housing.

Under ***Housing Unit Size Option 4***, the County would convene a working group to prepare criteria and / or standards for establishing limitations on the size of residential development on agriculturally zoned lands. Such limitations would be considered for adoption through a future update of the Marin County Development Code.

To view the technical report prepared for the agriculture and food section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The report is titled the *Agricultural Economic Analysis*, November, 2003.

THE BUILT ENVIRONMENT ELEMENT

The Built Environment Element of the *Draft 2005 CWP Update* principally addresses the County's unincorporated villages and towns and includes the following components:

Community Development

This section addresses State requirements for the Land Use Element. The primary technical and policy issue that forms the basis of the update is the selection of the new population, housing, and job projections for the future. The *Draft 2005 CWP Update* presents a projection of development which could occur if land vacant in 2005 were fully developed according to the zoning designations of the cities and towns in Marin County and the *Draft 2005 CWP Update*. For purposes of analysis in this EIR and for consistency with Association of Bay Area Governments (ABAG) projections, it is assumed that this buildout would occur in 2030.

The maximum growth identified in the *Draft 2005 CWP Update* may not occur by the horizon year of 2030. The *1994 CWP* was based on a projected year 2005 population of 259,844 with 68,950 people planned for the unincorporated area. The actual countywide population growth between 1990 and 2000 averaged less than one percent per year. Based on the US Census, Marin's total population grew from 230,096 persons in 1990 to 247,289 persons in 2000. The unincorporated population increased from 64,099 persons in 1990 to 68,735 persons in 2000.

The *Draft 2005 CWP Update* is based on a projected year 2030 population of 283,100 with 76,400 persons projected to reside the unincorporated area. Given the low historical growth rate, the population in 2030 is not expected to exceed this maximum. **Exhibit 3.0-4** shows historic and projected population for Marin County and the unincorporated portion of Marin County.

Exhibit 3.0-4
Marin County Population Figures Used in Draft 2005 CWP Update

Year	*Marin County*	*Unincorporated Marin*	*Unincorporated Population Percent of Total*
1990	230,096	64,099	28
2000	247,289	68,735	28
2006 [a]	253,341	69,239	27
2030 [b] Projections	283,100	76,400	27

a State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark. Sacramento, California, May 2006
b ABAG Projections 2003.

Source: U.S. Census Bureau unless otherwise noted.

Exhibit 3.0-5 shows the historic and theoretical buildout for housing units and square feet of nonresidential floor area for both the cities and towns plus the unincorporated area of Marin County. The buildout figures are a projection of development which could occur if land vacant in 2005 were fully developed according to the zoning designations of the cities and towns in Marin County and the *1994 CWP*.

Exhibit 3.0-5
Housing Units and Nonresidential Buildout

Land Use / Area	*1980*	*1990*	*2000*	*2005*	*Theoretical Buildout*
Housing Units					
Cities	67,420	73,914	77,585	80,671	89,133
Unincorporated Area	25,227	25,843	27,405	27,323	32,714
Countywide Total	***92,647***	***99,757***	***104,990***	***107,994***	***121,847***
Nonresidential Floor Area					
Cities	N/A	26,938,825	30,853,636	36,005,945	45,431,753
Unincorporated Area	N/A	2,631,931	3,111,873	3,204,549	5,272,188
Countywide Total	***N/A***	***29,570,756***	***33,965,509***	***39,210,494***	***50,702,941***

a In square feet
NA – Census data not available.

Sources; U.S. Census, Association of Bay Area Governments and the Marin County Community Development Agency, October 18, 2006.

During 2006, County staff worked with each of the cities and towns in Marin County to verify and update existing and buildout data for both housing units and nonresidential floor area. Buildout is based on calculating allowable development under the applicable general plans by parcel for each jurisdiction. As such, these figures represent "theoretical buildout" or the highest possible development potential under the general plans. In some cases, theoretical buildout may be greater than the development that would realistically occur due to a number of factors, including:

- Many non-residential sites are already developed with viable economic uses at less intensity than allowed by the applicable General Plan;
- On some parcels, environmental constraints would result in a lower intensity than allowed;
- Other policies or regulations (e.g., parking, height limits, setbacks) may lower the amount of development allowed on a particular parcel; and
- A land owner may seek less development than is allowed under the General Plan.

For example, the County's estimate of full theoretical buildout for the City of Novato, derived from determining the Floor Area Ratio (FAR) for each nonresidential parcel in the City, is approximately 7.7 million square feet over existing conditions. However, the City of Novato recently projected its realistic buildout over existing conditions to be approximately 1.5 million square feet based on the potential development of the remaining larger undeveloped commercial parcels and in-fill trends on smaller parcels. [14]

The *Draft 2005 CWP Update* would not exceed the maximum development potential set forth in the *1994 CWP*. The *Draft 2005 CWP Update* would not reduce the total number of potential housing units identified in the *1994 CWP* because of significant concerns about of the provision of affordable housing in Marin. In order to reduce the potential impacts of development, Policy **CD-1.3** would establish potential residential density and commercial Floor Area Ratio (FAR) at the low end of the applicable range on sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems. For residential properties, the development potential would be transferred to suitable locations primarily within the City-Centered Corridor.

Housing Overlay Designation

Policy **CD-2.3** would establish a Housing Overlay Designation to encourage construction of housing units to meet the need for workforce housing, especially for very low and low income households, and for special needs housing. These housing units would be designated in the City-Centered Corridor on sites close to transit, employment, and / or public services. **Exhibit 3.0-6** shows the proposed locations of the Housing Overlay Designation.

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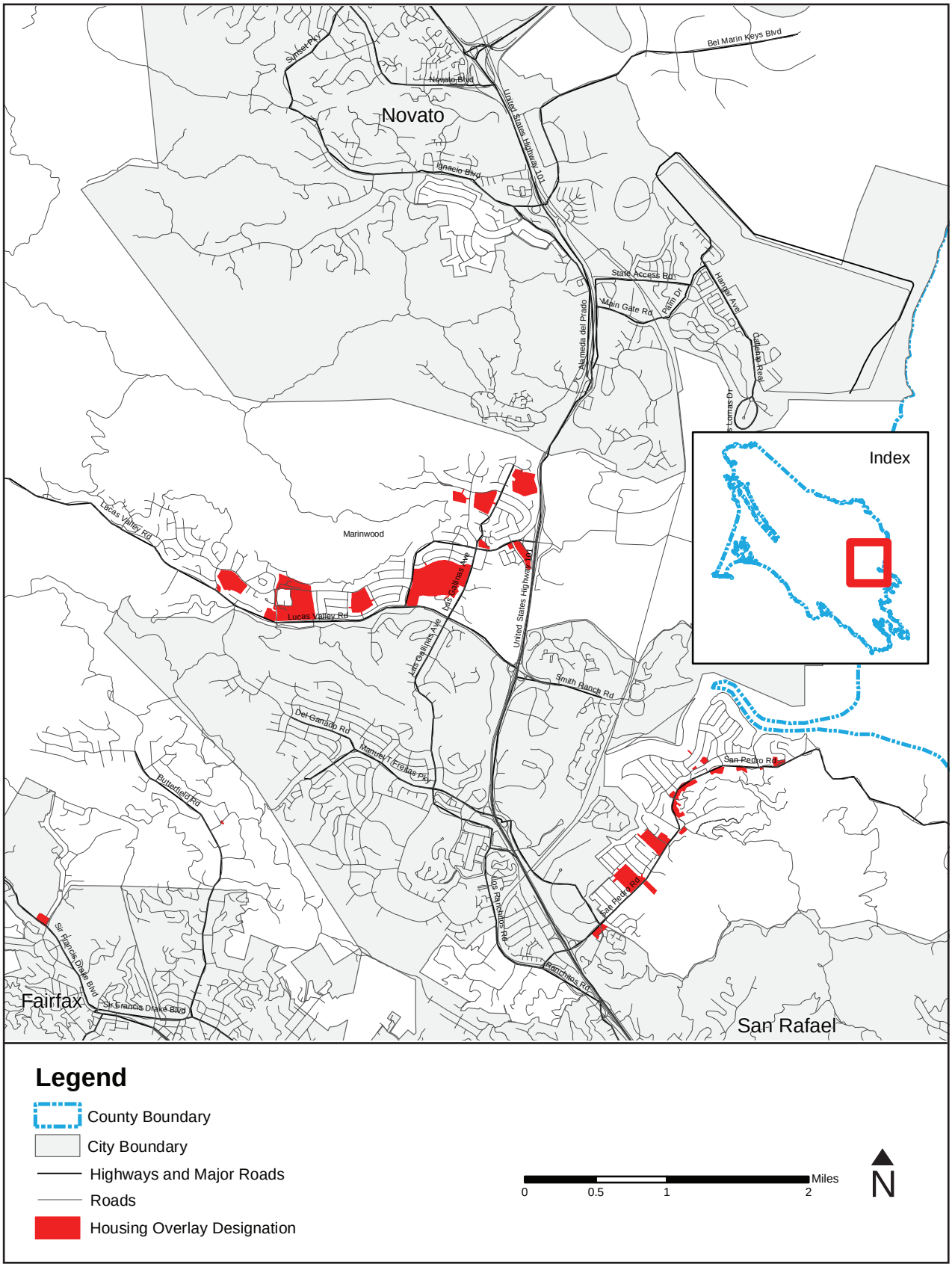
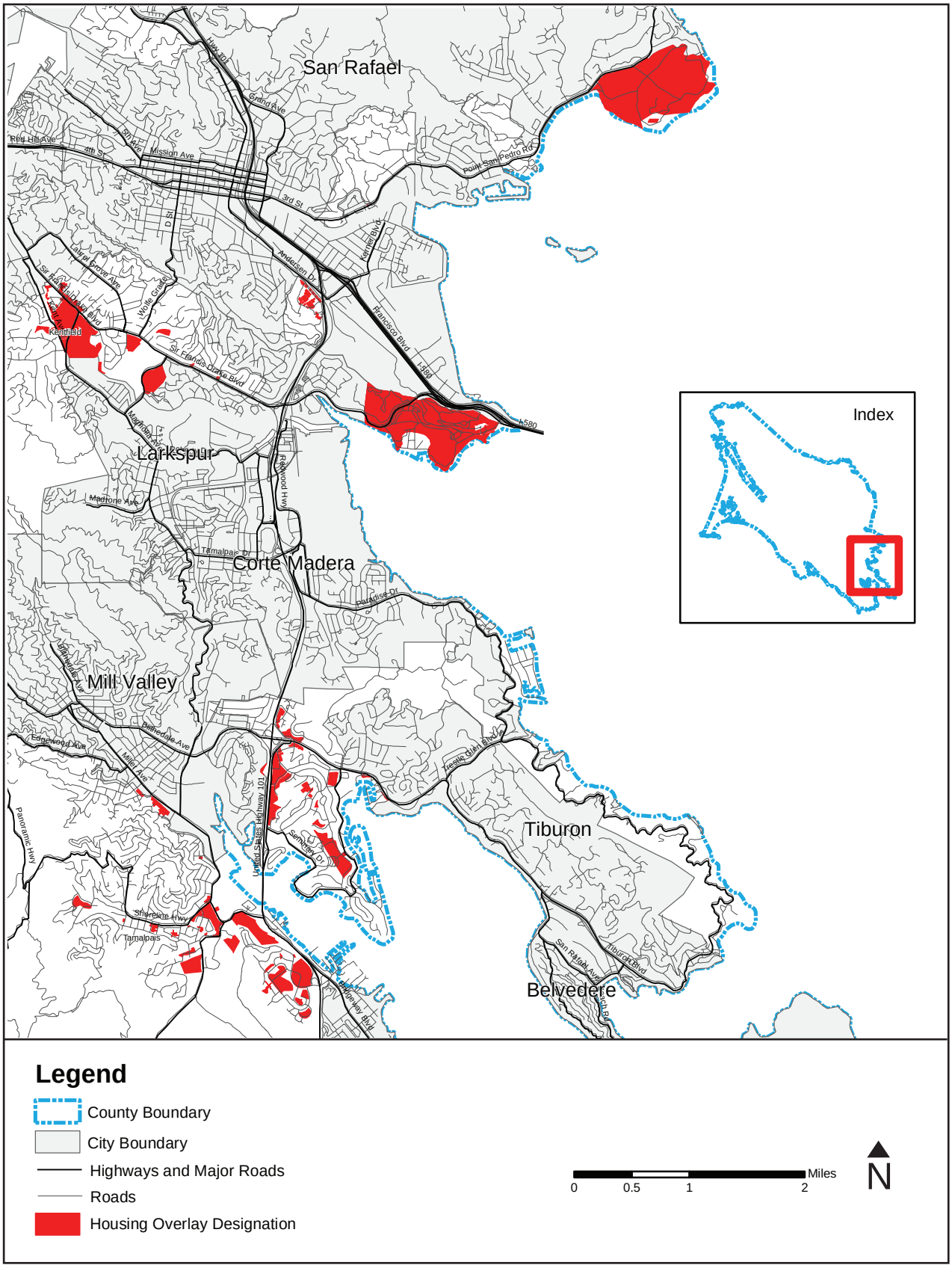
[14] This estimate does not include full theoretical buildout if all nonresidentially designated parcels developed and/or redeveloped at the full allowable FAR.

Exhibit 3.0-6(a)
Location of Housing Overlay Designation



Source: County of Marin Community Development Agency, 2006.

Exhibit 3.0-6(b)
Location of Housing Overlay Designation



Source: County of Marin Community Development Agency, 2006.

Up to 1,694 housing units from the Housing Bank (discussed below) may be approved within the Housing Overlay Designation in addition to the development permissible under the underlying approval process. The criteria used in establishing the Housing Overlay Designation includes only locations within the unincorporated portion of the City-Centered Corridor, however, the County would engage in discussions with cities and towns in Marin County regarding the possibility of locating residential units allocated in the Housing Overlay designation within those cities and towns, subject to the criteria the County created.

Parcels within the Housing Overlay Designation must meet all of the following criteria:

- Located within the unincorporated portion of the City-Centered Corridor;
- Designated by the CWP as Planned Designation (PD) Transit Village Area or Reclamation Area, Multifamily (MF), General Commercial (GC), Neighborhood Commercial (NC), Office Commercial (OC), Recreation Commercial (RC), or Public Facility (PF);
- Located within one-half mile of a transit node or route with daily, regularly scheduled service;
- Located within one mile of a medical facility, library, post office, or commercial center; and
- Site does not exceed an average 20 percent slope and is not within the Ridge or Upland Greenbelt.

Portions of parcels within a Wetlands Conservation Area or Streamside Conservation Area would not be eligible for Housing Overlay units.

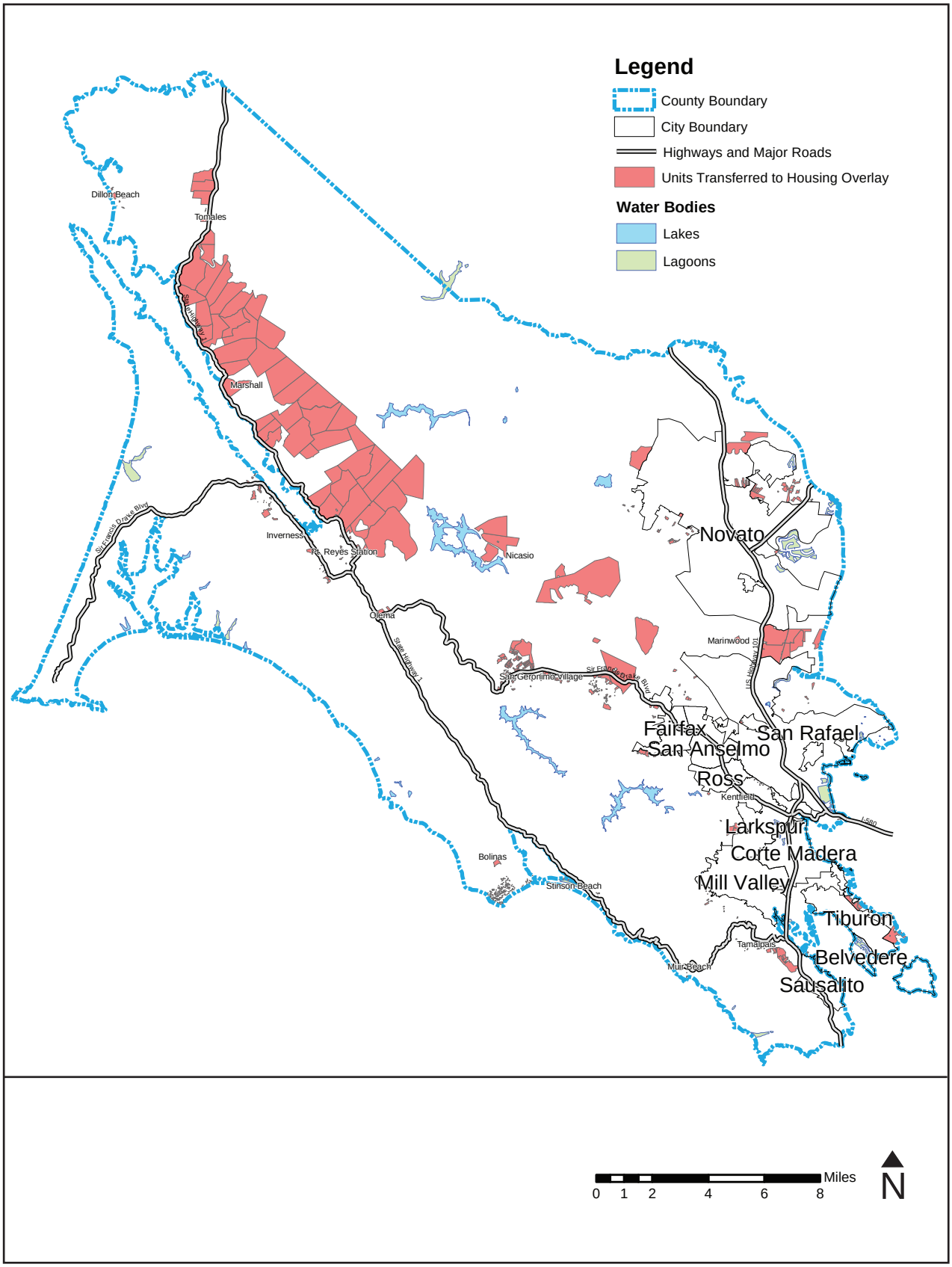
Housing Bank

Policy **CD-2.2** would establish a "Housing Bank", which would serve as a repository for the units distributed through the Housing Overlay program. The Housing Bank would include 1,694 units, which could be allocated to sites within the Housing Overlay Designation. As qualifying units are constructed (see criteria above), the number of housing units in the Housing Bank would be drawn down. The Housing Bank would be eliminated when all 1,694 housing units have been constructed. Upon adoption of the *Draft 2005 CWP Update*, any site with a Housing Overlay Designation would be immediately eligible for the additional housing units.

The 1,694 housing units in the Housing Bank would result from Policy **CD-1.3** and Program **CD-1.c**, which would establish potential residential density and commercial Floor Area Ratio (FAR) at the low end of the applicable range on sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems as discussed above. **Exhibit 3.0-7** shows the location of where such units would be transferred from.

As further discussed below, there are three *Draft 2005 CWP Update* land use scenarios that assume varying degrees of development on the St. Vincent's and Silveira Ranch properties (St. Vincent's / Silveira properties) and the San Rafael Rock Quarry. For each of the scenarios, net changes in the number of housing units on the St. Vincent's / Silveira properties affect the total number of units to be allocated through the Housing Overlay program.

Exhibit 3.0-7
Units Transferred to Housing Bank



Source: County of Marin Community Development Agency, 2006.

Under the *1994 CWP*, up to 501 housing units could be developed on the St. Vincent's / Silveira properties. As shown in **Exhibit 3.0-8**, between 0 and 280 housing units would be transferred to the Housing Bank from the St. Vincent's / Silveira properties. The resulting Housing Bank totals range from a high of 1,974 units under Option 1 to 1,694 units under Option 3. Of these figures, 466 to 816 housing units have been assumed for specific sites for modeling purposes. While there may be more or less housing units at these sites than the number assumed, policy language in the *Draft 2005 CWP Update* encourages and / or requires residential units to be provided at commercial sites upon development or redevelopment. The housing units assigned to these sites are not included in the unit assignments by community through the "Residual Assigned to Housing Overlay" allocation and are absolute regardless of which scenario is considered. The specific site assumptions are existing shopping centers or other retail areas and all are part of the Housing Overlay. **Exhibit 3.0-8** illustrates the allocation of housing units in the Housing Overlay.

Exhibit 3.0-8
Draft 2005 CWP Update Allocation of Housing Units in Housing Overlay

Units Transferred From	***Option 1***	***Option 2***	***Option 3***
Sites Countywide	1,694	1,694	1,694
St. Vincent's / Silveira	280	151	0
Total Units to Housing Bank	1,974	1,845	1,694
Less Allocation to Specific Sites			
San Rafael Rock Quarry	0	350	350
Marin City	186	186	186
Strawberry	169	169	169
Fairfax/Oak Manor	21	21	21
Marinwood	90	90	90
Subtotal	*466*	*816*	*816*
Residual Assigned to Housing Bank	1,508	1,029	878
Total Housing Units [a]	***32,714***	***32,714***	***32,714***

a In unincorporated Marin County.

Sources: *Community Development Element Technical Report #1 Land Use Modeling and Buildout*, July 7, 2005 and *Marin Countywide Plan Update Land Use Alternatives by Special Study Area*, September 2, 2005.

For purposes of analysis the residual housing units have been assigned to general areas within the Housing Overlay Designation. **Exhibit 3.0-9** shows the assignment of these units.

Exhibit 3.0-9
Assignment of Residual Housing Units

General Area	Draft 2005 CWP Update		
	Scenario 1	Scenario 2	Scenario 3
Marin City	256	175	149
Tam Valley	305	208	177
Strawberry	225	153	131
Kentfield	270	184	157
Santa Venetia	182	125	106
San Rafael Rock Quarry	0	0	0
Fairfax/Oak Manor	0	0	0
Marinwood	270	184	157
Residual Assigned to Housing Bank	1,508	1,029	878

Source: Nichols • Berman and Marin Community Development Agency, 2006.

The affordable housing component of the Housing Overlay Designation is proposed to be a minimum of 25 housing units per acre. The overlay zone would likely result in the introduction of mixed-use development, including affordable housing at Marin City, Strawberry, and Marinwood commercial centers. A Highway 101 Corridor Specific Plan is proposed which would require the County to join the cities and towns of Marin to identify and plan for sites appropriate for higher-intensity, transit-oriented, development and redevelopment, including mixed-use projects.

In order to discourage long commutes, lessen traffic congestion, and improve personal health through increased walking and bicycling the County would strive to locate future housing development close to jobs, transit routes, schools, shopping areas, and recreation. Zoning changes are proposed to add a mix of housing types and densities to appropriate locations. Development would continue to be guided away from areas with high natural resource value.

Land Use Categories

The *Draft 2005 CWP Update* continues the use of the land use categories and intensity standards from the *1994 CWP*. Policies **CD-8.1**, **CD-8.2**, and **CD-8.3** would establish the land use map designations, land use categories, and land use intensity standards. Some revisions to the existing land use categories are proposed:

- The Retail Commercial (RT) land use category would be combined with the General Commercial (GC) land use category;

- The Residential Commercial (RS) land use category would be renamed the Neighborhood Commercial (NC) land use category;

- A new land use category, Planned Designation, is proposed for potential major reuse sites (Policy **CD-8.8**). The purpose of this new designation is to create balanced, mixed-use communities.

Three Planned Designation land use categories are proposed: Planned Designation – Agricultural and Environmental Resource Area, Planned Designation – Transit Village Area, and Planned Designation – Reclamation Area; and

- In the Commercial / Mixed use land use categories, the General Commercial / Mixed Use category, the Office Commercial / Mixed Use category, the Neighborhood Commercial / Mixed Use category and the Recreational Commercial category would permit residential development up to 30 dwelling units per acre in addition to the applicable floor are ratio if: 1) the housing is either workforce housing, especially for very low and low income household or special needs housing; and 2) projected peak-hour traffic impacts of the proposed mixed-used development are not greater than that for maximum commercial development permissible on the site under the relevant land use category.

The *Draft 2005 CWP Update* land use categories are as follows:

- ***Agriculture and Conservation Land Use Categories***

  Agriculture and Conservation 1
  Agriculture and Conservation 2
  Agriculture and Conservation 3

- ***Agricultural Land Use Categories***

  Agriculture 1
  Agriculture 2
  Agriculture 3

- ***Residential Land Use Categories***

  Very Low Density Residential
  Rural Residential
  Low Density Residential
  Low to Medium Density Residential
  Medium to High Density Residential

- ***Commercial / Mixed Use Land Use Categories***

  General Commercial / Mixed Use
  Office Commercial / Mixed Use
  Neighborhood Commercial / Mixed Use
  Recreational Commercial
  Industrial

- ***Planned Designation Land Use Categories***

  Planned Designation – Agricultural and Environmental Resource Area
  Planned Designation – Transit Village Area
  Planned Designation – Reclamation Area

- ***Public Facility, Quasi-Public Facility, and Open Space Land Use Categories***

  Public Facility
  Quasi-Public Facility
  Open Space

The Planned Designation-Agricultural and Environmental Resource Area is intended for the reuse and development of the St. Vincent's/Silveira area. The Planned Designation-Transit Village Area was intended for reuse of the San Quentin prison site.[15] The Planned Designation-Reclamation Area is intended for the ultimate reclamation of the San Rafael Rock Quarry and McNear's Brickyard site at the time the quarry operations cease.

The Development Code would be reviewed to determine whether zoning districts and regulations clearly reflect the intention of the land use map designations. Various land use map changes are proposed due to recent public property purchases and to better reflect owner interests. Mixed-use would be added to the commercial category. The Agriculture and Conservation category would be clarified as lands that may have physical constraints, such as heavily wooded hillsides and ridgelines that limit agricultural production. Future evaluation of residential land use designations and associated zoning designations is proposed to make sure multifamily designations are located in the most appropriate location given hillside safety constraints. Minimum density requirements on multifamily-zoned sites would also be required. The minimum density requirements would discourage single-family development in multi-family zones.

Design

Maintaining the pedestrian-scale heritage of Marin County's neighborhoods and downtowns that adjoin commercial, cultural, and civic activity centers is a key objective of the *Draft 2005 CWP Update*. Another key objective is to ensure that new development provides for a harmonious transition between cities and the unincorporated areas. A variety of design strategies are recommended to ensure the preservation of community character while promoting pedestrian-friendly design and connecting bicycle and walking paths:

- Require harmonious transitions between cities and towns and rural areas;
- Designate mixed-use centers as areas intended to create attractive environments that accentuate the compact combination of businesses and medium to higher density housing;
- Target vacant and underutilized parcels to promote infill development;
- Promote small-scale green spaces;
- Place parking underground and landscaping surface lots to enhance community character;
- Require roadway and parking areas to be aesthetically appropriate to an area;

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[15] With the deletion of the San Quentin Vision Plan from consideration the Planned Designation – Transit Village Area also will be removed prior to adoption of the Countywide Plan.

- Prepare streetscape design standards;
- Refine parking area standards to encourage permeable design standards, to address screening of parking areas from public roads, and to address other related design issues;
- Add design components to all Community Plans to identify design standards that reflect the unique character of each area and that regulate mass and scale;
- Add rural design standards to the Development Code to ensure design elements are carried out in structures, lighting, landscaping, roadways, parking areas, and other design elements;
- Amend the Development Code to include prototype structures desired in mixed-use areas;
- Prohibit gated developments;
- Identify areas for public green spaces as focal points;
- Map and protect key view corridors and viewpoints;
- Require continued protection of views to ridge and upland greenbelt areas; and
- Minimize visual impacts from public facilities.

Energy and Green Building

Pacific Gas and Electric (PG&E) is the sole distributor of electricity and natural gas in Marin County. Marin is therefore vulnerable to supply disruptions and price increases. Renewable energy sources such as solar, geothermal, wind, and biomass can improve system reliability by diversifying energy sources. Although Marin's population growth has been relatively small (between 1990 and 2006 population increased by approximately 23,000 people), ever increasing home sizes contributes to rising local energy demand. Energy conservation and green building program proposals include:

- Homes 3,500 square feet or larger will be designed using energy efficiency techniques and / or use of renewable energy;
- Develop energy efficiency standards for existing and new residential and commercial buildings;
- Promote green building practices for new residential development, for remodels, and for County facilities;
- Reduce energy waste and peak electricity demand through energy efficiency and conservation;
- Use Geographic Information System (GIS) technology to map local renewable resources, community growth areas, and transmission and distribution systems;
- Assess how to best design and manage existing and future energy sources to promote energy conservation and the use of renewable resources;
- The County, working with PG&E and local and State agencies, will identify and remove regulatory or procedural impediments to producing energy using renewable resources;
- Provide incentives for facilities that use renewable sources for energy production;

- Identify possible sites for renewable energy production;
- Evaluate Community Choice aggregation for feasibility;
- Collaborate among regional public agencies to share resources and achieve economies of scale; and
- Develop protocols for alternative energy storage.

To view the technical report prepared for the energy conservation and green building section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org. The report is titled the *Energy Technical Report*, (undated).

Mineral Resources

The State requires cities and counties to adopt policies that protect designated mineral resource sites from premature development to ensure that necessary mineral and construction commodities are located reasonably close to their markets. For the *Draft 2005 CWP Update*, updates were made from the *1994 CWP* and include:

- Additional refinements to clarify that protection should be given to State-designated Class 2 production sites from encroaching land uses;
- Require use of best available management practices through the use permit process to minimize or avoid impacts from mining operations;
- Plans for reclamation of mined lands and what should be included, such as erosion control, re-vegetation, maintenance of settling ponds, and control of contaminants;
- Amend certain permits for operations generating adverse impacts on the environment and/or surrounding land uses;
- Require impact analysis and mitigations when use permit renewal occurs or a voluntary amendment is proposed to a surface mining and quarrying permit;
- Target specific sites for requests for termination or removal from Mineral Designation status and State listing;
- Modify the Mineral resource overlay zone to include both State designated sites and County-approved mineral resource sites;
- Use of alternative materials and conservation of mined materials to reduce the overall demand; and
- Modify the Mineral Resources map to distinguish between State of California designated mineral resource sites and Marin County permitted sites.

To view the technical background report related to the mineral resources section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The report is titled *Geology, Mineral Resources and Hazardous Materials Technical Background Report*, March, 2002, updated November 2005.

Housing

On June 3, 2003, the Board of Supervisors adopted the General Plan Housing Element; it was reviewed and certified by the State Department of Housing and Community Development on July 24, 2003. No changes to the Housing Element are proposed. The entire Housing Element would be incorporated into the updated CWP upon adoption of the CWP. Since the County's Housing Element has already been adopted by the Board of Supervisors and certified by the State, it is not the subject of the CWP update.

Meeting local housing needs while ensuring that new housing will be compatible with existing character and quality, environmental constraints, and resources are the goals of the Housing section. Policies include:

- Modifying Development Code sections regarding home occupations, employee, and caretaker provisions to allow live / work projects;
- Modifying the Development Code to assure protection and efficient development of multi-family infill housing sites;
- Conducting a survey to identify potential mixed- use sites;
- Allowing single room occupancy units in zoning and design standards;
- Utilizing the Housing Trust Fund ordinance to encourage a variety of revenue sources be used for affordable housing; and
- Establishing countywide programs to assist in housing the homeless by providing emergency shelter, transitional housing, supportive housing, and permanent housing.

Transportation

This section addresses State requirements for the Circulation Element with an emphasis on multi-modal transportation and the inextricable linkage between land use, transportation, and quality of life. The *1994 CWP* recognized that projected growth and increasing reliance on auto travel combined with the high cost of road and transit improvements were problematic. The *Draft 2005 CWP Update* would include policies to address these issues. Proposals include future project site design features such as pedestrian orientation, bicycle access, and the introduction of mixed uses close to transportation. These proposals would reduce the amount of single-occupancy vehicle trips in the City-Centered Corridor.

Marin County currently experiences increased congestion and loss of mobility during peak travel periods. Contributing factors include increases in per capita miles traveled, increases in the number of vehicles owned per household, use of regional routes by city traffic, parents driving their children to school, and increases in weekend travel in rural areas. A number of key roadway segments do not currently meet the Transportation Authority of Marin's Level of Service standard. [16] To address these issues, the recent passage of a half-cent sales tax will generate approximately $331 million over the next 20 years to be used on multi-modal projects. [17]

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[16] *2005 Marin County Congestion Management Program,* prepared by Wilbur Smith Associates for the Transportation Authority of Marin, September 2005.

[17] Measure A, the "Traffic Relief and Better Transportation Act" was approved in November 2004.

The transportation improvement needs and costs of future development in the City-Centered Corridor are key components of the *Draft 2005 CWP Update*. **Exhibit 3.0-10** provides a list of the major proposed transportation elements. **Maps 3-6a** and **3-6b** (Proposed Transportation Improvements) in the *Draft 2005 CWP Update* show the location of the proposed improvements.

Exhibit 3.0-10
Proposed Transportation Improvements

Map No.	*Proposed Improvement*
1	New overcrossing at the Redwood Landfill.
2	Widen U.S. 101 from four to six lanes to include an HOV lane in each direction from Novato to Petaluma.
3	Improve Atherton Avenue at U.S. 101 interchange.
4	New northbound auxiliary lane on U.S. 101 from State Route 37 off-ramp to South Novato Boulevard off-ramp. [b]
5	New northbound auxiliary lane from Nave Road onramp to State Route 37. [a b]
6	New traveler information system along State Route 37. [b]
7	New southbound auxiliary lane from Miller Creek Road to the truck scales. [a]
8	Improve U.S. 101 / Lucas Valley Road interchange.
9	A new southbound auxiliary lane on U.S. 101 from Manuel T. Freitas Parkway to the North San Pedro Road exit. [a]
10	New HOV gap closure project on U.S. 101 both north and southbound.
11	I-580 interchange improvements: [c] West I-580 to south U.S. 101 West I-580 to north U.S. 101 to 2nd Street
12	Reconfigure U.S. 101 / Sir Francis Drake interchange. [c]
13	New southbound auxiliary lane on U.S. 101 from Sir Francis Drake Boulevard to Anderson Drive. [a c]
14	Add a northbound auxiliary lane on U.S. 101 from Paradise Drive to Lucky Drive. [a c]
15	Widen Sir Francis Drake Boulevard from the Larkspur Ferry terminal to Anderson Drive. [c]
16	Improve U.S. 101 / Tamalpais interchange. [c]
17	Widen Tiburon Boulevard overcrossing to six lanes (divided with dual southbound ramps) from U.S. 101 to Redwood Frontage Road. [c]
18	Widen southbound off-ramp of U.S. 101/Tiburon interchange.
19 and 20	Widen and improve signals on State Route 1 between Flamingo Road and U.S. 101, including replacement of Tennessee Valley (Coyote Creek) bridge.
21	Access management for State Route 1 from U.S. 101 to Stinson Beach and Tennessee Valley Road for access to the Golden Gate, Mt. Tamalpais and Stinson Beach Recreation areas.
22	Regional express bus operations on U.S. 101 from Santa Rosa to San Rafael / San Francisco.

a This improvement is a possible improvement that Caltrans is considering for the future.
b Projects numbered 4 through 6 are components of the same project.
c Projects numbered 11 through 16 are currently being studied and are all part of the "Greenbrae Corridor Project".

Source: *Draft 2005 CWP Update*.

Since the majority of future residential development is targeted to be transit-oriented and higher density (i.e., 25 housing units per acre) it is likely that single occupancy vehicle traffic could decrease if public transit and bikeways can meet the demands. The movement of people and goods would change as more people would opt for alternative work schedules and live-work arrangements. Transportation proposals include:

- Adopt flexible parking standards to allow reduced automobile parking for projects that provide direct access to multi-modal transit hubs;
- Adopt performance standards for pedestrians, bicycles, and transit levels of service to better measure their success; and
- Mitigate for transit projects concurrently with new development projects, both subject to legal "fair share" requirements;

Additionally, the following proposals promote bicycling for local trips by students, commuters, visitors, and shoppers:

- Install bicycle stations and attended bike parking at intermodal transit hubs and bicycle storage on transit;
- Prioritize completion of the North-South and East-West bikeways;
- Develop a multi-use pathway that generally follows the proposed SMART railroad corridor;
- Connect to State and Federal parklands via bicycle and pedestrian trails from urban areas;
- Add bike route maps and safe Route to Schools program;
- Include bicycle and pedestrian access as part of transportation improvement projects;
- Participate in a Non-Motorized Transportation Pilot Program; and
- Seek grant funding for new bicycle and pedestrian infrastructure.

The *Draft 2005 CWP Update* goals include local bus service and other transportation alternatives such as vanpools, carpools, bicycles, and walking for commuting through the following policies:

- Expansion and improvement of local bus services to meet the needs of schools and work;
- Regional transit initiatives, such as the rail services on the Northwestern Pacific Railroad right-of-way;
- Integrate and support the needs of paratransit service and the transit-dependent persons;
- Reduce visitor traffic congestion in West Marin by coordinating with Caltrans, local, State and Federal parkland agencies by providing alternatives to recreational automobile travel to recreational areas;
- Provide reduced-cost transit passes to homeless, students, and other special needs groups;
- Design intermodal hubs to be convenient for pedestrians, bicyclists, transit users, and drivers; and

- Expand transit maps from the *1994 CWP* to include roads, primary roads, bus routes, shuttles, hubs and bikeways to reflect a multi-modal system.

The *Draft 2005 CWP Update* includes the following policies to ensure protection of environmental resources and minimization of impacts related to transportation:

- Materials for road construction and repair should include recycled and energy-conserving materials. Examples include use of rubberized asphalt concrete and pervious pavement.

- Targets are established for increasing the proportion of clean-fuel vehicles in the County fleet, as well as encouraging the use of clean-fuel transit vehicles, including biodiesel.

To view the technical background report prepared related to the circulation section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR, titled *Transportation Background Report*, March, 2003, updated November 2005.

Noise

This section addresses State requirements for the Noise Element. The Marin County Noise Element was first adopted as part of the Countywide Plan in 1975. Since that time, the Noise Element has been revised once, as a part of the *1994 CWP*. For the 1994 Noise Element, a comprehensive set of noise measurements was conducted throughout the county to provide information on the noise environment in the county at that time. [18] The previous Noise Element update included current and projected future noise levels for major noise sources, including U.S. 101 and major county roads, the heliport adjacent to Richardson Bay and the airport at Gnoss Field.

The programs in the *Draft 2005 CWP Update* include:

- Require an amendment to the development code to set maximum noise levels for exterior and interior space for new residential units;

- Determine ambient noise levels and reducing noise impacts to meet the standards by placing a heavier reliance on acoustical analysis;

- Amend the noise ordinance to limit the hours of construction and to minimize noise impacts from temporary land use such as fairs, and exhibits;

- Restrict the use of motorized outdoor equipment such as leaf blowers, generators, lawn mowers and trimmers, chain saws, and other gas-powered tools;

- Continued banning of personal watercraft in areas where such vessels have been prohibited; and

- Recommend natural sound barriers like landscape berms versus sound walls for aesthetic purposes.

Since adoption of the *1994 CWP*, two new, specific noise issues have been identified in the county: noise generated by the San Rafael Rock Quarry on Point San Pedro Road and jet aircraft over flights

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[18] As a part of the preparation of the *Draft 2005 CWP Update* and this Draft EIR noise measurements were conducted in 2001 and 2005. See ***Section 4.4 Noise*** for further discussion of the recent noise measurements.

from San Francisco and other surrounding airports. New policies have been added to address regional airplane over flights and to increase noise protection to residential properties surrounding quarry properties. Policy **NO-1.2** would ensure that transportation activities do not generate noise beyond acceptable levels. Policy **NO-1.3** would require measures to minimize noise to neighboring properties.

The Airport Land Use Plan (LUP) for the Marin County Airport located at Gnoss Field was adopted on June 10, 1991. As part of the plan, airport noise measurements were compiled in 1990. Noise levels due to aircraft operations were well within acceptable limits as defined by California and Federal Aviation administration regulations and by the guidelines of the Airport Land Use Planning Handbook for general aviation airports. The LUP has not been updated since 1991, and there are no immediate plans to update it in the future. The *Draft 2005 CWP Update* contains a policy to limit aviation use at Gnoss field to general aviation and emergency flights, in accordance with the *Airport Master Plan for Gnoss Field* (1989). The noise levels are not expected to increase beyond existing conditions. If a helipad is proposed at Marin General Hospital, separate environmental analysis would be conducted. Activity at the Richardson Bay Heliport has not changed substantially since 1987 and activity levels continue at about 25 commercial takeoffs and landings per week.

To view the technical background report prepared related the noise section of the *Draft 2005 CWP Update*; see the County's website at www.future-marin.org. The report is titled *Noise Technical Background Report*, April, 2002, updated October 2005.

Public Facilities and Services

A number of agencies and special districts provide public facilities and services in Marin County. The maps in the *Draft 2005 CWP Update* (see **Maps 3-17** through **3-32**) have been updated to reflect current conditions for public facilities and services and to reflect Local Agency Formation Commission sphere of influence studies completed since adoption of the *1994 CWP*.

This section addresses water supply, sanitary waste disposal, solid waste disposal, and disposal of hazardous waste and materials. The *Draft 2005 CWP Update* recognizes that public services are essential to support our existing community and seeks to strike a balance between existing demand and the limited supply and to promote conservation overall. Future development would be directed toward incorporated areas and the City-Centered Corridor because services are more readily available in these areas.

Reducing demand on public facilities is a theme in this section. New development and redevelopment would be encouraged to integrate cost-effective design and technology standards. The privatization and commercialization of utilities and public service facilities would be discouraged. Although fair-share contributions are required, components of affordable housing may be exempted.

Increased demand for water is expected over the next 20 years and, although water is essential, the *Draft 2005 CWP Update* would promote the idea that a dependable local supply of water should be accessed through a combination of recycled water, groundwater recharge, and less on imported sources of water. To achieve this goal, the following programs are proposed:

- Maintain high water quality, watershed protection, improving groundwater recharge and conservation efforts;

- Reduce of potable water waste through the use of efficient technologies, design and best management practices;

- Require water saving landscaping on all new development and re-landscaping projects over a certain size;
- Support irrigation alternatives through the use of recycled and non-potable water;
- Assist water supply companies in using local General Plan in the development of their urban Water Management Plans;
- Propose a zero-net gain study with water utilities to determine the level of retrofitting required on new and other additional buildings in order to not have additional water use beyond the baseline year of the study;
- Require all new construction to install water-conserving features; and
- Conduct a groundwater recharge study to assess the feasibility of using direct precipitation collection to supplement existing water sources.

Marin County currently exceeds its State mandated solid waste diversion requirements. The *Draft 2005 CWP Update* emphasizes decreasing generation of solid waste through the following measures:

- Increase efforts to recycle and reuse materials;
- Continue to divert construction waste through the Construction and Demolition Recycling Waste ordinance;
- Develop additional composting strategies;
- Explore a West Marin transfer station; and
- Increase recycling education.

In regard to telecommunications facilities, the *Draft 2005 CWP Update* proposes to:

- Ensure the siting of telecommunications facilities avoids adverse affects on people and / or environmental or visual quality.

To view the technical background report prepared related to the Public Facilities and Services section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The report is titled *Community Facilities Element Technical Background Report Provision of Services in Marin County*, February 2003.

Planning Areas and Land Use Maps

This section includes policies critical to the future development in Marin County. In addition to the four environmental corridors, there are seven planning areas that define Marin County. Six of the planning areas comprise the City-Centered and Baylands Corridors and generally represent the watersheds that drain to the bay. The seventh planning area covers both the Coastal and Inland Rural Corridors of West Marin. The seven planning areas are:

- Novato
- Las Gallinas
- San Rafael Basin

- Upper Ross Valley
- Lower Ross Valley
- Richardson Bay
- West Marin

Exhibit 3.0-11 illustrates the seven planning areas. The *Draft 2005 CWP Update* proposes goals and policies for each of the seven planning areas.

Novato Planning Area

This planning area has seen the number of jobs more than double in the past 20 years, and the number of employed residents has increased steadily during that same period. The *Draft 2005 CWP Update* would retain many of the same policies as the *1994 CWP*. Several privately-owned lands that have been purchased by public agencies since adoption of the *1994 CWP* would be designated Open Space. While Gnoss Field airport would retain its Industrial land use designation, the *Draft 2005 CWP Update* would add new language to limit commercial uses on land surrounding the airport to those which would be airport-related or compatible with the airport.

Las Gallinas Planning Area

In the last 20 years, the population in this planning area has increased slightly as has the number of employed residents. During this same period, the number of jobs in the area has decreased. Most of the policies affecting the Las Gallinas Planning Area from the *1994 CWP* would remain in the *Draft 2005 CWP Update*. However, the Marinwood Shopping Center would be identified as a reuse site. In addition, the 1994 interim designation on the St. Vincent's / Silveira properties would be replaced by four land use options, described below, all of which would leave the properties in unincorporated area. Policy **SV-2.5** would designate the St. Vincent's / Silveira area as Planned Designation – Agricultural and Environmental Resource Area and would provide for a range of residential units as follows:

St. Vincent's / Silveira Option 1 would permit, in addition to existing uses, a combined total of 221 housing units consisting of up to 121 market rate housing units plus up to 100 additional housing units for very low and / or low income households.

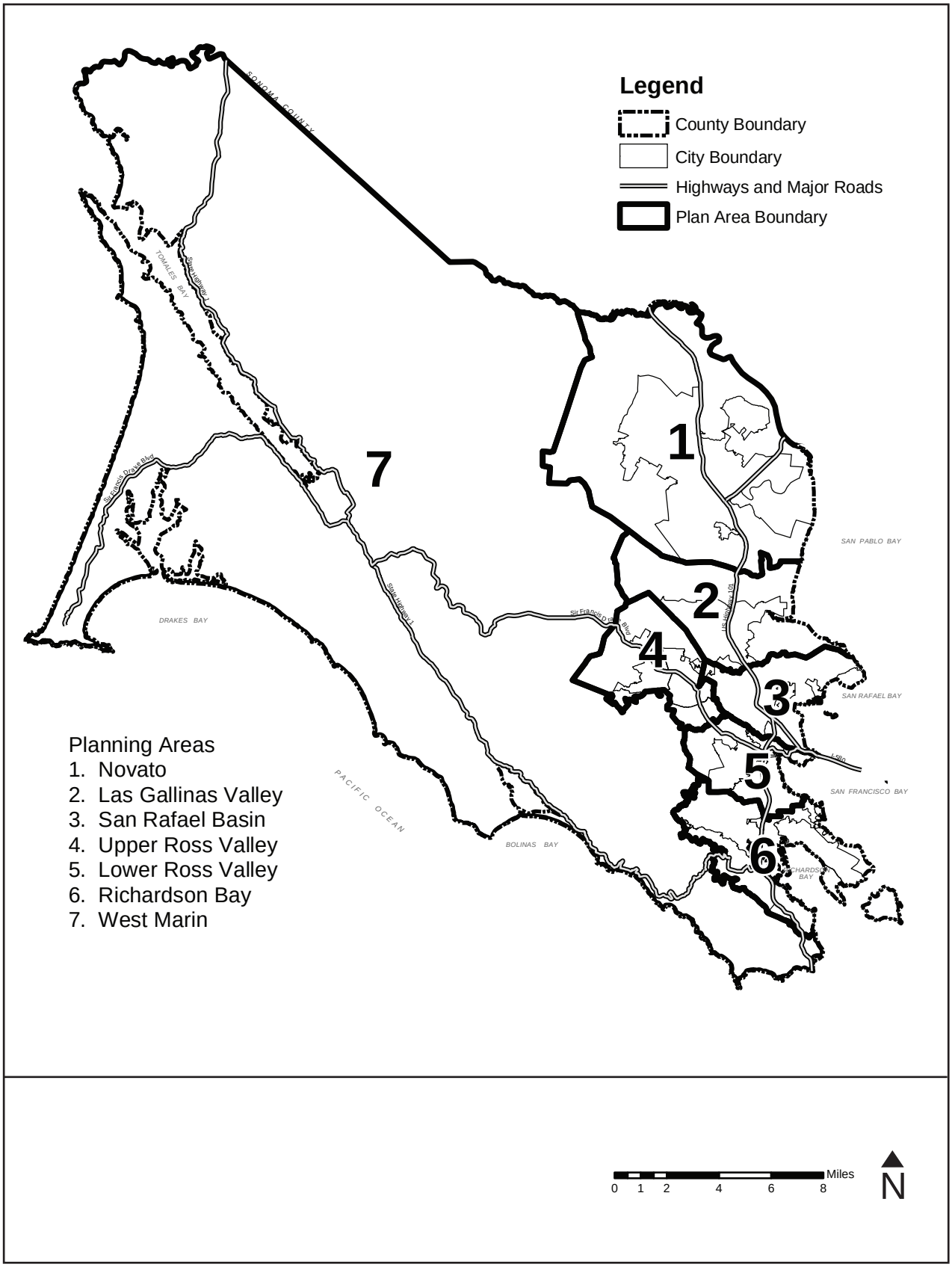
St. Vincent's / Silveira Option 2 would permit, in addition to existing uses, a combined total of 350 housing units. A senior housing and care facility may be considered with a capacity to serve up to 350 residents, including a combination of apartment style and / or congregate care units at varying degrees of affordability.

St. Vincent's / Silveira Option 3 would permit, in addition to existing uses, a combined total of 500 housing units. A senior housing and care facility may be considered with a capacity to serve up to 350 residents, including a combination of apartment style and / or congregate care units at varying degrees of affordability.

St. Vincent's / Silveira Option 4 would permit, in addition to existing uses, a range consisting of a combined total of 221 through 500 housing units. A senior housing and care facility may be considered with a capacity to serve up to 350 residents, including a combination of apartment style and / or congregate care units at varying degrees of affordability.

For each of the four options, non-residential uses may be permitted in lieu of some housing units, provided that the impacts of the non-residential development on peak hour traffic do not exceed those projected for the residential development being replaced (see Policy **SV-2.5**).

Exhibit 3.0-11
Marin County Planning Areas



Source: County of Marin Community Development Agency, 2006.

San Rafael Basin Planning Area

This planning area experienced an increase in population, employed residents, and the number of jobs during the last 20 years. Many of the *1994 CWP* policies were carried over into the *Draft 2005 CWP Update*. However, the farm adjacent to the cemetery in the Upper Sun Valley area would be identified for annexation into the City of San Rafael at such time that it is developed. Additionally, there would be changes to the land use in Point San Pedro and an updated quarry reclamation plan would be required. In addition, the San Rafael Rock Quarry site would be designated Planned Designation-Reclamation Area and a Specific Plan would be conducted in the future by the City of San Rafael to determine future land uses.

Upper Ross Valley Planning Area

Over the past 20 years, population has decreased in this area, while employed residents and jobs have increased. All of the *1994 CWP* policies have been carried over to the *Draft 2005 CWP Update*.

Lower Ross Valley Planning Area

Population, employed residents, and jobs have increased in the planning area during the past 20 years. No change is proposed in the Greenbrae Boardwalk area**.**

Richardson Bay Planning Area

Population, employed residents and the number of jobs have increased in this area over the past 20 years. The *1994 CWP* policies have been carried over into the *Draft 2005 CWP Update* with the modification that land within Tiburon's Sphere of Influence, such as the unincorporated islands along Paradise Drive should be considered for annexation to the Town prior to development.

West Marin Planning Area

Population, employed residents and the number of jobs have increased in this area over the past 20 years. The *1994 CWP* policies have been carried over into the *Draft 2005 CWP Update* with the modification that agricultural and mariculture in the Coastal Zone is supported by retaining land in active agricultural production.

Land Use Policy Maps

Each planning area is subdivided into smaller planning areas, which are geographically represented on Land Use Policy Maps. Land Use Policy maps can be found in the *Draft 2005 CWP Update* at the end of the Planning Areas section of the Built Environment Element.

Based on the planning area goals and policies in the Built Environment Element, several land use designation changes are proposed. **Appendix 2-D** of the EIR describes the proposed land use designation changes for each planning area and the proposed land use map designation changes are specifically discussed below. **Appendix 2-D** shows the parcel number or general area proposed for change, the size of the area in acres, existing zoning, *1994 CWP* land use designation, proposed *Draft 2005 CWP Update* land use designation, and an explanation for the proposed change. The land use policy maps showing the location of the changes are also provided in **Appendix 2-D**.

Novato Planning Area (Planning Area 1)

Agriculture and Conservation

There would be a decrease in the amount of land designated Agriculture and Conservation because previous versions of Map 1.1b (A) had designated these areas even though no corresponding parcel number exists, amounting to approximately 693 acres.[19] Additionally, approximately 1,575 acres (Map 1.1b (E) and Map 1.6 (A)) have been purchased by the State of California since 1994 and would be shown as Open Space.

Residential

There would be a decrease of 43 acres of Rural / Residential on Map 1.1a (D) because land owned by the North Marin Water would be changed to PF-OS.

Commercial / Mixed Use

There would be a decrease in the amount of Recreational Commercial (three acres on Map 1.1b (D)) acreage at Gnoss Field because the land proposed for the rear crosswind runway has been purchased by the State for conservation purposes. Lands designated Industrial (IND), which is part of the SMART / NWP railroad right-of-way, would be been changed to PF-RC to be consistent with zoning. This would be two acres on Map1.1b (C).

Public Facility, Quasi-Public Facility, and Open Space

There would be an increase in the amount of Open Space designated land because the State of California has purchased several properties for the purposes of resource conservation and protection, such as land around Bel Marin Keys (see Agriculture above). Furthermore, approximately 456 acres owned by the Marin Audubon Society would be changed to Open Space to protect resources in the North Novato and Black Point areas (see also Agriculture above).

Las Gallinas Valley Planning Area (Planning Area 2)

Agriculture and Conservation

No changes are proposed for planning area 2.

Agriculture

On Map 2.1, there would be a decrease of 0.65 acres of agricultural land because a lot for water tank (owned by the MMWD) would be changed from AG3 to PF. On Map 2.3, a three-acre property designated as Agriculture would be changed to Rural / Residential to be consistent with the use and zoning of the property.

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[19] This is a technical correction as these lands do not exist on paper and are also not zoned. These lands were shown as AGC1.

Residential

In Santa Venetia, there would be a decrease of five acres in the amount of residential lands that have been purchased by the Marin County Open Space District (MCOSD) and included in the San Pedro Open Space Preserve. These parcels would be designated as Open Space (B and C on Map 2.5.1). On Map 2.5.2, 0.1 acres (B and C) would be changed from Residential to Public Facilities to reflect the use as a public park and ownership by the Las Gallinas Valley Sanitary District. On Map 2.6 (A), 0.1 acres would be changed from Residential to Open Space because the parcel is part of the Terra Linda / Sleepy Hollow Divide and owned by the MCOSD.

Commercial / Mixed Use

Several RT designated parcels would be changed to GC, amounting to approximately six acres in Map 2.3 (B). This is a universal change throughout the unincorporated planning areas where all parcels with the RT designation have been changed to GC. Other areas where this has occurred are on Map 2.5.2 (D and E) for 1.7 acres, and Map 2.5.2 (A) for 0.5 acres. Similarly, all parcels with an RS designation have been universally changed to the new NC designation. There is one parcel on Map 2.5.2 (A) that has been changed from RS to NC.

Planned Designation

On Map 2.4, approximately 1,204 acres (C) currently designated UCR would be changed to Planned Development – Agriculture and Environmental Resource Area (PD – ERA). UCR was an interim designation for the St. Vincent's / Silveira properties. Approximately 165 acres shown as Tidelands would also be changed to the new PD – ERA designation (F). Four acres of privately owned property that is leased by the County and used as the "Honor Farm" would be changed from PF – UCR to PD – ERA (D).

Public Facility, Quasi-Public Facility and Open Space

Several parcels would be changed from UCR to PF, in particular B and D on Map 2.4. One nine-acre area (B) is a parcel owned by the Golden Gate Bridge and Highway District and is part of the proposed SMART rail corridor. The other 0.3-acre area is a parcel owned by the Las Gallinas Valley Sanitary District and is adjacent to the district facilities. On Map 2.5.2 (C), an area used as a park (0.1 acres) would be changed from Low Density Residential to PF.

Approximately five acres on Map 2.5.1 (B and C) would be added to Open Space. These lands were designated Residential but are now owned by the MCOSD and are a part of the San Pedro Open Space Preserve. Another 0.1 acres of Residential land would be added on Map 2.6 (B).

San Rafael Planning Area (Planning Area 3)

Agriculture and Conservation

No changes are proposed for Agriculture and Conservation designated parcels in planning area 3.

Agriculture

No changes are proposed for agricultural designated parcels in this planning area 3.

Residential

There would be a decrease of approximately 81 acres of Residential designated parcels, which would be changed to Open Space. These are shown on Map 3.2 (B and C). A portion of area B is a wetland, and the remainder of the parcel is underwater. The total acreage is 79 acres. The property is proposed to be transferred to the State of California. Area C (two acres) is part of China Camp State Park and is the location of the abandoned sewage pump station for Peacock Gap.

Approximately 15 acres in the Lomita area on Map 3.4 (A) are proposed to be changed from SF5 to MF2 to allow for affordable housing opportunities.

Commercial / Mixed Use

No changes are proposed for Commercial / Mixed Use designated parcels in planning area 3.

Planned Designation

Approximately 289 acres on Map 3.2 (A) at the San Rafael Rock Quarry would be assigned the new PD – Reclamation Area designation. The existing Mineral Resources overlay would be retained and shown as MR.

Public Facility, Quasi-Public Facility and Open Space

As noted under Residential above, there would be an increase in the amount of Open Space by approximately 81 acres. These lands are in or adjacent to China Camp State Park.

Upper Ross Valley Planning Area (Planning Area 4)

Agriculture and Conservation

No changes are proposed for Agriculture and Conservation designated parcels in planning area 4.

Agriculture

No changes are proposed for agricultural designated parcels in planning area 4.

Residential

Approximately 11 acres on Map 4.1 (C) have been inadvertently proposed to be changed from MF2 to PR. The map should be corrected to show MF2. On Map 4.1 (D), a 0.9-acre parcel would be changed to SF4 from SF3 because the characteristics of the lot are similar to surrounding properties in the neighborhood, which are SF4.

Commercial / Mixed Use

2.5 acres on Map 4.2 (A) would be changed from RT to GC. This is a universal change where all RT designations are combined with GC.

Public Facility, Quasi-Public Facility and Open Space

No changes are proposed for Public Facility, Quasi-Public Facility, or Open Space designated parcels in planning area 4.

Lower Ross Valley Planning Area (Planning Area 5)

Agriculture and Conservation

No changes are proposed for Agriculture and Conservation designated parcels in planning area 5.

Agriculture

No changes are proposed for agricultural designated parcels in planning area 5.

Residential

Relatively minor changes would occur on Map 5.1.1. 0.5 acres (A) would be changed from SF2 to SF1 to be consistent with zoning. The parcel is used for access. Two privately owned (but tax exempt) properties used for schools would be given a Public Facilities overlay (C and D). C is the Ross Valley Nursery School and D is Marin Catholic High School. On Map 5.1.1, approximately 2.1 acres (G) of SF5 would be changed to OS. This change was requested by a private landowner and approved by staff at the California State Lands Commission, which owns the land. These lands are adjacent to Corte Madera Creek and include the Corte Madera Bike Path.

On Map 5.3 (San Quentin), approximately 280.5 acres of residentially designated land (with a PF overlay) would be changed to PD – Transit Village Area with a PF overlay. [20]

Commercial / Mixed Use

On Map 5.1.1, 1.8 acres would be changed from RT to GC (E), and 6.8 acres (F) from RS to NC. Both changes are universal. All RS land use designations have been changed to NC, and all RT land use designations have been merged to GC.

Planned Designation

On Map 5.3 (San Quentin), approximately 280.5 acres (A) of residentially designated land (with a PF overlay) would be changed to PD – Transit Village Planning area with a PF overlay.

Public Facility, Quasi-Public Facility, and Open Space

No changes are proposed for Public Facility, Quasi-Public Facility, and Open Space designated parcels in planning area 5.

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[20] As discussed at the beginning of this chapter the *Draft 2005 CWP Update* includes a Vision Plan for San Quentin. Due to changes at the San Quentin site the Vision Plan is no longer under consideration for inclusion in the Countywide Plan and will be removed prior to adoption of the Countywide Plan.

Tamalpais Planning Area (Planning Area 6)

Agriculture and Conservation

No changes are proposed for Agriculture and Conservation designated parcels in planning area 6.

Agriculture

No changes are proposed for agricultural designated parcels in planning area 6.

Residential

The biggest change would be the reduction in residential use in the Tamalpais planning area. Approximately 235 acres of residential land would be changed to Open Space, with the changes occurring on Maps 6.2 (A, B, C, D, and F) and 6.3.2 (B and E). In most cases, these changes would be on lands within the Golden Gate National Recreation Planning area (GGNRA). In the other cases, the properties are owned by the MCOSD: one is a park and the other part of the Aramburu Wildlife Preserve in Strawberry.

Commercial / Mixed Use

The only significant change in the Commercial / Mixed Use designation would be the universal change of the RS designation to NC, and from RT to GC. Approximately 39 acres would be changed to NC, with nine acres on Map 6.1.3b (A), 28 acres on Map 6.1.4 (A), 0.8 acres on 6.2 (E), and 1.2 acres on 6.3.1 (B). Approximately 8.2 acres of RT would be changed to GC, with 0.9 acres changed on Map 6.1.3a (A), one acre on 6.1.4 (D), 5.1 acres on 6.3.2 (A), 1.1 acre on 6.4 (A and B).

On map 6.2 (Marin City), a 5.0-acre site would be changed from PF to GC. This site has been redeveloped.

Public Facility, Quasi-Public Facility, and Open Space

As discussed above, there would be an increase in the amount of lands designated as Open Space (please refer to the Residential section). This increase would be due to the acquisition of lands by the GGNRA and MCOSD.

West Marin Planning Area (Planning Area 7)

Agriculture and Conservation

No changes are proposed for Agriculture and Conservation designated parcels in planning area 7.

Agriculture

There would be a decrease of approximately 3,291 acres of agriculturally designated lands because lands purchased and owned by the State and federal governments, which are part of the Tomales Bay State Park, GGNRA, Point Reyes National Seashore, or the National Park Service, would be changed to Open Space. These include:

- 49.4 acres on Map 7.3.1 (C);
- 231.4 acres on Map 7.3.2 (D);

- 2,076 acres are on Map 7.4.2 (A, B, C, and D);
- 337.9 acres on Map 7.5 (A);
- 139 acres on Map 7.6 (F);
- 43.1 acres on Map 7.7 (C);
- 414.6 on Map 7.11 (A, B); and
- There would be an increase of approximately 122 acres of Agriculture on Map 7.4.1 to reflect the portion of the parcel that is agriculturally zoned

Residential

There would be a decrease of approximately 154 acres of residentially designated land in West Marin, most of which would be changed to Open Space because of their location within the GGNRA, PRNS, or State and County Park system. The breakdown of acreage by map is as follows:

- 0.8 acres on Map 7.3.1 (B);
- 9.3 acres on Map 7.3.2 (A, B and C) (part of GGNRA);
- 100 acres on Map 7.6 (A, B, C, D, E, G, H, and I) (part of Chicken Ranch Beach, Tomales Bay State Park, and PRNS);
- 12.1 acres on Map 7.10.1 (C) (part of Giacomini Open Space Preserve);
- 11 acres on Map 7.10.2 (A and B) (part of Giacomini Open Space Preserve);
- 7.8 acres on Map 7.10.3 (B and C) (part of Giacomini Open Space Preserve);
- 1.4 acres on Map 7.11 (C and D) (Bolinas Park and State owned beach);
- 3.1 acres on Map 7.12 (A, B, and D) (Bolinas Lagoon, Upton Beach, and land owned by the State); and
- 8.3 acres on Map 7.13 (A and C) (part of GGNRA).

Approximately two acres on Map 7.5 (H) would be changed from a residential use to OS as a portion of the affordable housing project in Point Reyes Station.

There would be a slight increase (198 acres) in the amount of residential land on Map 7.10.0 (A, B, C, D, and E) since land designated as Open Space would be changed to Residential to reflect the zoning and use.

Commercial / Mixed Use

As stated in the previous sections, there would be a universal change with the RS land use designation to Neighborhood Commercial (NC). The acreages for each map are as follows:

- 3.1 acres on Map 7.2 (C);
- 82.4 acres on Map 7.3.2 (E, F, and G);
- 4.3 acres on Map 7.4.1 (A);
- 57.1 on Map 7.5 (B, C, I and J);
- 22 acres on Map 7.7 (A and B);
- 10 acres on Map 7.9 (C);
- 5.3 acres on Map 7.10.1 (A and B);
- 9 acres on Map 7.10.3 (A);
- 7.3 acres on Map 7.11 (E); and
- 6.8 acres on Map 7.12 (G)

The RT land use designation would also be universally changed to GC. Approximately 2.5 acres on Map 7.12 (C) would be changed.

There would be a loss of 0.4 acres of commercial designated land on Map 7.12 (E), which is a County owned park. An additional decrease of approximately six acres of commercially designated land would be the result of the affordable housing project in Point Reyes Station on Map 7.5 (F and G). In Inverness, 25.2 acres of C-RS would be changed to C-RC (J, K, L and N) on Map 7.6.

Public Facility, Quasi-Public Facility, and Open Space

There would be an increase in the amount of lands designated as Open Space by approximately 3,291 acres of agricultural land, and 211 acres of residential, as described above. Also, a 0.5-acre water tank site of on Map 7.13 (B) that has a residential land use designation would be changed to PF.

On Map 7.10.0 there would be a decrease of approximately 198 acres of Open Space parcels (A, B, C, D, and E) to be consistent with the zoning.

Exhibit 3.0-12 summarizes the total acreages of land use changes in the unincorporated area resultant from the *Draft 2005 CWP Update* land use designation changes.

Exhibit 3.0-12
Countywide Plan Land Use Designations, Existing and Proposed

Countywide Plan Land Use Designation	*1994 CWP (acres)*	*Draft 2005 CWP Update (acres)*	*Net Change (acres)*
Agriculture and Conservation			
Agriculture and Conservation 1	427	1,278	+ 851
Agriculture and Conservation 3	1,752	233	- 1,519
Subtotal	*2,179*	*1,511*	*- 668*
Agriculture			
Agriculture 1	132,449	129,550	- 2,899
Agriculture 2	7,498	6,766	-732
Agriculture 3	27,903	26,168	- 1,735
Subtotal	*167,850*	*162,484*	*- 5,366*
Residential			
Very Low Density	2,533	1,494	- 1,039
Rural / Residential	13,447	12,556	-891
Low Density	4,830	4,505	-325
Low to Medium	110	110	0
Medium to High Density	220	219	-1
Subtotal	*21,140*	*18,884*	*- 6,744*
Commercial / Mixed Use			
General Commercial / Mixed Use	138	137	-1
Office Commercial / Mixed Use	14	14	0
Neighborhood Commercial / Mixed Use	316	274	- 42
Recreational Commercial	669	521	- 148
Industrial	428	113	- 315
Subtotal	*1,565*	*1,059*	*- 506*
Planned Designation			
PD - Agriculture and Environmental Resource Area	0	566	+ 566
PD - Transit Village [a]	0	275	+ 275
PD - Reclamation Area	0	303	+ 303
Subtotal	*0*	*1,144*	*+ 1,144*
Public Facility, Quasi-Public Facility and Open Space			
Subtotal	*128,993*	*138,014*	*+ 9,021*
Other			
UCR, tidelands	1,365	0	- 1,365
Floating Homes	39	39	0
Total	***323,131***	***323,135***	

a As discussed at the beginning of this chapter the *Draft 2005 CWP Update* includes a Vision Plan for San Quentin. Due to changes at the San Quentin site the Vision Plan is no longer under consideration for inclusion in the Countywide Plan and will be removed prior to adoption of the Countywide Plan

Source: Marin Community Development Agency, November 2006.

Land Use Scenarios

As discussed above, the *Draft 2005 CWP Update* includes options for the level of development on the St. Vincent's / Silveira properties plus the Housing Bank with three options for the distribution of the housing units within the City-Centered Corridor (see **Exhibit 3.0-8**). As a result, rather than a single distribution of housing units for the *Draft 2005 CWP Update* this Draft EIR evaluates three scenarios. The three scenarios are described in **Exhibit 3.0-13**.

Exhibit 3.0-13
Draft 2005 CWP Update Scenarios

Specific Sites	***Draft 2005 CWP Update***		
	Scenario 1	***Scenario 2***	***Scenario 3***
St. Vincent's / Silveira	221 housing units (Nonresidential floor area in exchange for some housing units)	350 housing units (Nonresidential floor area in exchange for some housing units)	501 housing units (Nonresidential floor area in exchange for some housing units)
Housing Units from Housing Bank			
San Rafael Rock Quarry	0	350	350
Marin City	186	186	186
Strawberry	169	169	169
Fairfax / Oak Manor	21	21	21
Marinwood	90	90	90
Subtotal	*466*	*816*	*816*
Residual Assigned to Housing Bank	1,508	1,029	878
Total Housing Units	32,714	32,714	32,714
Total Nonresidential Floor Area (Square Feet)	4,441,330	4,441,330	4,441,330

Source: Nichols Berman and Marin Community Development Agency

Exhibit 3.0-14 shows the distribution of housing units under existing conditions, with the *1994 CWP* and *Draft 2005 CWP Update* by planning area. **Exhibit 3.0-15** shows the geographic distribution of housing units by planning area.

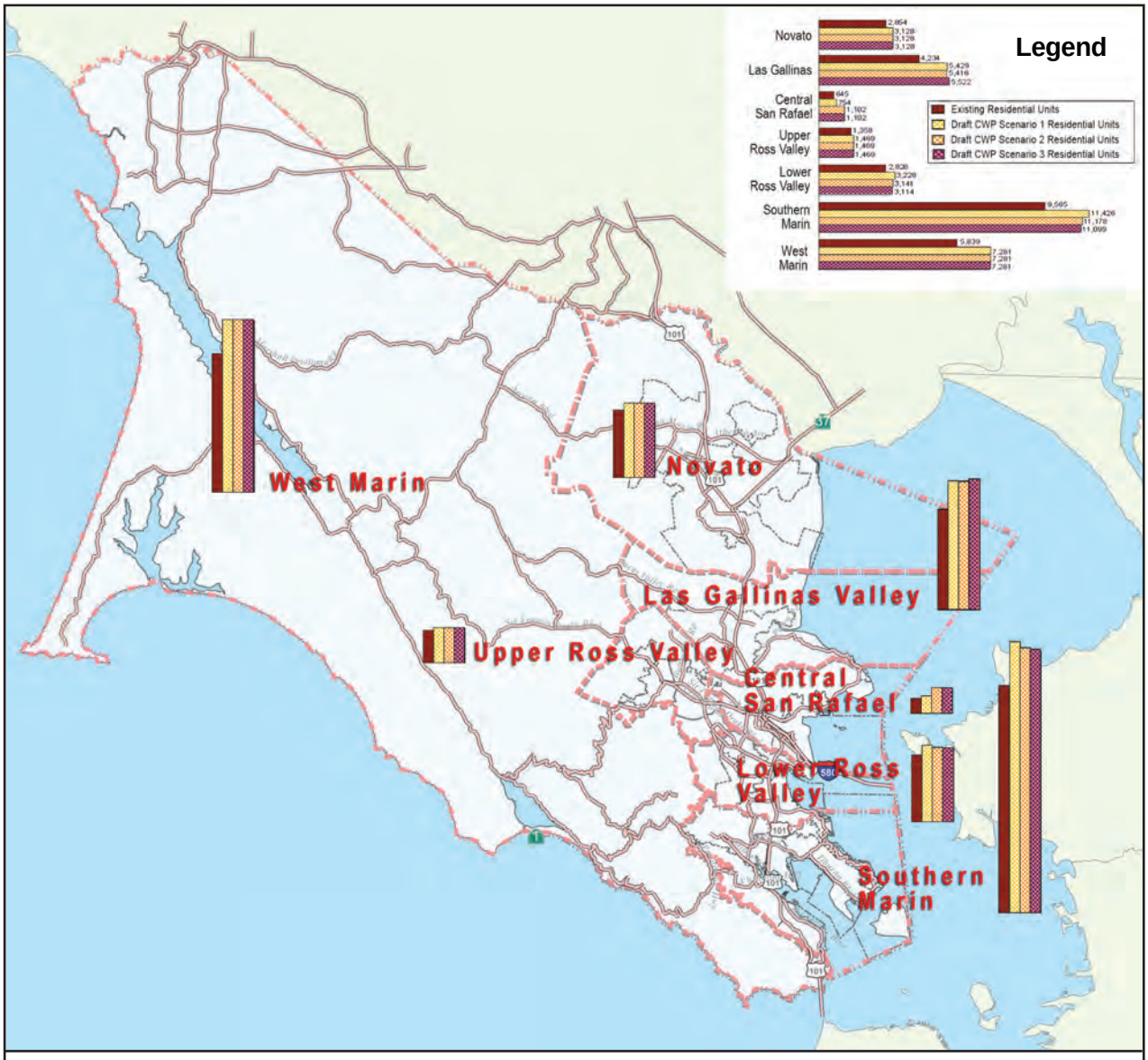
Exhibit 3.0-14
Draft 2005 CWP Update Land Use Scenarios in Housing Units [a] by Planning Area

Planning Area	*Existing (Units)*	*1994 CWP (Units)*	*Draft 2005 CWP Update*		
			Scenario 1 [b] (Units)	*Scenario 2 [c] (Units)*	*Scenario 3 [d] (Units)*
Novato	2,854	3,302	3,128	3,128	3,128
Las Gallinas	4,234	5,222	5,429	5,416	5,222
Central San Rafael	645	756	754	1,102	1,102
Upper Ross Valley	1,358	1,480	1,469	1,469	1,469
Lower Ross Valley	2,828	2,976	3,228	3,141	3,114
Southern Marin	9,565	10,534	11,426	11,178	11,099
West Marin	5,839	8,444	7,281	7,281	7,281
Unincorporated Area Total	***27,323***	***32,714***	***32,714***	***32,714***	***32,714***
Incorporated Cities & Towns	80,671	89,133	89,133	89,133	89,133
Countywide Total	***107,994***	***121,847***	***121,847***	***121,847***	***121,847***
Change from Existing [e]	-	5,391	5,391	5,391	5,391
Change from *1994 CWP* [f]	-	-	0	0	0

a *Unit* is any self-contained housing such as a house, townhome, or apartment but excluding group quarters.
b Scenario 1 assumes 221 units at St. Vincent's/Silveira and no change at the San Rafael Rock Quarry.
c Scenario 2 assumes 350 units at St. Vincent's/Silveira and 350 units at the San Rafael Rock Quarry.
d Scenario 3 assumes 500 units at St. Vincent's/Silveira and 350 units at the San Rafael Rock Quarry.
e Unincorporated only.
f Unincorporated only.

Sources: Community Development Element Technical Report #1 Land Use Modeling and Buildout, July 7, 2005, revised July 2006 and Marin Countywide Plan Update Land Use Alternatives by Planning Area, v 6.1.7/18F, October 18, 2006.

Exhibit 3.0-15
Distribution of Housing Units by Planning Area



Source: County of Marin Community Development Agency, December 2006.

The Housing section of the Build Environment Element focuses on meeting the local housing needs while ensuring that new housing will be compatible with existing community character and quality, environmental constraints, and resources. Both second units and farm worker housing are a part of meeting the local housing needs. The *Draft 2005 CWP Update* assumes 2,780 second units and 520 farmworker units countywide. The distribution of the units is shown in **Exhibit 3.0-16**. The second units and the farmworker units are included in the number of projected units for each planning area in **Exhibit 3.0-14**.

Exhibit 3.0-16
Distribution of Second Units and Farmworker Units

Planning Area	*Second Units*	*Farmworker Units*
Novato	285	0
Las Gallinas	434	0
Central San Rafael	69	0
Upper Ross Valley	137	0
Lower Ross Valley	279	0
Southern Marin	961	0
West Marin	615	520
Countywide Total	***2,780***	***520***

Source: Marin Community Development Agency, March 2006.

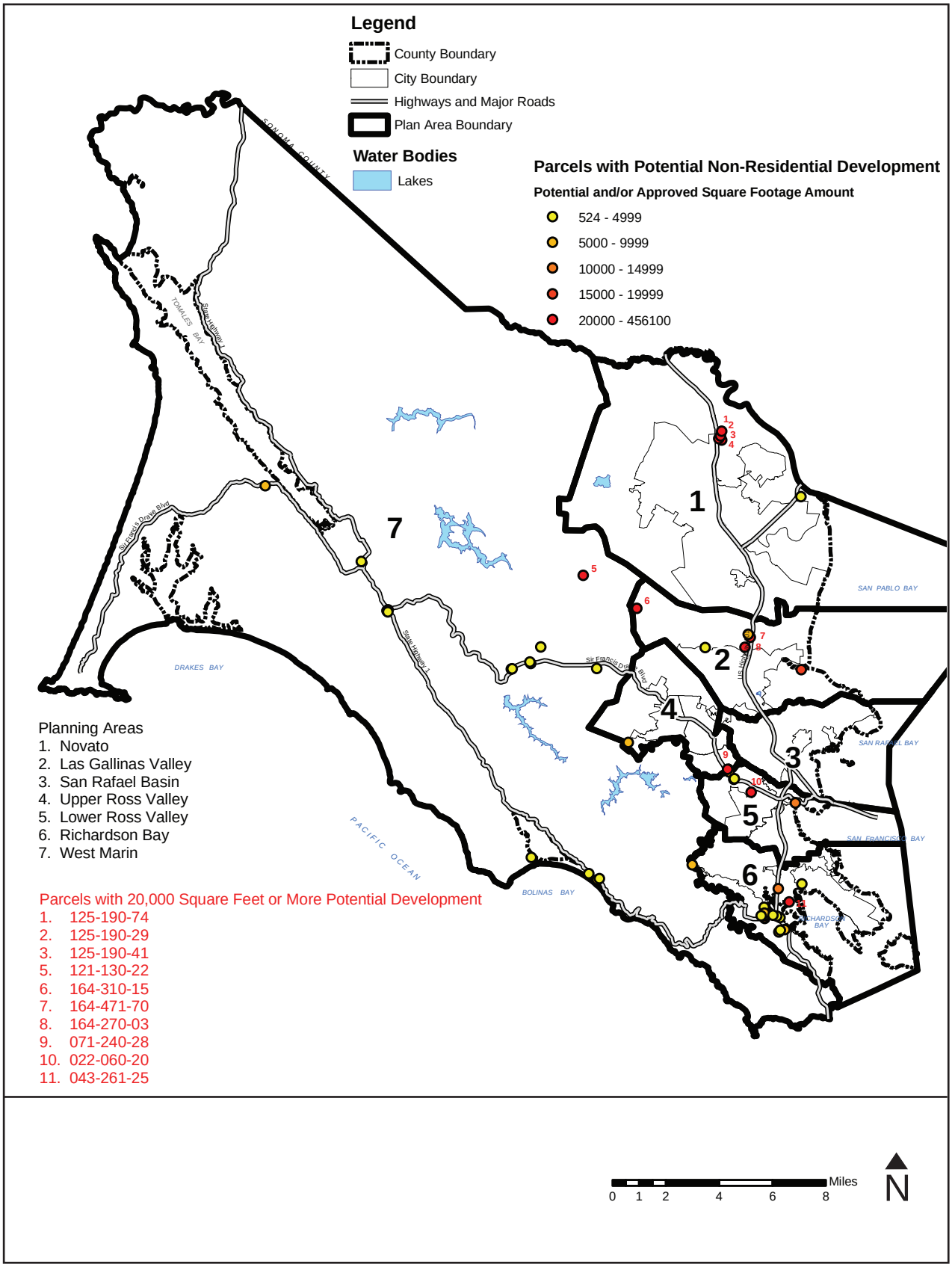
Exhibit 3.0-17 shows the distribution of nonresidential floor area by planning area. The floor area is shown in square feet and refers to the amount of floor area of any nonresidential use including retail, office, warehouses, hotels and group quarters. **Exhibit 3.0-18** shows the geographic distribution of nonresidential floor area by planning area.

Exhibit 3.0-17
Draft 2005 CWP Update Nonresidential Floor Area by Planning Area

Planning Area	***Existing (Square Feet)***	***1994 CWP (Square Feet)***	***Draft 2005 CWP Update (Square Feet)***
Novato	306,575	1,177,526	507,189
Las Gallinas	253,644	862,233	862,233
Central San Rafael	25,481	25,481	25,481
Upper Ross Valley	41,364	46,817	46,817
Lower Ross Valley	236,429	457,094	449,980
Southern Marin	1,095,980	1,297,951	1,236,517
West Marin	1,245,076	1,406,616	1,314,643
Unincorporated Area Subtotal	***3,204,549***	***5,272,188***	***4,441,330***
Incorporated Area Cities & Towns	36,005,945	45,431,753	45,431,753
Countywide Total	***39,210,494***	***50,703,941***	***49,873,083***
Change from Existing for Unincorporated Area Only	-	+2,067,639	+1,236,781
Change from *1994 CWP* for Unincorporated Area Only	-	-	+830,858

Sources: *Community Development Element Technical Report #1 Land Use Modeling and Buildout.* July 7, 2005, revised October 18, 2006 and *Marin Countywide Plan Update Land Use Alternatives by Planning Area, Nonresidential Floor Area* v 6.1.7/18F.

Exhibit 3.0-18
Distribution of Nonresidential Floor Area by Planning Area



Source: County of Marin Community Development Agency, December 2006.

The Socioeconomic Element

The Socioeconomic Element focuses on people and the ways in which they interact with one another including:

Economy

Marin County has enjoyed relative prosperity and economic diversity during the past decade. Many businesses have endured and prospered in Marin. However, some companies have grown to the extent that they have had difficulty finding adequate space and workers who can afford to live in Marin County, forcing some businesses to move out of the county. Increasing labor costs, traffic congestion, and a shortage of affordable housing have also impacted local business viability. Additionally, agricultural operations have not generally benefited from trends that have buoyed other sectors of the economy.

The *Draft 2005 CWP Update* policies promote green businesses that create few or no adverse environmental impacts and provide jobs that reduce the need for residents to commute to work outside the county by proposing:

- Implementation of the Targeted Industries Study;
- Programs that offer employees options such as carpooling, transit subsidies, flexible hours and home-based work;
- Encouraging businesses to work with local employment connection groups to train unemployed residents in enhancement programs;
- Minor tenant improvements with little environmental impact should receive streamlined review;
- Digital communications infrastructure to reduce automobile traffic and enhance business activities; and
- Establishing public-private partnerships to meet CWP goals.

Childcare

Several of the proposed childcare programs in the *Draft 2005 CWP Update* are similar to programs in the *1994 CWP*, but the majority of the policies and programs are new to this CWP. Additional childcare facilities and programs are promoted by the following proposals:

- Provide regulatory incentives for childcare facilities and programs; in some cases, waive whole or partial fees;
- Establish childcare requirements for development;
- Allow childcare in community facilities, such as churches;
- Reduce parking requirements; and
- Establish an amnesty program for large family childcare without a use permit.

Public Safety

The majority of this section is new to the *Draft 2005 CWP Update.* The policies and program goals relate to keeping neighborhoods safe by decreasing crime and improving emergency and disaster preparedness. Community policies and restorative justice programs are a few of the programs proposed to encourage community involvement in crime control. A variety of design techniques to discourage crime are identified including ensuring adequate lighting and structure design. Alternatives to jail for mental health offenders would be supported. A greater focus on youth programs and other outreach efforts would also be included.

Community Participation (New Section)

Proposed policies emphasize the need for full public participation in decision-making processes to obtain a breadth or perspective by:

- Utilizing information technology to communicate and outreach to the public;
- Informing a broad and diverse range of the community; and
- Encouraging diversity on Advisory Commissions and Committees.

Diversity (New Section)

Encouraging and celebrating diversity is a key theme to the proposals in this section. Goals and policies propose:

- Supporting populations that have traditionally been underrepresented;
- Cultural awareness and understanding programs; and
- Community events to promote diversity and educate the public about various cultures.

Education (New Section)

Because educational institutions and programs are generally very successful in Marin, the policies in this section direct attention to scholastic weaknesses in the county. In particular, this includes:

- Addressing educational inequities based on income, geography and race;
- Expanding after school, adult, and other community-based educational programs;
- Ensuring that all students have access to nutritional meals at school;
- Expanding services to library programs by all persons; and
- Prioritizing homeless education and entry-level job opportunities.

Environmental Justice (New Section)

The policies in this section promote the fair treatment of people of all races, cultures, and incomes through the development, adoption, implementation, and enforcement of criminal and environmental laws and regulations. The intent of environmental justice is to ensure that all persons are able to live

in a safe and healthy environment. If correlations are shown to exist between businesses with Hazardous Waste Permits and disproportionately impacted communities, the *Draft 2005 CWP Update* proposes taking steps to abate the release of toxins, such as creating buffer zones. Toxic exposure would be reduced through the proposed certification of businesses through the Green Business Program.

Public Health (New Section)

This section examines the connection between land use and public health. It proposes that health is largely determined by community environmental conditions that support healthy lifestyles and behaviors by ensuring access to quality health care and controlling environmental factors. While the leading causes of death in Marin are heart disease, cancers, stroke, and chronic lower respiratory diseases, the actual causes of death are most often related to tobacco, poor diet, lack of exercise, and alcohol consumption. Health problems with high incidence rates in the county include breast cancer, high blood pressure, and arthritis. This section addresses the need for adequate access to quality healthcare by proposing to:

- Increase access to care and services for seniors and residents of affordable housing;
- Reduce tobacco and alcohol and drug dependency and the reduction in rates of obesity, eating disorder and chronic disease;
- Improve disease prevention education and mental health programs;
- Employ the Precautionary Principle to guide disease prevention;
- Encourage co-located adult day health care and senior housing and expand senior services;
- Advocate affordable assisted living and explore in-home supportive services;
- Expand affordable housing for seniors and people with special needs;
- Increase tobacco cessation services;
- Adopt and enforce tobacco control laws;
- Reduce youth access to alcohol and enhance enforcement of alcohol laws;
- Promote access to healthy foods and physical activity;
- Develop chronic disease management programs; and
- Continue breast cancer research and improve access to early prevention screening and treatment.

Arts and Culture (New Section)

This section emphasizes art and culture as a community resource by proposing:

- Continued participation in arts and cultural activities;
- Support for local artists, cultural events and cultural creativity;

- Support for public art created by local artists;
- Artists to be on design teams for planning public projects;
- Public art to be required in some new development projects; and
- Support of arts and culture in County facilities.

Historic and Archaeological Resources

In this section of the *Draft 2005 CWP Update* proposals include:

- Update the County sensitivity map of potential locations of archeological resources and updating it thereafter every three years;
- Complete a historical inventory of historical resources compliant with federal standards and seek Certified Local Government Status after the survey is completed;
- Repeal County Ordinance 1589 as it has been superseded by State and federal environmental regulations;
- Require archeological surveys for new development on areas identified as potential resource locations;
- Require permanent protection of archeological sites;
- Provide incentives for preservation and restoration of historical and cultural resources;
- Amend the Development Code to incorporate guidelines for preservation of structures of local historical or archeological interest and to require design compatibility on sites or adjacent to cultural resources;
- Place plaques or markers on county roadways and at structures to inform the public of their importance; and
- Promote and distribute local historical education.

To view the technical background report prepared related to the Historic and Archaeological Resources section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR. The report is titled *Cultural Resources Technical Background Report*, February, 2003.

Parks and Recreation

State law allows cities and counties to acquire parkland through dedication or payment of in-lieu fees during subdivision review. [21] The Las Gallinas, Lower Ross Valley and West Marin Planning Areas fall short of the low end of the Quimby standard which is three acres of parkland per 1,000

[21] Government Code Section 66477, known as the "Quimby Act". The Quimby Act standard for local parkland is three to five acres per 1,000 residents.

residents. [22] Policy **PK-1.1** would develop park and recreation facilities and programs to complement local, State, and national parks and open space in Marin County to provide for active recreation, passive enjoyment, and protection of natural resources.

To view the technical background report prepared related to the Parks and Recreation section of the *Draft 2005 CWP Update*, see the County's website at www.future-marin.org and **Appendix 1** to the Draft EIR.. The report is titled *Parks and Recreation Technical Background Report*, January, 2005.

Related Development Code Update

The *Draft CWP Update 2005* implementing programs include amendments to the Development Code to be enacted after adoption of the CWP Update. The purpose of the amendments is to make the Development Code consistent with the goals, policies, and program of the CWP. The Development Code updates would include:

- Amendments to strengthen wetland and bayland protection; to increase protection from stormwater runoff and from hazards caused by seismic and geologic activity and by flooding and wildland fires; and to protect open space lands.
- Zoning changes to protect agricultural lands by increasing controls on residential and non-agricultural development.
- Sites that the CWP designates for mixed use and higher densities near employment centers and transit nodes would need to be rezoned to allow mixed residential and commercial use and a housing overlay zone at higher densities than current zoning permits.
- Other modifications to the Development Code would facilitate the use of renewable energy, mitigate the impacts of mining operations, provide increased protection from noise, and require use of drought-tolerant landscaping.
- Amendments to zoning designations and regulations would be needed for consistency with CWP policies dealing with density, permitted uses, protection of views in ridge and upland greenbelt areas, home occupations, parking standards, traffic reduction, and bicycle and pedestrian access.
- CWP policies requiring archeological surveys and protection of historic structures would also require Development Code amendments.

[22] See **Exhibit 4.10-12** in ***Section 4.10 Public Services***

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

This chapter contains an analysis of the environmental topics identified by Marin County's scoping process for the EIR (Initial Study and Notice of Preparation) described in ***Chapter 1.0 Introduction***. Environmental topics addressed in this chapter include:

- 4.1 Land Use, Population, and Housing
- 4.2 Transportation
- 4.3 Air Quality
- 4.4 Noise
- 4.5 Hydrology, Water Quality, and Flood Hazards
- 4.6 Biological Resources
- 4.7 Geology
- 4.8 Agriculture
- 4.9 Water Supply and Demand
- 4.10 Public Services
- 4.11 Cultural Resources
- 4.12 Visual Resources

Sections 4.1 through 4.12 of this chapter describe existing environmental conditions as they relate to each specific topic, identify potential impacts from implementing the *Draft 2005 CWP Update*, and present mitigation measures required to reduce significant adverse impacts to a less-than-significant level.

This EIR evaluates cumulative impacts from two points of view. The first is cumulative impacts that would occur in the unincorporated area of Marin County under the *Draft 2005 CWP Update*. Each of the topical impact assessments in this EIR (i.e., Sections 4.1 through 4.12) takes into consideration, where applicable, the cumulative impacts of the *Draft 2005 CWP Update*. For these cumulative analyses the geographic area of concern is the unincorporated area of Marin County.

Additionally, this EIR evaluates the level of cumulative impact resulting from growth in the unincorporated portion of Marin County together with projected growth in each of the 11 cities and towns within the County. For this cumulative analysis the geographic area of concern is Marin County. These cumulative impacts are discussed in ***Section 6.2 Cumulative Impacts.***

CEQA requires an EIR for a general plan to consider the impacts of the *proposed plan* against the existing physical environment. Limiting the analysis to a comparison of the potential development under the proposed general plan with the potential development under the existing general plan is not appropriate.[1] CEQA does not require the evaluation of the impacts of a proposed project on an existing general plan. Rather, it concerns itself with the impacts of the project on the environment, defined as the existing physical conditions in the affected area. It should be noted that ***Chapter 5.0 Alternatives*** provides a comparison of the impacts that would be expected to occur from land uses and development under continuation of the *1994 CWP* with what would be expected to occur under the *Draft 2005 CWP Update*.

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[1] See *Environmental Planning & Information Council v. County of El Dorado* ("*EPIC*") (1982) 131 Cal.App.3d 350.

FORMAT OF TOPICAL ANALYSES

Each of the topical impact assessments in this EIR (Sections 4.1 through 4.12) are organized as follows:

Environmental Setting

Existing conditions are described in the respective "setting" sections. These descriptions summarize information compiled during the study process to prepare the EIR. Background materials used in the EIR are referenced in footnotes and listed in ***Section 7.3 Bibliography***.

Significance Criteria

Standards used to evaluate the magnitude of impacts are listed in the "significance criteria" subsections for each topic analyzed. Under CEQA, a *significant effect* is defined as a substantial or potentially substantial adverse change in the environment - namely, in any of the "physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance". The *State CEQA Guidelines* direct that the significance of impact be determined on the basis of scientific and factual data. The significance criteria were derived from the following main sources: the *State CEQA Guidelines*, Marin County's *EIR Guidelines*, [2] environmental documents prepared recently on other projects in Marin County, and the professional standards and practices of the technical analysts who conducted the EIR evaluations.

Impacts and Mitigation Measures

The "impacts and mitigation" subsections identify the level and type of impacts that are likely to result from implementation of the *Draft 2005 CWP Update*. The generic impacts of potential growth from the land uses and level of development consistent with the *Draft 2005 CWP Update* are discussed in addition to any other impacts that might result from the goals and policies of the *Draft 2005 CWP Update*.

All impacts are numbered consecutively by topic. Based on the significance criteria, each impact is identified as being either a ***Significant Impact*** or a ***Less-than-Significant Impact***. Significant impacts are followed by feasible mitigation measures that are available to reduce the magnitude of impact. No mitigation measures are required for less-than-significant impacts. Mitigation measures also are numbered to correspond to the respective impacts.

For each significant impact where a feasible mitigation is identified, a conclusion is provided as to whether the incorporation of the recommended mitigation measure would reduce the impact to a less-than-significant level or whether it would be a ***Significant Unavoidable Impact***. A significant unavoidable impact is a significant impact which cannot feasibly be avoided with mitigation. These

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[2] *Marin County Environmental Impact Review Guidelines*, Marin County Community Development Agency, adopted May 17, 2994 Marin County Board of Supervisors.

include impacts which could be partly mitigated but could not be reduced to a less-than-significant level.

As discussed in the Introduction to the *Draft 2005 CWP Update*, the Plan includes goals, policies, and programs. A *goal* is an expression of community values and desired outcomes– a sought after end state that is not quantifiable or time dependent. A *policy* is a statement derived from a goal that represents the jurisdiction's adopted position and guides action by decision-making bodies. This Draft EIR relies upon the implementation of specific goals and policies of the *Draft 2005 CWP Update*. Implementation of the identified goals and policies would, in many instances, reduce significant impacts to a less-than-significant level.

The *Draft 2005 CWP Update* also includes programs. A *program* is a specific implementation measure to carry out goals and policies of the *Draft 2005 CWP Update*. As discussed in the Plan Implementation section of the Introduction of the *Draft 2005 CWP Update* implementation of programs can take time, especially when needed resources are limited and required for more than one program. Each section of the *Draft 2005 CWP Update* provides a table that summarizes responsibilities, potential funding, priorities, and estimated timeframes for proposed implementation programs, as follows:

Program	***Responsibility***	***Potential Funding***	***Priority***	***Time Frame***
Name of specific program	Department or agency responsible to implement	Source of funding	Low, Medium or High	Immediate (0-1 years) Short Term (1 -2 years) Med. Term (3-5 years) Long Term (over 5 years) Ongoing

This Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate, short-term, medium-term, or is ongoing, that the program will be implemented and can be relied upon to reduce significant impacts to a less-than-significant level.

If there is no identified funding source, is a low priority, and would only be implemented in the long-term, then this Draft EIR does not assume that the program would be implemented. In instances where such programs would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner. In a few instances, the priority is listed as TBD (to be determined). Such an instance is assumed to be a low priority.

In addition, a few programs are to be implemented by agencies other than Marin County. Such instances may require additional commitment and funding by the responsible agency to be counted upon to reduce significant impacts to a less-than-significant level.

However, it must be noted that if the specific goals, policies, and programs relied upon in this Draft EIR are not in fact adopted, it may be necessary to reassess the impacts that relied upon those goals, policies, and programs.

For each significant unavoidable impact identified in the Final EIR, Marin County would be required to adopt Findings and a Statement of Overriding Considerations explaining the reasons for approving the project (if approved) despite the impacts identified.

4.1 LAND USE, POPULATION, AND HOUSING

4.1 LAND USE, POPULATION, AND HOUSING

Land Use, Population, and Housing – Environmental Setting

This section describes the existing land use patterns in Marin County. The seven planning areas are described in terms of communities, land uses, and local issues. [1] Land use issues that occur in more than one planning area are outlined and include population patterns, affordable housing, and urban / rural conflicts. County, regional, State, and federal regulatory authority over land use is described. Some topics discussed in this section overlap with other sections of this EIR, including ***Section 4.8 Agriculture***. Land use impacts are most closely related to the *Draft 2005 CWP Update*'s Built Environment and Socioeconomic Elements.

A technical background report, *Community Development Element Technical Report #1, Land Use Modeling and Buildout*, October 2006 was prepared by the Marin County Community Development Agency, Planning Division is included in **Appendix 1** to the Draft EIR. This report is incorporated by reference and summarized below.

LAND USE PATTERNS

Marin's total land and water area is approximately 606 square miles. Of the 520 square miles of land, about 87 percent (454 square miles) is unincorporated. Marin County has a diverse and unique physical setting, including mountain ridges, hills, and valleys, which are replete with forests, oak woodlands, stream corridors, and tidal and fresh water marshes.

History of Land Use

A high density of Native Americans once thrived on abundant wildlife, anadramous fish, and acorns. [2] In the early 1820's, Marin was settled by the Mexicans whose home base was the San Rafael mission. They raised thousands of longhorn cattle for hide and tallow production. The cattle ran wild along with herds of native tule elk that were rounded up yearly by Mexican and Native American Coast Miwok vaqueros. After the mission was closed in 1834, the land and the longhorns were divided up into vast ranches and during the Gold Rush of 1849. The longhorns were herded to the gold country. The subsequent Gold Rush of 1849 initiated a major migration to California. California gained statehood in 1851. Marin County's growth following that time was strongly tied to the Gold Rush impacts on San Francisco. Summer home communities developed along the Russian River as tourism began to play a role in the local economy. With the completion of the Golden Gate Bridge in 1937, Marin County became the site for tract home subdivisions in the 1950s and 1960s. [3]

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1 **Exhibit 3.0-11** shows the boundaries of the seven planning areas.

2 *The Coast Miwok Indians of the Point Reyes Peninsula*. Point Reyes, California: Point Reyes National Seashore Association, Sylvia Barker Thalman, 1993.

3 *Facts about Agriculture in Marin County,* Ellie Rilla, U.C. Cooperative Extension, January 2005 revision.

The demand for subdividing rural land was also spurred by the growth to the north of San Francisco. Requirements were limited to surveying and filing parcel maps for four or fewer parcels, which were often split again into four. Road access and proof of water and on-site waste disposal capacity was required for five or more parcels, but the filing of serial parcel maps was a way around those requirements. By the mid-1960s, the county's cities became stressed by the post World War II growth. A proposed nuclear power plant on Bodega Head was defeated, while large portions of both the Marin and Sonoma coasts were preserved as parkland. [4]

Current Land Use Patterns

Nearly half of the county's land base is protected by park or open space status. With the largest amount of public land in the nine-county Bay Area, Marin County's 118,669 acres of park and open space make up 30 percent of the county's land base, while water area and watershed lands comprise another 20 percent. [5] **Exhibit 4.1-1** shows the amount of acres and percentage of the county land base for land uses in Marin County.

Exhibit 4.1-1
Marin County Land Uses in 2001

LAND USE	*ACREAGE*	*PERCENTAGE OF COUNTY LAND BASE*
Parks Lands [a]	105,428	27
Agriculture & Open Space [b]	101,619	26
Water Area	55,424	14
Watershed Lands [c]	22,731	6
Marin County Open Space District	13,241	3
Tideland, Marshland, Mudflats	10,000	3
Remainder of Marin Land [d]	79,909	21
Total	***388,352***	***100***

a Includes federal, State, County and local municipality parks.
b Privately owned open space acreage under contract.
c Marin Municipal Water District and Novato Municipal District lands.
d Includes developed and potentially developable land.

Source: Marin County Acreage Summary, Prepared By: Assessor's Mapping Division, January 2, 2001, accessed online at http://www.co.marin.ca.us/depts/AR/main/Acreage.cfm, March 2006.

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4 *Patterns of Settlement Density in Selected Counties, FRAP Analysis of 1990 Census Data*, California Department of Forestry, 1997.

5 *Marin County Acreage Summary*, Prepared By: Assessor's Mapping Division, January 2, 2001, accessed March 2006 online at http://www.co.marin.ca.us/depts/AR/main/Acreage.cfm,.

Countywide Plans

Growth management programs have existed in Marin County throughout several cycles of general plan updates as a result of the concerns over the ability to keep up with public services and to protect the environment. The environmental corridors were created in order to articulate the area of higher density development and public utilities and the areas of less development potential including the baylands, the coast and inland areas.

The *1973 Countywide Plan* designated three environmental corridors: the Coastal Recreation, Inland Rural, and City-Centered corridors. The *Draft 2005 CWP Update* proposes to add a fourth corridor for baylands protection (i.e., Baylands Corridor) and restoration and would rename the Coastal Recreation Corridor to the Coastal Corridor recognizing that issues, opportunities, and constraints in the corridor go far beyond recreation. The *1994 CWP* also included Bayfront lands protection as implemented by the Bayfront Conservation Zone. In 1994, the areas of the Bayfront Conservation Zone were based on the Nichols-Wright survey and included diked marshlands, tidelands, and the shoreline. The proposed Baylands Corridor replaces the Bayfront Conservation Zone and uses as its basis, the San Francisco Estuary Institute historic baylands boundary. [6]

Existing Housing Element

On June 3, 2003, the Board of Supervisors adopted the General Plan Housing Element; it was reviewed and certified by the State Department of Housing and Community Development on July 24, 2003. There are no proposed changes to the Housing Element. The entire Housing Element would be incorporated into the updated Countywide Plan upon adoption of the Countywide Plan. Since the County's Housing Element has already been adopted by the Board of Supervisors and Certified by the State, it is not the subject of this Draft EIR. The goal of the housing element is meeting local housing needs while ensuring that new housing will be compatible with existing character and quality, environmental constraints, and resources. Policies include:

- Modify Development Code sections regarding home occupations, employee, and caretaker provisions to allow live / work projects;
- Modify the Development Code to assure protection and efficient development of multi-family infill housing sites;
- Conduct a survey to identify potential mixed-use sites;
- Allow single room occupancy units in zoning and design standards;
- Encourage a variety of revenue sources to be used for affordable housing through the Housing Trust Fund ordinance; and
- Establish Countywide programs to assist in house the homeless by providing emergency shelter, transitional housing, supportive housing, and permanent housing.

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6 The proposed Baylands Corridor is further described in ***Chapter 3.0 Description of the Proposed Project***.

Population Patterns

From 2000 to 2006, the total population of Marin County increased by two percent from 247,289 [7] persons to 253,341 persons. [8] The population in unincorporated Marin County increased from 68,735 persons to 69,239 persons over the same period. Between 1990 and 2000, Marin County's annual population growth was less than one percent per year.

The majority of Marin County's population lives in cities along U.S. 101 in the City-Centered Corridor: the incorporated areas of Sausalito, Marin City, Mill Valley, San Rafael, Corte Madera, and Novato. The *1994 CWP* was based on a total projected population (i.e., including the incorporated and unincorporated areas) of 259,844 persons by 2005 with 68,950 persons residing in the unincorporated area. By 2030, the county's total population is projected to reach 283,100 persons with 75,400 persons living in the unincorporated area. [9]

In addition to the residents of Marin County, some people work within the county but reside elsewhere. However, the number of Marin County residents employed outside of the county is greater than non-residents that are employed within the county. **Exhibit 4.1-2** describes the estimated daytime population of Marin County compared to statewide population statistics.

Exhibit 4.1-2
Daytime Populations of Marin County and California in 2000

Population Criteria	*Marin County*	*California*
Total Resident Populations	247,289	33,871,648
Total Workers Employed in the Area	122,643	14,506,499
Total Workers Living in the Area	126,646	14,525,322
Estimated Daytime Population	243,286	33,852,825
Population Change Due to Commuting	-4,003 (-1.6 %)	-18,823 (-0.1 %)
Workers who Live & Work in Same Area	78,681 (62.1 %)	12,043,885 (82.9 %)
Employment-to-Residence Ratio	0.97	1.00

Source: U.S. Census Bureau, Estimated Daytime Population, Table PHC-T-40, October 2005. Accessed online at http://www.census.gov/population/www/socdemo/daytime/daytimepop.html, May 2006.

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7 Marin County QuickFacts, United States Census Bureau, accessed online http://quickfacts.census.gov on May 2, 2006.

8 State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark.* Sacramento, California, May 2006.

9 State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark.* Sacramento, California, May 2006.

Planning Areas

The *Draft 2005 CWP Update* provides detailed goals, policies, and programs governing Marin County's seven planning areas. Six of the planning areas comprise the City-Centered and Baylands Corridors and generally represent the watersheds that drain to San Francisco Bay. The seventh planning area covers both the Coastal and Inland Rural Corridors of West Marin. The designated planning areas, associated key trends, and land use designations are described below.

Novato Planning Area

The City of Novato and the Marin County Airport (i.e., Gnoss Field) are located within this planning area. **Figure 3-52** in the *Draft 2005 CWP Update* provides land use and demographic data for the Novato Planning Area. From 1980 to 1990, population within this planning area increased from 49,985 persons to 54,515 persons before decreasing to 54,506 persons in 2000. From 1980 to 2000, housing increased from 18,513 units to 21,719 units. During the same period, jobs more than doubled from 13,783 to 27,879 while the number of employed residents increased steadily from 25,658 persons to 32,043 persons. In 2000, there were 2,725 housing units and 309,320 square feet of nonresidential floor area (e.g., commercial and industrial uses) within the unincorporated portion of the planning area.

Exhibit 4.1-3 describes the existing and proposed land use designations for the Novato Planning Area.

Las Gallinas Planning Area

The Terra Linda portion of the City of San Rafael is located within this planning area. **Figure 3-53** in the *Draft 2005 CWP Update* provides land use and demographic data for the Las Gallinas Planning Area. From 1980 to 2000, the population in this planning area increased from 26,788 persons to 28,615 persons while housing increased from 9,353 units to 11,915 units. During the same period, the number of employed residents residing in the planning area increased from 14,239 persons to 16,157 persons while the number of jobs increased from 13,789 to 16,275. In 2000, there were 4,251 housing units and 244,715 square feet of nonresidential floor area (e.g., commercial and industrial uses) located within the unincorporated portion of the planning area. Both the St. Vincent's and Silveira properties (i.e., the St. Vincent's School for Boys and the Silveira Ranch) and the Marinwood Shopping Center are located in this planning area.

Exhibit 4.1-4 describes the existing and proposed land use designations for the Las Gallinas Planning Area.

Exhibit 4.1-3
Countywide Plan Land Use Designations, Existing and Proposed – Novato Planning Area (Planning Area 1)

Countywide Plan Land Use Designation	***1994 Countywide Plan (acres)***	***2005 Countywide Plan Update (acres)***	***Net Change (Acres)***
Agriculture and Conservation			
Agriculture and Conservation 1	427	438	+ 11
Agriculture and Conservation 3	1,752	230	- 1,522
Subtotal	*2,179*	*668*	*- 1,511*
Agriculture			
Agriculture 1	13,725	12,713	- 1,014
Agriculture 2	144	144	0
Agriculture 3	13,096	12,904	- 192
Subtotal	*26,965*	*25,761*	*- 1,206*
Residential			
Rural / Residential	3,077	3,230	+ 153
Low Density	395	396	+ 1
Medium to High Density	11	11	0
Subtotal	*3,483*	*3,637*	*+ 154*
Commercial / Mixed Use			
General Commercial / Mixed Use	0	0	0
Office Commercial / Mixed Use	0	0	0
Neighborhood Commercial / Mixed Use	16	13	- 3
Recreational Commercial	96	81	- 15
Industrial	138	113	- 25
Subtotal	*250*	*207*	*- 43*
Planned Designation – None			
Public Facility, Quasi-Public Facility and Open Space			
Subtotal	3,395	6,000	+ 2,605
Other / Unknown	0	0	0
Total	***36,272***	***36,273***	

Source: Nichols • Berman and the Marin County Community Development Agency, Planning Division, November 2006.

Exhibit 4.1-4
Countywide Plan Land Use Designations, Existing and Proposed – Las Gallinas Planning Area (Planning Area 2)

Countywide Plan Land Use Designation	***1994 Countywide Plan (acres)***	***2005 Countywide Plan Update (acres)***	***Net Change (acres)***
Agriculture and Conservation			
Agriculture and Conservation 1	0	840	+ 840
Agriculture and Conservation 3	0	3	+ 3
Subtotal	*0*	*843*	*+ 843*
Agriculture			
Agriculture 1	67	67	0
Agriculture 2	0	0	0
Agriculture 3	11,365	11,361	- 4
Subtotal	*11,432*	*11,428*	*- 4*
Residential			
Rural / Residential	2,865	2,795	-67
Low Density	960	887	- 73
Low to Medium	57	57	0
Medium to High Density	22	20	-2
Subtotal	*3,904*	*3,759*	*- 142*
Commercial / Mixed Use			
General Commercial / Mixed Use	11	10	-1
Office Commercial / Mixed Use	4	4	0
Neighborhood Commercial / Mixed Use	1	1	0
Recreational Commercial	6	6	0
Subtotal	*22*	*21*	*0*
Planned Designation			
PD - Agriculture and Environmental Resource Area	0	566	+ 566
Subtotal	*0*	*566*	*+ 566*
Public Facility, Quasi-Public Facility and Open Space			
Subtotal	*3,769*	*3,877*	*+ 108*
Other			
VCR	1,206	0	-1,206
Tidelands	159	0	-159
Subtotal	*1,365*	*0*	*-1,365*
Total	***20,492***	***20,494***	

Source: Nichols • Berman and the Marin County Community Development Agency, Planning Division, November 2006.

San Rafael Basin Planning Area

This planning area includes most of the City of San Rafael, the San Rafael Rock Quarry, and McNear's Brickyard. **Figure 3-54** in the *Draft 2005 CWP Update* provides land use and demographic data for the San Rafael Basin Planning Area. From 1980 to 2000, the planning area's population increased from 31,613 persons to 40,078 persons while its housing increased from 14,280 units to 15,913 units. During the same period, the number of employed residents increased from 17,323 persons to 22,083 persons while the number of jobs increased from 19,570 to 28,073. In 2000, there were 629 housing units and 10,977 square feet of nonresidential floor area (e.g., commercial and industrial uses) within the unincorporated portion of this planning area.

Exhibit 4.1-5 describes the existing and proposed land use designations for the San Rafael Basin Planning Area.

Upper Ross Valley Planning Area

The towns of Fairfax, Ross, and San Anselmo are located in this planning area. **Figure 3-55** in the *Draft 2005 CWP Update* provides land use and demographic data for the Upper Ross Valley Planning Area. From 1980 to 2000, population decreased from 25,623 persons to 25,297 persons while housing decreased from 10,836 units to 10,823 units. However, the number of employed residents increased from 13,500 persons to 14,459 persons during this same period. Similarly, the number of jobs increased from 4,355 in 1980 to 7,033 in 2000. In 2000, there were 1,192 housing units and 31,820 square feet of nonresidential floor area (e.g., commercial and industrial uses) within the unincorporated portion of this planning area.

Exhibit 4.1-6 describes the existing and proposed land use designations for the Upper Ross Valley Planning Area.

Lower Ross Valley Planning Area

The cities of Corte Madera and Larkspur are located within this planning area as is San Quentin State Prison. **Figure 3-56** in the *Draft 2005 CWP Update* provides land use and demographic data for the Lower Ross Valley Planning Area. From 1980 to 2000, population within this planning area increased from 29,220 persons to 34,366 persons while housing increased from 11,693 units to 13,168 units. During the same period, the number of employed residents increased from 14,313 persons to 16,585 persons while the number of jobs increased from 12,991 to 22,674. In 2000, there were 2,905 housing units and 336,937 square feet of nonresidential floor area (e.g., commercial and industrial uses) in the unincorporated portion of this planning area.

Exhibit 4.1-7 describes the existing and proposed land use designations for the Lower Ross Valley Planning Area.

Exhibit 4.1-5
Countywide Plan Land Use Designations, Existing and Proposed – San Rafael Basin Planning Area (Planning Area 3)

Countywide Plan Land Use Designation	***1994 Countywide Plan (acres)***	***2005 Countywide Plan Update (acres)***	***Net Change (acres)***
Agriculture and Conservation – None			
Agriculture – None			
Residential			
Very Low Density	0	0	0
Rural / Residential	403	405	+ 2
Low Density	79	77	- 2
Low to Medium	3	3	0
Medium to High Density	3	3	0
Subtotal	*488*	*488*	*0*
Commercial / Mixed Use			
Recreational Commercial	5	5	0
Industrial	289	0	- 289
Subtotal	*294*	*5*	*- 289*
Planned Designation			
PD - Reclamation Area	0	303	+ 303
Subtotal	*0*	*303*	*+ 303*
Public Facility, Quasi-Public Facility and Open Space			
Subtotal	*2,027*	*2014*	*- 13*
Total	***2,809***	***2,810***	

Source: Nichols • Berman and the Marin County Community Development Agency, Planning Division, November 2006.

Exhibit 4.1-6
Countywide Plan Land Use Designations, Existing and Proposed – Upper Ross Valley Planning Area (Planning Area 4)

Countywide Plan Land Use Designation	***1994 Countywide Plan (acres)***	***2005 Countywide Plan Update (acres)***	***Net Change (acres)***
Agriculture and Conservation – None			
Agriculture			
Agriculture 1	761	756	- 5
Agriculture 2	0	0	0
Agriculture 3	3.5	3	-0.5
Subtotal	*764.5*	*759*	*- 5.5*
Residential			
Very Low Density	263.5	262	-1.5
Rural / Residential	1,615	1,621	+6
Low Density	129.5	117	- 14
Medium to High Density	1	1	0
Subtotal	*2,009*	*2,001*	*- 8*
Commercial / Mixed Use			
General Commercial / Mixed Use	3	3	0
Subtotal	*3*	*3*	*0*
Planned Designation – None			
Public Facility, Quasi-Public Facility and Open Space			
Subtotal	*2,375*	*2,389*	*+ 14*
Total	***5,151.5***	***5,152***	

Source: Nichols • Berman and the Marin County Community Development Agency, Planning Division, November 2006.

Exhibit 4.1-7
Countywide Plan Land Use Designations, Existing and Proposed – Lower Ross Valley Planning Area (Planning Area 5)

Countywide Plan Land Use Designation	***1994 Countywide Plan (acres)***	***2005 Countywide Plan Update (acres)***	***Net Change (acres)***
Agriculture and Conservation – None			
Agriculture			
Agriculture 3	839	12	-827
Subtotal	*839*	*12*	*-827*
Residential			
Very Low Density	159	159	0
Rural / Residential	1,229	705	-524
Low Density	529.5	480	-49.5
Low to Medium	6.5	7	+.5
Medium to High Density	21	21	0
Subtotal	*1,945*	*1,372*	*-573*
Commercial / Mixed Use			
General Commercial / Mixed Use	2	2	0
Office Commercial / Mixed Use	5	5	0
Neighborhood Commercial / Mixed Use	7	7	0
Recreational Commercial	0	0	0
Industrial	.5	0	-0.5
Subtotal	*14.5*	*14*	*-0.5*
Planned Designation			
PD – Transit Village [a]	0	275	+ 275
Subtotal	*0*	*275*	*+ 275*
Public Facility, Quasi-Public Facility and Open Space			
Subtotal	*623.5*	*1,749*	*+1,125.5*
Total	***3,422***	***3,422***	

a As discussed in ***Chapter 3.0 Description of the Proposed Project***, the *Draft 2005 CWP Update* includes a Vision Plan for San Quentin. Due to changes at the San Quentin site the Vision Plan is no longer under consideration for inclusion in the Countywide Plan and will be removed prior to adoption of the Countywide Plan.

Source: Nichols • Berman and the Marin County Community Development Agency, Planning Division, November 2006.

Richardson Bay Planning Area

The cities of Sausalito, Mill Valley, and Belevdere and the Town of Tiburon are located within this planning area. **Figure 3-57** in the *Draft 2005 CWP Update* provides land use and demographic data for the Richardson Bay Planning Area. From 1980 to 2000, population within the planning area increased from 47,983 persons to 52,094 persons while housing increased from 22,405 units to 25,092 units. During the same period, the number of employed residents increased from 27,903 persons to 32,166 persons while the number of jobs increased from 12,113 to 19,627. In 2000, there were 9,343 housing units and 1,067,936 square feet of nonresidential floor area (e.g., commercial and industrial uses) within the unincorporated portion of this planning area. Both the Marin City and Strawberry Shopping Centers are located in this planning area.

Exhibit 4.1-8 describes the existing and proposed land use designations for the Richardson Bay Planning Area.

West Marin Planning Area

There are no incorporated cities or towns in this planning area. **Figure 3-58** in the *Draft 2005 CWP Update* provides land use and demographic data for the West Marin Planning Area. From 1980 to 2000, population in this planning area increased from 11,356 persons to 12,334 persons while housing increased from 5,657 units to 6,360 units. During the same period, the number of employed residents increased from 5,624 persons to 7,462 persons while the number of jobs increased from 1,252 to 1,409. In 2000, there were 1,110,168 square feet of nonresidential floor area (e.g., commercial and industrial uses).

Exhibit 4.1-9 describes the existing and proposed land use designations for the West Marin Planning Area.

Exhibit 4.1-8
Countywide Plan Land Use Designations, Existing and Proposed – Richardson Bay Planning Area (Planning Area 6)

Countywide Plan Land Use Designation	***1994 Countywide Plan (acres)***	***2005 Countywide Plan Update (acres)***	***Net Change (acres)***
Agriculture and Conservation – None			
Agriculture			
Agriculture 3	43	0	- 43
Subtotal	*43*	*0*	*- 43*
Residential			
Very Low Density	1	1	0
Rural / Residential	1,041	939	- 102
Low Density	1,847	1,729	- 118
Low to Medium	37	37	0
Medium to High Density	162	163	+ 1
Subtotal	*3,088*	*2,869*	*- 219*
Commercial / Mixed Use			
General Commercial / Mixed Use	75	79	+ 4
Office Commercial / Mixed Use	5	5	0
Neighborhood Commercial / Mixed Use	39	39	0
Recreational Commercial	81	72	- 9
Subtotal	*200*	*195*	*- 5*
Planned Designation – None			
Public Facility, Quasi-Public Facility and Open Space			
Subtotal	*2,484*	*2,753*	*+ 269*
Other			
Floating Homes	39	39	0
Subtotal	*39*	*39*	*0*
Total	***5,854***	***5,856***	

Source: Nichols • Berman and the Marin County Community Development Agency, Planning Division, November 2006.

Exhibit 4.1-9
Countywide Plan Land Use Designations, Existing and Proposed – West Marin Planning Area (Planning Area 7)

Countywide Plan Land Use Designation	***1994 Countywide Plan (acres)***	***2005 Countywide Plan Update (acres)***	***Net Change (acres)***
Agriculture and Conservation – None			
Agriculture			
Agriculture 1	117,896	116,014	- 1,882
Agriculture 2	7,354	6,622	-732
Agriculture 3	2,556	1,888	-668
Subtotal	*127,806*	*124,524*	*- 3,282*
Residential			
Very Low Density	2,109	1,072	- 1,037
Rural / Residential	3,217	2,861	- 356
Low Density	890	819	- 71
Low to Medium	6	6	0
Subtotal	*6,222*	*4,758*	*- 1,464*
Commercial / Mixed Use			
General Commercial / Mixed Use	47	43	- 4
Neighborhood Commercial / Mixed Use	253	214	- 39
Recreational Commercial	481	357	- 124
Subtotal	*781*	*614*	*- 167*
Planned Designation – None			
Public Facility, Quasi-Public Facility, and Open Space			
Subtotal	*114,319*	*119,232*	*+ 4,913*
Total	***249,128***	***249,128***	

Source: Nichols • Berman and the Marin County Community Development Agency, Planning Division, November 2006.

CITY-CENTERED CORRIDOR HOUSING SITES

As discussed in ***Chapter 3.0 Description of the Proposed Project***, the *Draft 2005 CWP Update* assumes varying degrees of development on the St. Vincent's and Silveira properties and the San Rafael Rock Quarry. In addition, the *Draft 2005 CWP Update* proposes the establishment of a Housing Overlay Designation (Policy **CD-2.3**) and Housing Bank (Policy **CD-2.2**). The Housing Overlay Designation includes four specific sites: Marinwood Shopping Center, Strawberry Shopping Center, Marin City Shopping Center, and the Fairfax / Oak Manor Shopping Center. A brief description of the St. Vincent's / Silveira properties, the San Rafael Rock Quarry, and the four specific sites of the Housing Overlay Designation are provided below.

St. Vincent's / Silveira Properties

The St. Vincent's / Silveira properties are adjacent to one another and located east of U.S. 101 between San Rafael and Novato. These properties encompass a total of approximately 1,375 acres, including tidelands and diked baylands. The St Vincent's property is approximately 1,023 acres. The site contains the St. Vincent's Catholic Youth Organization / School for Boys, which consists of structures, parking, roads, and ornamental landscaping. The 352-acre Silveira property is mainly used for dairy farming and contains a residence and ranch structures. Surrounding land uses include suburban development, the Las Gallinas Valley Sanitary District wastewater treatment facilities, and U.S. 101.

Marinwood Shopping Center

The Marinwood Shopping Center property extends north from the northern bank of Miller Creek to Miller Creek Road. Marinwood Drive and U.S 101 border the property to the east and west, respectively. The shopping center grounds cover 5.1 acres. Most of the site is developed with buildings, paved parking, and ornamental landscaping. Surrounding land uses include suburban development, open space, and U.S. 101.

San Rafael Rock Quarry

The San Rafael Rock Quarry encompasses the tip of the peninsula which is punctuated by Point San Pedro. McNear's Brickyard abuts the rock quarry to the west and operates on land owned by the rock quarry. The two properties are approximately 272 acres in size and bounded on the north by Point San Pedro Road, and on the south, east, and west by San Francisco Bay.[10] The Peacock Gap neighborhood, consisting primarily of single family homes, townhouses, and a golf course, is located immediately across Point San Pedro Road from the San Rafael Rock Quarry.

The San Rafael Rock Quarry is essentially an open pit mine where rock extraction resulted in the excavation of a hilltop over time. The bottom of the pit is over 230 feet below sea level.[11]

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[10] The site includes several parcels that are partly dry land and partly tideland, totaling 750 acres. The dry portion upon which the mining occurs covers 272 acres.

[11] Clearwater Hydrology communication with Eric Steger, Senior Civil Engineer, Marin County Department of Public Works, March 2006.

Strawberry Shopping Center

The Strawberry Shopping Center is located directly east of U.S. 101, south of Tiburon Boulevard in the Strawberry area of Mill Valley. The shopping center covers approximately 13.5 acres and is completely developed with buildings, parking, and ornamental landscaping. Surrounding land uses include additional commercial development, multiple family and office use, and U.S. 101.

Marin City Shopping Center

The Marin City Shopping Center is located west of U.S. 101 at the Bridgeway Street exit. The shopping center covers approximately 21.2 acres. This includes 19 acres of shopping center (i.e., buildings and associated parking) and a 2.2-acre marsh to the north. Impervious surface covers nearly all of the shopping center grounds. Surrounding land uses are predominantly suburban, consisting of apartment dwellings. U.S. 101 and Richardson Bay border the property to the northeast.

Fairfax / Oak Manor Shopping Center

The Oak Manor strip center is located along Sir Francis Drake Boulevard in western Fairfax. The strip center covers approximately 2.5 acres and is completely developed with buildings and parking. Surrounding land uses are suburban with a mix of apartments, low- to medium-density residential, and some undeveloped land in the surrounding hills.

ECONOMY

Marin County has enjoyed relative prosperity and economic diversity during the past decade. Many businesses have endured and prospered in Marin. However, some companies have grown to the extent that they have had difficulty finding adequate space and workers who can afford to live in Marin County, forcing some businesses to move out of the county. Increasing labor costs, traffic congestion, and a shortage of affordable housing have impacted local business viability. The median household income in 1999 was $71,306. [12] In 1999, more than six percent of the population was considered living below the poverty level compared to the statewide statistic of 14.2 percent. In 2000, the homeownership rate was 63.6 percent with a median value of $514,600 for owner-occupied housing units at. There were 10,256 private, non-farm establishments with paid employees in 2001. In 1997, retail sales per capita were $11,836 as compared with $8,167 statewide. While the *1994 CWP* projected a countywide employment of 145,433 jobs in 2005, the State Employment Development Department estimated actual employment of only 129,290 jobs for that year.

Agricultural operations generally have not benefited from trends that have buoyed other sectors of the economy. Agricultural properties continue to experience substantial pressure to convert to single-family homesteads as the cost of agricultural land has increased far beyond what agricultural revenues can support. In recent years, this trend has been only exacerbated with the conversion of agricultural land to large residential estates with diminished or no agricultural operations. Those families that continue to farm are diversifying their practices and trying to balance the demand for on-site affordable farm worker housing with increased pressure for environmental preservation. Increased numbers of visitors to West Marin has added pressure to commercialize agriculture and develop agricultural processing and support uses (e.g., tasting rooms and retail sales).

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[12] Marin County QuickFacts, United States Census Bureau, accessed May 2, 2006 online at http://quickfacts.census.gov

ADDITIONAL INFLUENCES

Marin County Local Coastal Program

Marin County's Local Coastal Program is divided into two units: Unit I and Unit II. Unit I was certified in 1980 and includes the communities of Muir Beach, Stinson Beach, Seadrift, and Bolinas. Unit II was certified in 1981 and includes the communities of Olema, Point Reyes Station, Inverness, Dillon Beach and Oceana Marin, Marshall, and Tomales. The primary goal of the LCP is to ensure that the local government's land use plans, zoning ordinances, zoning district maps, and implemented actions meet the requirements of, and implement the provisions \and polices of the Coastal Act at the local level. [13]

Local Agency Formation Commission (LAFCo)

LAFCo is an independent agency, established by State law and comprised of representatives of the county, cities, special districts, and the public. Each incorporated city and many other public agencies that provide sewage collection or supply water have a district boundary indicating the service area. LAFCo has responsibility for reviewing, approving, or disapproving changes in boundaries of all jurisdictions within county boundaries, including annexations, detachments, new formations, and incorporations. New State legislation requires that a LAFCo perform Municipal Service Reviews as part of this process.

LAFCos have intended to discourage urban sprawl, preserve open space and agricultural land, and provide government services efficiently. LAFCo must adopt for each local agency a sphere of influence that describes the area within which properties are eligible to annex to the city or district.

The Marin LAFCo has started the Municipal Service Reviews for the southern Marin area [14] and the San Rafael Area. [15]

City and Town General Plans

Incorporated cities and towns have a broad range of powers, responsibilities, and political independence. Within their limits, cities control development permits and utility services. The County relies on interagency communication, review procedures, voluntary coordination, and LAFCo actions to influence the future boundaries of cities.

Each city within the county has adopted a general plan that guides where development and services are planned. Most of these general plans have policies regarding future annexation, urban development, and extension of urban services in areas not within current city limits. A major issue addressed by policies in both city and the county general plans is whether to allow extension of urban sewer and

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[13] In addition to updating the Countywide Plan, Marin County had previously planned to update simultaneously the 1980-81 Local Coastal Plan (LCP) Units I and II. Subsequently, the County decided to delay the LCP Update until after the adoption of the Countywide Plan Update as part of its implementation program.

[14] *Southern Marin Service Review and Sphere of Influence Update Public Review Draft*, Marin Local Agency Formation Commission, April 26, 2004.

[15] *San Rafael Area Service Review and Sphere of Influence Update Public Review Draft*, Marin Local Agency Formation Commission, January 2006.

water services beyond city limits, district boundaries, sphere of influence, urban growth boundaries, and / or Urban Service Boundaries (USBs).

Community Plans

In addition to the Countywide Plan related to the incorporated areas of Marin County, there are Community Plans for 16 unincorporated areas of county. These plans supplement the Countywide Plan by focusing on a particular community or area. Community Plans contain information and policies concerning land use, population and growth, transportation, housing, jobs, environmental protection, and community facilities. Other issues may be addressed depending on the circumstances in a particular community.

The policies and programs contained in a Community Plan are intended to provide long-term guidance and stability in implementing the goals of the plan. Community Plans may also impose restrictions on certain activities and function as a zoning ordinance in these situations. Many Community Plans have restrictions on residential second units, for example. The 16 Community Plan areas and the year of the last update are depicted in **Exhibit 4.1-10**.

Exhibit 4.1-10
Marin County Community Plans

Community	*Last Updated*
Black Point	1978
Bolinas	1975
Dillon Beach	1989
East Shore (Tomales Bay)	1987
Indian Valley	2003
Inverness Ridge	1983
Kentfield/Greenbrae	1987
Marin City	1992
Muir Beach	1972
Nicasio Valley	1988
Point Reyes Station	2001
San Geronimo	1997
Stinson Beach	2006
Strawberry	1973/Amended 1982
Tamalpais Valley	1992
Tomales	1997

Source: Marin County Development Agency, accessed May 2006 online at http://www.co.marin.ca.us/depts/CD/main/comdev/ADVANCE/CP.cfm

Association of Bay Area Governments (ABAG) Smart Growth Strategy

Five of the Bay Area's regional agencies, organized by ABAG, developed the *Smart Growth Strategy-Regional Livability Footprint Project.* [16] The project aims to change the underlying fiscal and regulatory structure of current growth patterns to support more sustainable land use patterns. The future ideal vision developed by the project for Marin County featured a rail line extending along the currently unused Northwestern Pacific railroad right-of-way from Cloverdale in Sonoma County south to Larkspur. New stations in most cities and new mixed-use communities would be built. Densities in existing urban areas would be increased. A smart growth scenario was modeled to illustrate the potential positive effects of these land use policy changes.

National Park Service

Three federal lands totaling 97,591 acres make up approximately 25 percent of Marin County's land base. The National Park Service has regulatory authority over the following lands: Golden Gate National Recreation Area (26,000 acres), Point Reyes National Seashore (71,068 acres) and Muir Woods National Monument (522.98 acres). [17]

State Department of Parks and Recreation

The State Department of Parks and Recreation owns and manages a number of parks, historic parks, reserves, and a recreation area within Marin County, totaling more than 14,000 acres. It has regulatory authority over these lands. They include Angel Island (740 acres), China Camp (1,640 acres), Marconi Conference Center (62 acres), Mount Tamalpais (6,300 acres), Olompali Historic Park (824 acres), Samuel P. Taylor (2,700+ acres) and Tomales Bay Day Use Park (2,000 acres.)

State Department of Fish and Game

Within Marin County, the State Department of Fish and Game owns, manages and has regulatory authority over the San Pablo Bay Wildlife Area and the Petaluma Marsh. The San Pablo Bay Wildlife Area contains 11,040 acres located in the mudflats and surrounding San Pablo Bay waters, between the mouths of the Petaluma River and Gallinas Creek. San Pablo Bay Wildlife Area is accessible by boat only via the Petaluma River in Sonoma County. The Petaluma Marsh, located partially in Sonoma County, contains 3,748 acres of salt and brackish marshes.

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16 *Regional Livability Footprint Project*, ABAG, Metropolitan Transportation Commission, Bay Area Air Quality Management District, Bay Conservation and Development Commission, and Regional Water Quality Control Board, October, 2002.

17 National Park total acreage confirmed by Michael Feinstein of the National Park Service Public Affairs Department, January 31, 2006. Additional information sourced January 2006 online at http://www2.nature.nps.gov/stats/acrebypark03cy.pdf

Land Use, Population, and Housing – Significance Criteria

The land use, population, and housing analysis use criteria from the *State CEQA Guidelines*, Appendix N, Significance Criteria, Marin County EIR Guidelines, and professional practices. The project would have a significant land use, population, or housing impact if it would:

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;

- Physically disrupt or divide an established community. ***No significant impact, see Initial Study***;

- Result in substantial alteration of the character or functioning of a community, or preset or planned use of an area. ***No significant impact, see Initial Study****;*

- Induce substantial growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure, removing obstacles to development, or by setting a precedent for additional growth);

- Introduce new land uses, or alter the intensity of existing land uses, which would be incompatible with the established land uses within Marin County's unincorporated area;

- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or, displace substantial numbers of people, necessitating the construction of replacement housing elsewhere. ***No significant impact, see Initial Study***;

- Lead to a physical change that could result in other social or economic impacts. ***No significant impact, see Section 2.6 Effects of No Significance***; or

- Have an adverse effect on the jobs-housing ratio, which could indirectly increase traffic, air quality emissions, and noise.

Land Use, Population, and Housing – Impacts and Mitigation Measures

Impact 4.1-1 Conflict with Applicable Land Use or Other Plans
Goals, policies, and programs of the Draft 2005 CWP Update would not conflict with other adopted plans. The plan consistency analysis has not found any plan inconsistencies with the Draft 2005 CWP Update that would result in adverse physical impacts and therefore this would be a less-than-significant impact.

The *State CEQA Guidelines* require EIRs to "… discuss any inconsistencies between the proposed project and applicable general plans and regional plans". [18] While CEQA requires this discussion of consistency with public plans, inconsistency does not necessary lead to a significant impact. Inconsistencies with public plans create significant impacts under CEQA only when an adverse physical effect would result from the inconsistency.

The plan consistency analysis that follows has not found any plan inconsistencies with the *Draft 2005 CWP Update* that would result in adverse physical impacts and is therefore provided in conformance with *CEQA Guidelines Section* 15125(d) to provide a summary and analysis of potential inconsistencies with other community and regional plans that may result from adoption of the *Marin Countywide Plan 2005*. The discussion provides information to guide decision-makers in making policy updates and additions or amendments that although not required as mitigation for any adverse CEQA impacts, could be considered to bring these plans into closer and more specific conformance with the updated *Countywide Plan.* These recommendations concerning potential plan conflicts represent the opinion of the EIR preparers and are not intended as binding determinations of plan consistency or inconsistency in certify the EIR. The Marin County Board of Supervisors is the final decision-making body for the County, with authority to determine plan consistency and take any actions necessary to address potential plan inconsistency.

Several community plans and other land use plans have been adopted for areas within Marin County. Implementation of the *Draft 2005 CWP Update* could potentially result in a conflict with such an adopted land use plan policy or regulation of an agency with jurisdiction over the planning area. Land use and environmental plans that apply to the unincorporated area of Marin County include: [19]

- Black Point Community Plan
- Dillon Beach Community Plan
- Indian Valley Community Plan
- Kentfield / Greenbrae Community Plan
- Muir Beach Community Plan
- Bolinas Community Plan
- East Shore (Tomales Bay) Community Plan
- Inverness Ridge Community Plan
- Marin City Community Plan
- Nicasio Valley Community Plan

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18 *CEQA Guidelines*, Section 15125(d).

19 As appropriate several environmental plans are discussed in the individual impact sections. For example, transportation plans, including bicycle plans are discussed in ***Section 4.2 Transportation***. The Bay Area Clean Air Plan is discussed in ***Section 4.3 Air Quality***. As discussed in ***Section 4.6 Biological Resources*** there is no adopted Habitat Conservation or natural Community Conservation Plans in Marin County.

- Point Reyes Station Community Plan
- Stinson Beach Community Plan
- Tamalpais Valley Community Plan
- Local Coastal Program
- Marin County Operational Area Hazard Mitigation Plan
- Marin County Child Care Master Plan, 2002 – 2007
- Bay Conservation and Development Commission's San Francisco Bay Plan
- Marin County Local Agency Formation Commission
- National Park Service General Management Plan 1980
- 2005 Marin County Congestion Management Program and Capital Investment Program
- San Geronimo Community Plan
- Strawberry Community Plan
- Tomales Community Plan
- Airport Master Plan, Gnoss Field
- Telecommunications Facilities Policy Plan Update
- Marin County Development Code
- Bay Trail Plan
- Regional Airport System Plan General Aviation Element
- Transportation 2030 Plan for the San Francisco Bay Area
- Moving Forward: A 25 Year Vision for Transportation in Marin County

COMMUNITY PLANS

As discussed in the setting section, there are community plans for 16 unincorporated areas of the county. These community plans supplement the Countywide Plan by focusing on a particular community or area. Community plans support and reinforce the general elements of the Countywide Plan. The policies and programs contained in a community plan are intended to provide long-term guidance and stability in implementing the goals of the Countywide Plan. Only one of the community plans, the *Marin City Community Plan*, has been adopted by reference as part of the Countywide Plan. [20] The remaining 15 Community Plans are subservient to the Countywide Plan and would have to be amended where inconsistent with the Countywide Plan.

Goal **CD-4** of the *Draft 2005 CWP Update* would aim to coordinate the implementation of the Countywide Plan with community plans. Policy **CD-4.1** and Program **CD-4.a** in the *Draft 2005 CWP Update* would require the County to amend existing community plans to ensure consistency with the policies and programs of the *Draft 2005 CWP Update*. It would be necessary to amend community plans to make them consistent with the land use policy maps (see **Map Set 3-37** Land Use Policy Maps in the *Draft 2005 CWP Update*).

Policy **DES-1.1** would require that design issues be addressed in community plans. Program **DES-1.a** would require the addition of design components to each of the community plans. The design components would include customized building and site design standards that reflect the unique character of each unincorporated communities, respond to local design issues, and encourage ridgeline and viewshed protection, walking, bicycling, and shared parking in commercial centers. In order to

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[20] Resolution No. 92-61, *Resolution Approving The Marin City Community Plan Amendments in conjunction with the Marin City Redevelopment Plan Amendments and the Marin City U.S.A. Master Plan*, adopted on March 17, 1992 by the Marin County Board of Supervisors.

protect important public views, Program **DES-4.a** would incorporate into community plans design standards for development in identified view corridors.

Program **TR-1.h** would require that transportation policies be added to the community plans. This program would result in amendments to each community plan to incorporate level of service standards, recommended transportation improvements, and additional policies and standards appropriate to reduce traffic congestion and improve walking and bicycling in each of the unincorporated communities covered by a community plan.

Exhibit 4.1-11 provides a summary of consistency between the 16 Community Plans and the *Draft 2005 CWP Update*.

Exhibit 4.1-11
Consistency with Community Plans

Applicable Provision / Policy / Regulation	***Consistency Issue(s)***
Black Point Community Plan (adopted 1978)	
Land Use Map	No land use map in the Community Plan.
Policies	*Draft 2005 CWP Update* Policy **CD-4.1** (*Update Community Plans)* portions of the planning area are within the CWP Baylands Corridor and Ridge and Upland Greenbelts designations and require reconciliation to comply with the CWP.
LOS	NA
Bolinas Community Plan (adopted December 1975, amended November 1997)	
Land Use Map	Much of the Agriculture and Planned Residential / Agriculture area in the Community Plan have been designated as Coastal Open Space in the *Draft 2005 CWP Update*.
Policies	The building moratorium requires conversions of existing buildings in order to meet the *Draft 2005 CWP Update* goals and policies for affordable housing for Bolinas. *Draft 2005 CWP Update* Implementing Program **TR-1.h** (*Add Transportation Policies to Community Plans*).
LOS	NA
Dillon Beach Community Plan (adopted December 1988, amended June 1989)	
Land Use Map	The mixed use (residential / commercial) Planned District was changed to Costal Recreational Commercial in the *Draft 2005 CWP Update*. A couple of the residential PUD designations were changed to Coastal Multi-Family. The mixed use (residential / agriculture) changed to coastal residential (SF), and Coastal Agriculture was added as a separate designation.
Policies	Consistent
LOS	NA

Applicable Provision / Policy / Regulation	***Consistency Issue(s)***
East Shore (Tomales Bay) Community Plan (adopted June 1987, amended March 1992)	
Land Use Map	A portion of the C-RCR (Coastal Resort and Commercial Recreation) area in the Community Plan is designated as Coastal Open Space and C-GC (general commercial / mixed-use) in the *Draft 2005 CWP Update*. The Village Commercial designation in the Community Plan is Neighborhood Commercial / Mixed Use in the *Draft 2005 CWP Update*. The C-RMPC in the Community Plan is labeled as C-NC in the *Draft 2005 CWP Update*. The Coastal Agricultural Production Zone in the Community Plan has been broken into AG1 and C-AG1, and C-AG3 in the *Draft 2005 CWP Update*.
Policies	Community Plan Policy **CD-7**: Mariculture, boat repair, fishing, water-related recreation and scenic resources, shall have priority over other uses along the shoreline. (The *Draft 2005 CWP Update* designates most of the shoreline within the Planning Area for other uses, including single-family and Neighborhood commercial / Mixed Use). Community Plan Policy **CD-25**: Community services shall be pursued when a majority of community members desire them.
LOS	Community Plan Policy **CD-8**: New development shall not cause a significant cumulative adverse affect on existing roadway and traffic conditions. (*Draft 2005 CWP Update* Policy **TR-1.4** (*Share the Costs for Improvements*) Require new development to pay or otherwise improve its fair share of the transportation system impacts and the *Draft 2005 CWP Update* accepts LOS D or better for urban and suburban arterials and LOS E or better for U.S. 101.)
Indian Valley Community Plan (adopted March 2003)	
Land Use Map	There is a new Ridge and Upland Greenbelt designation in the Countywide Plan.
Policies	Community Plan Policy **3.1.2**: Minimum lot area for any parcel zoned A2-B4 shall be determined by the Indian Valley Slope Policy: Average Slope < 10% = Min 1 acre lot; Average Slope of 10-20% = Min 1.5 acre; Average slope > 20% = Min 2 acre lot. Community Plan Policy **3.1.3**: Maximum residential floor area is established for parcels zoned A2-B4 and max is 7,000 square feet.
LOS	NA

Applicable Provision / Policy / Regulation	***Consistency Issue(s)***
Inverness Ridge Community Plan (adopted 1983)	
Land Use Map	The majority of the plan area is designated as Coastal open space in the *Draft 2005 CWP Update*. There is also a significant amount of designated Coastal Single Family area, and a small amount of Coastal General Commercial / Mixed Use in the *Draft 2005 CWP Update*.
Policies	Consistent
LOS	Community Plan Policy **7.00**: Maintain the present roadway system within its current capacity and configuration. (*Draft 2005 CWP Update* CWP accepts LOS D or better for urban and suburban arterials and LOS E or better for U.S. 101.)
Kentfield / Greenbrae Community Plan (adopted 1987)	
Land Use Map	New Open Space and Ridge and Upland Greenbelt designation exist in the *Draft 2005 CWP Update*.
Policies	Community Plan Policy **III-51**: no second units should be developed in the Planning Areas. Existing illegal units should be abated. Community Plan, Policy **Subarea B**: Proportional distribution of uses – 40% retail, 40% office, and 20% residential; Community Plan Policy **Subareas B, C, D, E & F**: max FAR is 35% except lots < 6,000 sf.
LOS	NA
Marin City Community Plan (adopted January 1980, amended March 1992)	
Land Use Map	Golden Gate National Recreation Area Open Space has been expanded in the *Draft 2005 CWP Update* and contains a Ridge and Upland Greenbelts designation. The PR designation in the Community Plan is mostly Open Space in the *Draft 2005 CWP Update.* The Community Plan Public Housing designation is labeled as MF4.5 in the *Draft 2005 CWP Update*. There is also a new Open Space designation in the middle of the MF4.5 area in the *Draft 2005 CWP Update*.
Policies	*Draft 2005 CWP Update* Program **TR-1.h** (*Add Transportation Policies to Community Plans*)
LOS	NA

Applicable Provision / Policy / Regulation	***Consistency Issue(s)***
Muir Beach Community Plan (adopted May 1979, amended February 1988)	
Land Use Map	No land use map in the Community Plan. The *Draft 2005 CWP Update* identifies a large portion of the plan area as Open Space and the rest is mostly Single-Family and Agriculture with a small amount of Neighborhood Commercial / Mixed Use and Public Facility.
Policies	Consistent
LOS	NA
Nicasio Valley Community Plan (adopted May 1979, amended February 1988)	
Land Use Map	No land use map, only a proposed zoning map in the Community Plan. Both the Community Plan and the *Draft 2005 CWP Update* show the area as mostly agricultural; however, a new Open Space designation appears in the *Draft 2005 CWP Update* map.
Policies	Community Plan Policy **1**: The Community Plan does not recommend development density reductions as a means to preserve water quality, but does recommend cluster development and TDR's as planning alternatives which can help to preserve water quality. Community Plan Policy **B – Fire Protection**: a 10,000 gallon storage tank should be provided for each new SF residence; fire hydrants should be located within 600 ft of the proposed residence. Community Plan Streams Policy: further study of the County Stream Conservation Zone consisting of a buffer of 300 feet from either side of all streams to inventory the major streams and formulate better design standards for residential construction and agricultural activities. *Draft 2005 CWP Update* Program **TR-1.h** (*Add Transportation Policies to Community Plans*) According to the Community Plan, County policy should be established to ensure that adequate groundwater is available for new development and that no building permits are issued or final maps recorded until sufficient proof is provided that adequate groundwater for domestic use is available.
LOS	NA

Applicable Provision / Policy / Regulation	***Consistency Issue(s)***
Point Reyes Station Community Plan (adopted 2001)	
Land Use Map	There is no land use map in the Community Plan, only a proposed zoning map. The *Draft 2005 CWP Update* map shows the expansion of the Golden Gate National Recreation Area Open Space designation and the remainder of the planning area remains as a single-family designation. There is a small amount of Coastal Neighborhood / Mixed Use Designated area in the *Draft 2005 CWP Update* as well.
Policies	Community Plan Policy **CL-4.3**: Future development of the Grandi building shall require submittal of planned uses for the entire parcel (APN 119-234-01), including the existing Cheda building and Sawyer building; Community Plan Policy **CL-4.4**: Any change in use of the Red Barn (now referred to as the Depot) shall require submittal of plans for the entire parcel (APN 119-198-05); Consistent
LOS	NA
San Geronimo Community Plan (adopted December 1978, amended 1982 and 1997)	
Land Use Map	More open space and new agricultural and mixed use designations were added to formerly residential sites in the Countywide Plan. A large portion of SF1 is part of a new open space designation (Gary Giacomino Open Space Preserve). Additional open space and agriculture designations were added to the Forest Knolls Planning Area.
Policies	Consistent
LOS	A nearby section on Sir Francis Drake Boulevard (west Fairfax) has LOS F, but it is a grandfathered segment not subject to deficiency plan
Stinson Beach Community Plan (adopted 2006)	
Land Use Map	There is no land use map in Community Plan. The *Draft 2005 CWP Update* calls for predominantly single-family and coastal agricultural uses. There is a small amount of General Commercial / Mixed Use and Coastal open Space designated area in the *Draft 2005 CWP Update*.
Policies	Consistent

Applicable Provision / Policy / Regulation	***Consistency Issue(s)***
Stinson Beach Community Plan cont.	
LOS	NA
Strawberry Community Plan (adopted November 1973, amended 1982)	
Land Use Map	There is no land use map in Community Plan or amendments. The *Draft 2005 CWP Update* includes new Ridge and Upland Greenbelts and Baylands Corridor designations.
Policies	*Draft 2005 CWP Update* defers to Community Plan for land use policies; Community Plan: **T-10**: to ensure that non-residential development has adequate parking, do not allow the leasing of land for parking to increase floor area for a parcel, or to meet on-site parking requirements inconsistent with shared parking practices promoted in the Countywide Plan. *Draft 2005 CWP Update* Program **DES-1.a** (*Add Design Components to Community Plans).* Update community plans to include customized building and site design standards that reflect the unique character of each area, respond to local design issues, and encourage…shared parking in commercial centers. *Draft 2005 CWP Update* Program **HS-3q (***Establish Mixed Use Development Standards and Incentives)*. d. Allow reduced and shared parking based on the use mix, and allow for reduced parking where sites are located within 0.25 mile of a public transit stop.
LOS	Community Plan – LOS recommendations (Amendments): Highway 101 – LOS B Tiburon Blvd / Redwood– LOS D / E Tiburon Blvd / E. Strawberry – LOS B Seminary Dr / Redwood – LOS B / C Maintenance of existing service levels at the Seminary / 101 / Frontage Road interchange should be a prime determinate of the development that is located at the Golden Gate Theological Seminary Site. *Draft 2005 CWP Update* Policy **TR-1.4**: (*Share the costs for improvements*). Require new development to pay or otherwise improve its fair share of the transportation system impacts and the *Draft 2005 CWP Update* accepts LOS D or better for urban and suburban arterials and LOS E or better for U.S. 101).

Applicable Provision / Policy / Regulation	***Consistency Issue(s)***
Tamalpais Valley Community Plan (adopted September 1992)	
Land Use Map	New Open Space and Ridge and Upland Greenbelt designations exist in the *Draft 2005 CWP Update*.
Policies	*Draft 2005 CWP Update* defers to Community Plan for land use policies.
LOS	NA
Tomales Community Plan (adopted March 1997)	
Land Use Map	Coastal Neighborhood Commercial became Coastal Village Commercial in the *Draft 2005 CWP Update*. Coastal Planned Commercial became Coastal GC / Mixed Use. C-ARP-20 became C-PF-AG2 in the Countywide Plan where Tomales High School is now located.
Policies	Consistent
LOS	NA

REVIEW OF OTHER PLANS AND PROGRAMS

As with the preceding analysis of community plans, the following analysis of other plans and programs does not identify any plan inconsistencies with the *Draft 2005 CWP Update* that would result in adverse physical CEQA impacts. For identified potential conflicts that are associated with environmental resources protection or preservation, conflicts are generally the results of *Draft 2005 CWP Update* policies that provide stricter standards and policies than identified for the Marin Local Coastal Program or other plans and programs. Adoption of the *Draft 2005 CWP Update* policies would require County decision-makers to consider policy updates ad additions or amendments to these other plans to ensure their continued conformance with the adopted *Countywide Plan Update.*

Marin County Local Coastal Program

Marin County's Local Coastal Program (LCP) is divided into two subareas or units. The boundaries of Unit 1 generally consist of the southern portion of Marin County's coastline, including the unincorporated communities of Bolinas, Stinson Beach, and Muir Beach. [21] The boundaries of Unit II are generally the area from Olema north to the Marin / Sonoma County line, including the unincorporated communities of Point Reyes, Inverness, Tomales, and Dillon Beach. [22]

A summary of consistency between the LCP and the *Draft 2005 CWP Update* is provided below:

LCP Unit I

LCP Policies on Public Access

Policy 3 (page 7) promotes the use of prescriptive rights. Program TRL-1.j Utilize Prescriptive Rights, of the *1994 CWP*, has been deleted from the *Draft 2005 CWP Update*.

LCP Policies on Recreation and Visitor Serving Facilities

No consistency conflicts.

LCP Policies on State and Federal Parklands

No consistency conflicts.

LCP Policies on Stream Protection

Policy 3 (page 19) on the riparian protection area differs with *Draft 2005 CWP Update* Policy **BIO-4.1** on Stream Conservation Areas. The *Draft 2005 CWP Update* policy appears to be stricter. Plus, the LCP policy applies only to USGS blue lined streams, while the *Draft 2005 CWP Update* policy

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21 *Marin County Local Coastal Program Unit 1*, Marin County Comprehensive Planning Department, adopted by Marin County Board of Supervisors August 21, 1979, certified by State Coastal Commission, April 1, 1980. A revised document was completed in May 1981.

22 *Marin County Local Coastal Program Unit I1*, Marin County Comprehensive Planning Department, adopted by Marin County Board of Supervisors December 9, 1980, certified by State Coastal Commission, April 1, 1981.

applies along perennial, intermittent, and ephemeral streams. Further, Policy 3 says there shall be no construction or alteration of land forms permitted in the riparian area, while the above *Draft 2005 CWP Update* policy lists allowable uses.

LCP Policies on Lagoon Protection

Policy 13 (a) (page 26) allows diking, filling, and dredging of wetlands in and around Bolinas Lagoon for minor public works projects. *Draft 2005 CWP Update* Program **BIO-5.d** would appear to prohibit the practice unless the area is already developed or is already being dredged.

Policy 18 requires a 100-foot setback from wetlands. This policy appears to be stricter than *Draft 2005 CWP Update* Policy **BIO-3.1** because it would allow exceptions.

LCP Policies on Dune and Sandy Beach Protection

No consistency conflicts.

LCP Policies on Habitat Protection

No consistency conflicts.

LCP Policies on Agriculture

No consistency conflicts.

LCP Policies on Shoreline Protection and Hazard Areas

No consistency conflicts.

LCP Policies on Public Services

Policy 2 (page 48) prohibits industrial and energy facilities in the coastal zone. This could be construed to prohibit the production of renewable energy resources mentioned in *Draft 2005 CWP Update* Programs **EN-2.b**, **EN-2.c**, **EN-2.e**, and **EN-2.j**.

LCP Policies on New Development and Land Use

This section covers Historical Resources, Archaeological Resources, Visual Resources, Housing, and Grading.

While the two housing policies on page 66 may be outdated, there are no apparent inconsistencies with other policy areas.

LCP Policies on Location and Density of New Development

The LCP states that the Muir Beach LCP land use designations shall follow the Community Plan land use designations. It also states that the Stinson Beach LCP land use designations are those identified in the adopted Community Plan. There are no inconsistencies.

LCP Unit II

Unit II of the LCP encompasses the coastal area from Olema north to the Sonoma-Marin County border and includes the villages of Olema, Point Reyes Station, Inverness, Dillon Beach, Oceana Marin, Marshall, and Tomales.

LCP Policies Public Access Policies

Same issue as with Unit I on prescriptive rights. Otherwise there are no other consistency issues.

LCP Policies Recreation and Visitor Serving Facilities

No consistency conflicts.

LCP Policies Federal Parklands

No consistency conflicts.

LCP Policies Natural Resources

Policy 3(d) deals with Stream Buffers (page 73). The LCP specifies that no construction, alteration of land or vegetation removal shall be permitted within the stream buffer, although the *Draft 2005 CWP Update* policy allows exceptions.

Policies in the *Draft 2005 CWP Update* on wetlands specify jurisdictional wetlands, while the LCP polices (page 74) just refers to wetlands. In addition, the *Draft 2005 CWP Update* would introduce the Wetland Conservation Area (**BIO-3.1**), which is not addressed in the LCP.

LCP Policies Agriculture

No consistency conflicts, although the allowable uses described in Policy 6 (page 100) for the APZ district may differ with what is in the Development Code for agriculture processing and retail sales.

LCP Policies Mariculture

Draft 2005 CWP Update Policy **AG-2.8** would avoid introduction of invasive mariculture species; LCP Policy 2(e) (page 114) deals with exotic animals. The *Draft 2005 CWP Update* policy would focus on avoiding and preventing the introduction of invasive species, while the LCP policy allows the importation of exotic species after careful review for its potential effect on native organisms.

LCP Policies Commercial Fishing and Recreational Boating

No consistency conflicts.

LCP Policies Public Trust Lands

No consistency conflicts.

LCP Policies Shoreline Structures

No consistency conflicts.

LCP Policies Diking, Filling, and Dredging

These policies address the diking, filling, and dredging of coastal areas such as open coastal waters, wetlands, estuaries, and other water bodies. No consistency conflicts.

LCP Policies Public Services

No consistency conflicts.

LCP Policies New Development and Land Use

Policies in this section include the areas of Historic Resources, Archaeological Resources, Visual Resources, Housing, Hazards, Watershed and Water Quality Protection/Grading, Energy and Industrial Development, and Location and Density of New Development.

LCP Policies Historic Resources

No consistency conflicts.

LCP Policies Archaeological Resources

Policies in the *Draft 2005 CWP Update* are more comprehensive than those in the LCP. Another difference is that the *Draft 2005 CWP Update* considers a site historically significant if it is more than 50 years old (**HAR-2.a**), while the LCP focuses on pre-1930 buildings. Otherwise, there are no policy conflicts.

LCP Policies Visual Resources

No consistency conflicts.

LCP Policies Housing

The LCP housing policies are outdated, but otherwise there are no policy conflicts.

LCP Policies Hazards

No consistency conflicts.

LCP Policies Watershed and Water Quality Protection/Grading

No consistency conflicts.

LCP Policies Energy and Industrial Development

No consistency conflicts. However, it is unclear whether the renewable resources listed in the *Draft 2005 CWP Update* Program **EN-2.b** are consistent with those listed in the LCP policy 7 (page 209), specifically small hydrological, biogas, wave, and tidal resources.

LCP Policies Location and Density of New Development

No consistency conflicts.

Airport Master Plan, Gnoss Field

The Airport Master Plan, adopted in 1991, provides Marin County with an informational document regarding the development of facilities at Gnoss Field over the next 20 years. The Transportation section of the Built Environment Element recognizes that the County airport at Gnoss Field should be the only civilian airport facility in Marin County and shall be for aviation only. The intent of the *Draft 2005 CWP Update* is that the policies would be consistent with the Airport Master Plan. Policy **TR-1.7** would be to maintain Gnoss Field as the county's only civilian airport facility and to limit its use and expansion in accordance with the adopted Airport Master Plan. Program **TR-1.p** would specifically limit the use of Gnoss Field to general aviation and emergency flights, in accordance with the Airport Master Plan and current technological conditions.

Regional Airport System Plan General Aviation Element [23]

This report deals with the 20 publicly owned and operated general aviation airports in the Bay Area. [24] The only general aviation airport in Marin County is Gnoss Field. The General Aviation Element of the Regional Airport System Plan evaluates issues faced by general aviation users and articulates a set of regional interests and recommendations that would apply to the general aviation airport system in the Bay Area. Part 1 provides information about trends within the general aviation industry. Part 2 provides an updated database of information about general aviation airport facilities and plans. The *Draft 2005 CWP Update*, especially Policy **TR-1.7**, would be consistent with the Regional Airport System Plan.

Marin County Operational Area Hazard Mitigation Plan

The Marin County Local Hazard Mitigation Plan, adopted in April 2005, describes strategies for sustaining and building on current mitigation activities to ensure future safety of lives, preservation of property, and protection of the environment during times of disaster. The Environmental Hazards section of the *Natural Systems & Agricultural Element* includes policies and programs to minimize harm to people and property due to environmental hazards from seismic activity, geology conditions, flooding and fire. These policies and programs are consistent with the Hazard Mitigation Plan. Goal **PS-3** of the *Draft 2005 CWP Update* would require the County to provide proper emergency and disaster preparedness services through effective and coordinated emergency management plans and procedures.

Telecommunications Facilities Policy Plan Update

The Telecommunications Plan provides guidance for allowing the efficient and effective development of telecommunications facilities while protecting natural resources, communities, and other land uses of Marin County. The Public Facilities and Services section of the *Built Environment Element* contains policies and programs consistent with the Telecommunications Plan. Goal **PFS-5** would be to ensure that siting of telecommunications facilities avoids their undue proliferation and adverse affects on people and / or environmental or visual quality. Policy **PFS-5.1** would require that new telecommunications projects be consistent with the County Telecommunications Facility Policy Plan.

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[23] *Regional Airport System Plan General Aviation Element Final Report*, Metropolitan Transportation Commission, San Francisco Bay Conservation and Development Commission, Association of Bay Area Governments, June 2003.

[24] General aviation refers to all the flying conducted by individuals and businesses that is not conducted by an airline, commuter/air taxi or the military.

Consistent with the Telecommunications Plan several programs of the *Draft 2005 CWP Update* would reduce the impacts of telecommunication facilities. Program **PFS-5.d** would prohibit the installation of telecommunications facilities that would pose a significant threat to the health and survival of people, threatened or endangered species, or migratory birds unless such facilities are necessary to protect health m safety, or welfare. Program **PFS-5.e** would locate telecommunication facilities away from schools, health facilities, and residential areas, unless no other feasible site is available.

The Marin County Child Care Master Plan, 2002 - 2007

This report presents a brief portrait of the weaknesses and strength's of Marin County's current child care system followed by a discussion of the opportunities identified for providing better child care choices for children, families, and providers. The Childcare section of the *Socioeconomic Element* contains policies and programs intended to ensure adequate childcare in Marin County. Goal **CH-1** would strive to increase the number of childcare facilities countywide and Goal **CH-2** would be to expand the range of available childcare options. Several of the *Draft 2005 CWP Update* policies would result in an increased number of childcare facilities in Marin County. Policy **CH-1.2** would require onsite childcare or in-lieu fees for childcare in new public and private mixed-use and nonresidential development. Policy **CH-1.3** would streamline the permitting process for childcare facilities.

Marin County Development Code

The Marin County Development Code, Title 22 of the Marin County Code (Development Code) sets forth zoning and other regulations that are applicable in the unincorporated areas of Marin County. One of the purposes of the Development Code is to implement the Countywide Plan, adopted community plans and other specific plans, and the Local Coastal Program by encouraging the uses of land envisioned by these land use documents, and by avoiding conflicts between land uses.

As discussed in ***Chapter 3.0 Description of the Proposed Project***, the *Draft 2005 CWP Update* implementing programs include amendments to the Development Code to be enacted after adoption of the *Marin Countywide Plan 2005*. The purpose of the amendments is to make the Development Code consistent with the goals, policies, and programs of the Countywide Plan.

For example, Program **CD-1.a** would require the County to update the Development Code as necessary to ensure that urban development is confined primarily to the City-Centered Corridor, and to designate specific areas within and surrounding the corridor for resource protection, including the Ridge and Upland Greenbelt Area, the Streamside Conservation Area, designated wetlands, and undeveloped historic baylands and floodplains. Program **CD-1.c** would amend the Development Code to calculate potential residential density and commercial Floor Area Ratio (FAR) at the low end of the applicable range on sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems. Program **CD-8.a** would have the County conduct a review of the Development Code to determine whether zoning categories and regulations clearly reflect the intention of the Countywide Plan land use plan map designation and express the relationship between land use and population density and appropriate uses and procedures. Program **CD-8.b** would have the County review and revise zoning designations where proposed land use mp designations are different from existing zoning in the unincorporated portions of the county. With this program zoning would be consistent with Countywide Plan land use designations in unincorporated areas.

Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) is the federally-designated state coastal management agency for San Francisco Bay and has jurisdiction in the greater San Francisco Bay area to administer the State's McAteer-Petris Act, the *San Francisco Bay Plan*, and the Suisun Marsh Preservation Act. In all decisions involving wetlands, the BCDC and its staff evaluate projects in light of the McAteer-Petris Act (the BCDC's primary law), the *San Francisco Bay Plan*, the Suisun Marsh Preservation Act, the *Suisun Marsh Protection Plan*, the federal Coastal Zone Management Act, and the California Environmental Quality Act.

BCDC is dedicated to the protection and enhancement of San Francisco Bay and to the encouragement of the Bay's responsible use. BCDC's primary roles in wetlands management in the Bay are planning the protection, enhancement, and restoration of wetlands; protecting wetlands (through BCDC's regulatory authority); and balancing the protection of wetlands against other often high priority objectives.

All projects proposed in tidal wetlands within the BCDC's jurisdiction require an approved BCDC permit before proceeding. Under State and federal law, BCDC is required to set conditions for these permits in order to minimize impacts on wetlands and to offset unavoidable impacts.

In addition to the controls over filling and dredging in the Bay, BCDC has limited control over the Bay shoreline as specified in the McAteer-Petris Act. Such limited shoreline jurisdiction is necessary to reduce pressures for Bay filling that would result from poor use of available shoreline land, and to assure that public access to the Bay is provided wherever feasible. BCDC's shoreline jurisdiction, as defined in the McAteer-Petris Act, consists of the area between the Bay shoreline, as defined in the Act, and a line 100 feet landward of and parallel to the shoreline. The Act further specifies that certain water-oriented land uses should be permitted on the shoreline, including ports, water-related industries, airports, wildlife refuges, water-oriented recreation and public assembly, desalinization plants, and power plants requiring large amounts of water for cooling purposes. Priority use areas designated for such uses in the Bay Plan are to be reserved for them in order to minimize the need for future filling in the Bay for such uses. Within the 100-foot shoreline jurisdiction but outside of the areas designated for priority uses, BCDC may deny an application for a permit for a proposed project only on the grounds that the project fails to provide maximum feasible public access, consistent with the proposed project, to the Bay and the shoreline. BCDC also has, under the McAteer-Petris Act, limited jurisdiction over salt ponds and managed wetlands. BCDC also maintains jurisdiction over certain waterways, which in Marin County includes portions of the Petaluma River and Corte Madera Creek.

Two of BCDC’s plans directly apply to areas within Marin County: The *San Francisco Bay Plan* and the *Special Area Plan: Richardson Bay*.

San Francisco Bay Plan

The *San Francisco Bay Plan* sets forth the permitting provisions for the Bay. For those areas subject to BCDC’s jurisdiction, in addition to obtaining the necessary project approvals from the County, they may also require a permit from the BCDC. BCDC issues permits for Bay filling and dredging, including piers, pilings and floating structures and for shoreline development. Priority uses for the shoreline include ports, water-related industry, water oriented recreation including public access, airports and wildlife refuges. The *Draft 2005 CWP Update* specifies uses consistent with the Bay Plan.

Consistent with BCDC's policies, Goal **BIO-5** of the *Draft 2005 CWP Update* would seek to preserve and enhance the diversity of the baylands ecosystem, including tidal marshes and adjacent uplands, seasonal marshes and wetlands, rocky shorelines, lagoons, agricultural lands, and low-lying grasslands overlaying historical marshlands.

Several policies of the *Draft 2005 CWP Update* would result in the protection and enhancement of San Francisco Bay plus provide encouragement of the Bay's responsible use. Policy **BIO-5.2** would be to ensure that development does not encroach into sensitive vegetation and wildlife habitats, damage fisheries or aquatic habitats, limit normal wildlife range, or create barriers that cut off access to food, water, or shelter for wildlife. This policy requires an environmental assessment where development is proposed within the Baylands Corridor. Policy **BIO-5.3** would require that all tidelands be left in their natural state to respect their biological importance to the estuarine ecosystem. Any modifications should be limited to habitat restoration or enhancement plans approved by regulatory agencies. Policy **BIO-5.4** would enhance the wildlife and aquatic habitat value of diked bay marshlands, and encourages land uses and provide or protect wetland or wildlife habitat and do not require diking, filling, or dredging. Policy **BIO-5.5** would preserve and, where possible, expand habitats associated with freshwater streams, seasonal wetlands, and small former marshes to facilitate the circulation, distribution, and flow of fresh water and to enhance associated habitat values. Policy **BIO-5.8** would ensure that any modifications to the shoreline do not result in a loss of biodiversity or opportunities for wildlife movement. Possible modifications may include construction of revetments, sea walls, and groins, as permitted State and federal agencies.

Several of the *Draft 2005 CWP Update* programs would be supportive of the *San Francisco Bay Plan*. Program **BIO-5.d** would ensure that the County's Development Code would prohibit diking, filling, or dredging in tidelands, unless the area is already developed and currently being dredged. Current dredging operations for maintenance purposes may continue subject to environmental review, if necessary. In some cases, exceptions may be made for areas that are isolated or limited in productivity. In tidal areas, only lands that are water-dependent shall be permitted, as consistent with federal, State, and regional policy. Program **BIO-5.e** would ensure that the Development Code would allow only those land uses in diked bay marshlands that protect wetland or wildlife habitat.

Richardson Bay Plan

Five local governments have jurisdiction over the waters and shorelines of Richardson Bay: Marin County, the cities of Sausalito, Mill Valley, and Belvedere and the Town of Tiburon. Because Richardson Bay is a relatively small and enclosed body of water, activities that occur in one local jurisdiction have impact on the other four jurisdictions as well as BCDC's jurisdiction. Recognizing this, the agencies determined there was need for a unified set of planning policies and regulatory controls that would be common to the local governments and the BCDC. Thus, the purpose of the *Richardson Bay Special Area Plan* is to recommend to each agency uniform policies and regulations for adoption as the agency's specific policy for Richardson Bay.

The *Draft 2005 CWP Update* contains goals, policies, and programs that are consistent with the *Richardson Bay Special Plan*. As discussed above, goals, policies, and programs that result in the protection of the Bay's natural resources; use of the water for water-oriented purposes; restoration and enhancement of degraded tidal wetlands; and provision of public access to and along the Bay's shoreline would be consistent with the *Richardson Bay Special Plan*.

Bay Trail Plan

The *Bay Trail Plan* was adopted by the Association of Bay Area Governments in 1989. This plan proposes development of a regional hiking and bicycling trail around the perimeter of San Francisco and San Pablo Bays. The plan proposes an alignment for what will become a 400-mile recreational "ring around the Bay". The *Draft 2005 CWP Update* acknowledges that some of Marin County's public trails may become part of other regional or statewide trail systems such as the Bay Trail. **Map 2-18** (Coastal, Ridge and Bay Trails) in the *Draft 2005 CWP Update* shows both existing and proposed bay trails. Program **TRL-1.d** would be to complete regional trail systems in Marin County, including the Bay Trail.

Both the *Bay Trail Plan* and the *Draft 2005 CWP Update* recognize the need to control public access and plan trails to protect sensitive habitat areas. *Bay Trail Plan* Trail Alignment Policy 2 is to minimize impacts on and conflicts with sensitive environments. Trail Alignment Policy 8 states where existing trails through wetlands are well-maintained and well-managed; the Bay Trail can feasibly be routed there. However, it also states that alternative routes should be provided where necessary and additional buffering / transition areas designed to protect wetland habitats should be provided where appropriate to protect wildlife.

Draft 2005 CWP Update policies and programs to protect sensitive habitat area would also serve to minimize the impacts of the Bay Trail. The Stream Conservation Areas (SCA) along designated streams, the Wetland Conservation Area (WCA) around jurisdictional wetlands, and the establishment of the Baylands Corridor along the shoreline of San Francisco Bay and San Pablo Bay are aimed to protect known sensitive habitat areas. The *Draft 2005 CWP Update* recognizes the need to ensure that public access does not do harm to sensitive habitat areas. Program **BIO-4.k** would require that trails be located at adequate distances from streams to protect riparian and aquatic habitat and wildlife Corridors. The Baylands Corridor designed to protect the baylands and large, adjacent essential uplands, would not prevent the development of the Bay Trail. Although Policy **BIO-5.7** may limit public access to wetlands, it would not prohibit such access as long as the access is designed to avoid or minimize disturbance to the wetlands, the necessary buffer areas, and associated important wildlife habitat while facilitating public use, enjoyment, and appreciation of bayfront lands. Program **BIO-5.f** would require that public use areas be designed to be clearly marked, to minimize possible conflicts between public and private uses, to provide continuous ten-foot wide walkways from the nearest roads to the shoreline and along the shoreline, to be set back at least ten feet from any proposed structure, and to be buffered from wetlands. Program **BIO-5.f** would also restrict access to environmentally sensitive marshlands and adjacent habitat, especially during spawning and nesting seasons.

Marin County Local Agency Formation Commission

The Marin Local Agency Formation Commission (LAFCo) promotes and coordinates the efficient delivery of local governmental services and encourages the preservation of open space and agricultural lands. LAFCo has four major functions under State law:

- Review and approve or disapprove proposals for changes in the boundaries or organization of cities and special districts in the county (including annexations to or detachments from cities and districts, incorporations of cities, formations of districts, and the dissolution, consolidation or merger of special districts), applications for activation of special district latent powers, and applications to provide service outside of a city or district boundary;

- Establish and periodically update the sphere of influence or planned service area boundary for each city and special district;

- Initiate and assist in studies of existing local government agencies with the goal of improving the efficiency and reducing the costs of providing urban services; and

- Provide assistance to other governmental agencies and the public concerning changes in local government organization and boundaries.

The *Draft 2005 CWP Update's* establishment of the four corridors (Coastal Corridor, Inland Rural Corridor, City-Centered Corridor and Baylands Corridor) would be consistent with LAFCo's mission to focus development and to protect environmental resources, including agricultural land. Furthermore, the *Draft 2005 CWP Update* acknowledges that "urban development is best served if it occurs in urbanized locations, which are equipped to provide water, sewer, police, and fire protection services efficiently." Policy **CD-6.2** would support LAFCo's efforts to update the sphere of influence boundary plans for local jurisdictions, and update the urban service areas boundaries, if necessary. Consistent with Policy **CD-6.2**, the *Draft 2005 CWP Update* contains a number of programs that would call for consideration of annexation of urban areas (**CD-6.a**); referral of project proposals to cities (**CD-6.b**); review of Urban Service Areas (USA) and Spheres of Influence (SOI) (**CD-6.d** and **CD-6.e**).

As required by State law, Marin LAFCo is required to determine the sphere of influence of each local governmental agency within the county. [25] LAFCo has completed its service review and sphere of influence review for both Southern Marin and for the City of San Rafael. [26] [27] The *Draft 2005 CWP* Update would call for updating County maps to reflect adopted SOIs and USAs as LAFCo completes its sphere reviews. Proposed policies in the *Draft 2005 CWP Update* would call for coordination of urban fringe planning (**CD-6.1**), and updating of SOIs and USAs consistent with LAFCo's reviews (**CD-6.2**). Maps **3-17** through **3-30** in the *Draft 2005 CWP Update* locate each city or town's sphere of influence and urban service area. Program **CD-6.e** would call for the County to update its maps to show the adopted changes to SOIs and USAs from LAFCo's study of the spheres of influence and service areas. Program **CD-6.d** would call for the County to consider removal of several unincorporated, established communities such as Kentfield, Kent Woodlands, Lucas Valley, and Marinwood as well as St. Vincent's / Silveira area, from the USAs of Larkspur and San Rafael if so indicated by LAFCo actions. [28]

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[25] See Sections 56425 and 56430 of the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000.

[26] *Southern Marin Service Review and Sphere of Influence Update*, Public Review Draft, Marin Local Agency Formation Commission, April 26, 2004.

[27] *San Rafael Area Service Review and Sphere of Influence Public Review Draft*, Marin Local Agency Formation Commission, January 2006.

[28] In June 2006, LAFCo completed it actions regarding the City of San Rafael service review. Its action included the removal of three areas (Lucas Valley, Marinwood and St. Vincent's / Silveira) from the City's sphere of influence. Nichols • Berman communication with Evelyn Ellis, Assistant Planner, Marin Local Agency Formation Commission, June 2006.

Other LAFCo policies applicable to lands governed by the *Draft 2005 CWP Update* include the following agricultural lands policies:

- Land which is currently engaged in the substantial production of food, fiber, or livestock, or is identified as agricultural land under Williamson Act contract shall not be annexed to a city or a sanitary sewer agency for the purpose of promoting urban development; and

- Development of existing vacant or non-prime agricultural lands for urban uses within a city's and / or special district's jurisdiction or within a city's and / or special district's sphere of influence should be encouraged before any proposal is approved which would allow for or lead to the development of existing agricultural or open space lands for nonagricultural or non open space uses which are outside of the city's and / or special district's jurisdiction or outside of a city's and / or special district's sphere of influence.

Consistent with LAFCo policies, the *Draft 2005 CWP Update* includes goals, policies and programs directed at directed at protecting agricultural lands. Guiding Principal 6 is to protect agricultural lands and work to maintain the County's agricultural heritage. One of the overarching goals is t ensure that Marin's working agricultural landscapes will be protected and the agricultural community will remain viable and successfully produce and market a variety of healthy foods and products. The Agriculture and Food section of the *Natural Systems & Agriculture Element* includes numerous policies which would be highly protective of ongoing agricultural operations, including, but not limited to Policy **AG-1.3** (Preserve Agricultural Zoning) and Policy **AG-1.5** (Restrict Subdivision of Agricultural Lands within the Coastal, Inland Rural, and Baylands Corridor), as well as other policies and implementing programs.

With implementation of the goals, policies, and programs the *Draft 2005 CWP Update* would be consistent with the Marin LAFCo's mission and applicable policies.

National Park Service General Management Plan

The National Park Service owns 97,591 acres in Marin County including the Golden Gate National Recreation Area (26,000 acres), Point Reyes National Seashore (71,068 acres), and Muir Woods National Monument (523 acres).

The National Park Service's current planning document for its lands in Marin County is the *General Management Plan*, which was adopted in 1980.[29] The National Park Service is in the process of updating the *General Management Plan* for the Point Reyes National Seashore. The update includes Golden Gate National Recreation Area lands administrated by the National Park Service in Olema Valley and within Tomales Bay. The *General Management Plan Update* will guide management actions in the future.

In November 2003, the National Park Service released for public review the *Concepts Newsletter* for the Update to the General Management Plan for Point Reyes National Seashore and certain lands within the Golden Gate National Recreation Area. These preliminary concepts were generated from

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[29] *Golden Gate National Recreation Area / Point Reyes National Seashore General Management Plan / Environmental, Analysis*, United States Department of the Interior / National Park Service, September 1980.

scoping meetings and were a starting point for the development of alternatives for public review in a draft General Management Plan and Environmental Impact Statement (EIS). [30]

It is anticipated that the Draft General Management Plan Update / EIS will be released in January 2007. [31] In addition to the General Management Plan Update, the National Park Service is preparing two additional EISs, the Non-Native Deer Management Plan EIR and the Giacomini Wetlands EIS. The Non-Native Deer Management Plan is scheduled to be available for public review in September 2006 and the Giacomini Plan could be available for public review in Fall 2006. [32]

The National Park Service is also in the process of updating the *General Management Plan* for the Golden Gate National Recreation Area. [33] Many of the lands currently within the boundary of the Golden Gate National Recreation Area were not so when the *General Management Plan* was adopted in 1980. [34] Not all of the lands within the boundary of the Golden Gate National Recreation Area will be studied in the update. Rather, the update will focus on those areas that do not have recent land use planning. Also, as discussed above, Golden Gate National Recreation Area lands north of the Bolinas-Fairfax Road are being addressed in the *General Management Plan Update* for the Point Reyes National Seashore. The National Park Service initiated the updating process in Spring 2006 with a series of open houses. It is anticipated that the updated *General Management Plan* will be adopted in winter 2010. [35]

The general management objectives for the Golden Gate National Recreation Area are to:

- Preserve and restore the natural resources;
- Preserve and restore cultural resources;
- Make the recreation area readily available to the broadest variety of park users;
- Provide a broad variety of park experiences; and
- Be considerate of park neighbors.

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[30] Staff Report Summary of Comments from *Concepts Newsletter* Review Point Reyes National Seashore General Management Plan Update, National Park Service, undated.

[31] Email to Bob Berman from John A, Dell'Osso, Chief of Interpretation and Resource Education, Point Reyes National Seashore, August 8, 2006.

[32] Email to Bob Berman from John A, Dell'Osso, Chief of Interpretation and Resource Education, Point Reyes National Seashore, August 8, 2006.

[33] *Golden Gate National Recreation Area / Muir Woods National Monument General Management Plan / Environmental Impact Statement Newsletter #1*, U.S. Department of the Interior, National Park Service, Spring 2006.

[34] For example, a significant amount of land in San Mateo County has been added to the Golden Gate National Recreation Area since 1980.

[35] *Golden Gate National Recreation Area / Muir Woods National Monument General Management Plan / Environmental Impact Statement Newsletter #1*, U.S. Department of the Interior, National Park Service, Spring 2006.

The general management objectives for the Point Reyes National Seashore are to:

- Identify, protect, and perpetuate the diversity of natural resources;
- Identify, protect, and preserve significant historic and cultural resources;
- Offer interpretive programs and services that further an awareness and appreciation of the wide diversity of natural and cultural resources;
- Provide for and permit only those cultural, educational, and recreational activities that are compatible with the preservation of an undeveloped coastline;
- Ensure that park development is the minimum necessary for efficient and essential management and that visitor services are consistent with the seashore purposes and compatible with natural resource limitations and the special requirements imposed by the coastal environment; and
- Provide access to and circulation within the seashore that is compatible with other park objectives and considers a full range of alternative means of transportation.

In general, the goals, policies, and programs of the *Draft 2005 CWP Update* are consistent with the National Park Service's *General Management Plan* for the Point Reyes National Seashore and the Golden Gate National Recreation Area. The Open Space section of the Natural Systems & Agricultural Element recognizes both the Golden Gate National Recreation Area and the Point Reyes National Seashore and their important contributions to Marin County. Furthermore, the *Draft 2005 CWP Update* clearly states its intent to complement and support the missions and policies of the National park Service with goals, policies, and programs contained in the Natural Systems & Agricultural Element. [36]

Goals **OS-1** and **OS-2**, which would aim to sustainably manage and preserve open space for the benefit of the environment and Marin community members, would be consistent with the *General Management Plan*. Policy **OS-2.6** would require the County to work with State and federal agencies to preserve targeted sensitive coastal lands, specifically the retention of the Golden Gate National Recreation Area and the Point Reyes National Seashore in their natural conditions. The Open Space section of the Natural Systems & Agricultural Element would recognize the need to establish programs to ensure the continued cooperation and coordination of the many land management agencies, including the National Park Service, concerning open space. Program **OS-1.b** would encourage public land management agencies to share resource information and collaboratively address open space management issues. Program **OS-1.k** would establish partnerships to maximize funding opportunities for open space land stewardship while Program **OS-2.d** would establish partnerships to maximize open space funding opportunities.

The Trails Section of the Natural Systems & Agriculture Element recognizes the contribution of trails in both the Point Reyes National Seashore and Golden Gate National Recreation Area to the countywide trail system. The need to avoid or reduce conflicts along trails, especially parking and trespass issues, with neighboring properties owners is also acknowledged. Several programs are

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[36] In addition to the National Park Service, the Natural Systems & Agricultural Element cites the numerous other public agencies and non-governmental organizations, such as California State Parks, the Marin Municipal Water District, the North Marin Water District and the Marin Agricultural Land Trust that protect land in Marin. Furthermore, it is noted that it is the intent of the element to be consistent with the missions and policies of all of the organizations.

directed toward increasing cooperation with the National Park Service and reducing conflicts with neighboring properties. Program **TR-1.j** would encourage partnerships between public land management agencies and trail interest groups to increase and improve trial uses opportunities and minimize conflicts. Program **TR-2.j** would explore ways to address trailhead-parking issues.

With respect to agricultural lands, Policy **AG-1.9** would continue to encourage agricultural uses in Point Reyes National Seashore and Golden Gate National Recreation Area. This would be accomplished through long-term leases with agricultural operators.

The potential for land use conflicts at areas adjacent to National Park Service lands, as well as those owned by the State of California and other agencies, is recognized by the *Draft 2005 CWP Update*. Program **CD-4.d** would require County coordination with State, federal, and other agencies during review of development proposed on property located within or adjacent to State or federal lands that are within or near Marin County. Furthermore, Policy **PA-7.5** states that when considering expansion of village boundaries in West Marin, one criterion should be the location of existing and future boundaries of the Golden Gate National Recreation Area and the Point Reyes National Seashore.

Transportation 2030 Plan for the San Francisco Bay Area [37]

The Metropolitan Transportation Commission is responsible for adopting the San Francisco Bay Area's regional transportation plan. The current plan, known as the *Transportation 2030 Plan*, was adopted in February 2005. [38] The *Transportation 2030 Plan* is a long-range strategic investment plan to improve system performance for San Francisco Bay Area travelers over the next 25 years.

The plan includes a set of highway, transit, local roadway, bicycle, and pedestrian projects identified through regional and local transportation planning processes. The *Transportation 2030 Plan* is made of up two separate elements; the "financially constrained" element includes those transportation projects that would be funded through revenues projected to be reasonably available over the 25 year horizon of the plan. The more comprehensive "vision" element identifies illustrative transportation projects that would be funded through revenue measures that may become available in the future through either legislative action or voter mandate. Appendix 1 of the plan includes a list of projects included by county.

All of the *Draft 2005 CWP Update* transportation improvement projects are included in, and therefore consistent with, the *Transportation 2030 Plan* transportation improvement projects. A list of the *Draft 2005 CWP Update* transportation improvement projects and their corresponding *Transportation 2030 Plan* improvement project are presented in **Exhibit 4.1-12**. Prior to adoption of the *Transportation 2030 Plan*, the Metropolitan Transportation Commission prepared and certified an EIR for the plan. [39]

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[37] *Transportation 2030 Plan for the San Francisco Bay Area*, Metropolitan Transportation Commission, February 2005.

[38] The plan is updated every three years to reflect new planning priorities and changing projection of growth and travel demand as well as a realistic forecast of future revenues.

[39] *Transportation 2030 Plan Environmental Impact Report*, Metropolitan Transportation Commission, State Clearinghouse No. 2004022131. The Draft EIR is dated October 2004, the Final EIR is dated February 23, 2005.

Exhibit 4.1-12
Draft 2005 CWP Update Transportation Improvements

No.	Proposed Improvement	Included in MTC RTP 2030
1.	New overcrossing at the Redwood Landfill.	Yes. 100% privately funded project. System Efficiency #21888
2.	Widen U.S. 101 from four to six lanes to include an HOV lane in each direction from Novato to Petaluma.	Yes. Financially Constrained Element. Strategic Expansion 98154
3.	Improve Atherton Avenue at U.S. 101 interchange.	Yes. Financially Constrained Element -- This a part of the Strategic Expansion 98154 listed on page 96.
4.	New northbound auxiliary lane on U.S. 101 from State Route 37 off-ramp to South Novato Boulevard off-ramp.	Yes. Financially Constrained Element -- This a part of the Strategic Expansion 98154 listed on page 96.
5.	New northbound auxiliary lane from Nave Road onramp to State Route 37	Yes. Vision Element. System Efficiency 22437.
6.	New traveler information system along State Route 37.	Yes. This is a part of the "Give Bay Area Freeway a High Tech Edge" Call-To-Action in the *Transportation 2030 Plan*.
7.	New southbound auxiliary lane from Miller Creek Road to the truck scales.	Yes. This is part of the "Analyze Traffic Collision Data" call to action on page 67 as these are auxiliary lanes which provide extended acceleration and merging opportunities between on and off-ramps without increasing the mainline capacity.
8.	Improve U.S. 101/Lucas Valley Road interchange.	Yes. Majority of funding in Vision Element. Strategic Expansion 21306.
9.	A new southbound auxiliary lane on U.S. 101 from Manuel T. Freitas Parkway to the North San Pedro Road exit.	Yes. This is part of the "Analyze Traffic Collision Data" call to action on page 67 as these are auxiliary lanes that provide extended acceleration and merging opportunities between on and off-ramps without increasing the mainline capacity.
10.	New HOV gap closure project on U.S. 101 both north and southbound.	Yes. Financially constrained element. Strategic Expansion 94563.
11.	I-580 interchange improvements: West I-580 to south U.S. 101 West I-580 to north U.S. 101 to 2nd Street.	Yes. Vision Element. Strategic Expansion 21030.
12.	Reconfigure U.S. 101/Sir Francis Drake interchange.	Yes. Financially constrained element and regional measure 2 toll bridge program. Strategic Improvement 98178

13.	New southbound auxiliary lane on U.S. 101 from Sir Francis Drake Boulevard to Anderson Drive.	Yes. This is part of the "Analyze Traffic Collision Data" call to action on page 67 as these are auxiliary lanes that provide extended acceleration and merging opportunities between on and off-ramps without increasing the mainline capacity.
14.	Add a northbound auxiliary lane on U.S. 101 from Paradise Drive to Lucky Drive.	Yes. This is part of the "Analyze Traffic Collision Data" call to action on page 67 as these are auxiliary lanes that provide extended acceleration and merging opportunities between on and off-ramps without increasing the mainline capacity.
15.	Widen Sir Francis Drake Boulevard from the Larkspur Ferry terminal to Anderson Drive.	Yes. This is part of the "Analyze Traffic Collision Data" call to action on page 67 as these are auxiliary lanes that provide extended acceleration and merging opportunities between on and off-ramps without increasing the mainline capacity.
16.	Improve U.S. 101 / Tamalpais interchange.	Yes. This is part of the "Analyze Traffic Collision Data" call to action on page 67 as these are auxiliary lanes that provide extended acceleration and merging opportunities between on and off-ramps without increasing the mainline capacity.
17.	Widen Tiburon Boulevard overcrossing to six lanes (divided with dual southbound ramps) from U.S. 101 to Redwood Frontage Road.	Yes. Financially constrained and vision elements. Strategic Improvement 98179.
18.	Widen southbound off-ramp of U.S. 101/Tiburon interchange.	Yes. Financially constrained and vision elements. Strategic Improvement 98179
19 and 20.	Widen and improve signals on State Route 1 between Flamingo Road and U.S. 101, including replacement of Tennessee Valley (Coyote Creek) bridge.	Yes. Vision element. Strategic Improvement 21317.

Sources: Nelson/Nygaard Consulting and Marin County Public Works Department, November 2006.

2005 Marin County Congestion Management Program and Capital Investment Program [40]

The Transportation Authority of Marin, the Marin County Congestion Management Agency, is responsible for preparing the *Marin County Congestion Management Plan* (CMP) and a 7-year Capital Improvement Program (CIP). The most recent version of this plan was adopted in September 2005. Since the CMP is ultimately incorporated into the Regional Transportation Plan (RTP), projects selected for Marin County's CIP are consistent with the assumptions, goals, policies, actions and

40 *2005 Marin County Congestion Management Program*, Transportation Authority of Marin, 2005

projects identified in the RTP. MTC has determined that the Marin County CMP is consistent with the "Transportation 2030" RTP, adopted in February 2005. The designated roadway system is included within the RTP's Metropolitan Transportation System. This facilitates regional consistency between Marin County's CMP and those of adjoining Contra Costa, San Francisco, and Sonoma counties.

The *Draft 2005 CWP Update* policies and methodologies would be consistent with the Congestion Management Program. Both use the same methodology for identifying significantly impacted roadways and intersections. Both also establish policies for managing travel demand by implementing a combination of traffic operation improvements, transit improvements, incentives to use alternatives to the auto implemented through employers and developers, and land-use planning that helps mitigate traffic generation.

Moving Forward: A 25-Year Vision for Transportation in Marin County [41]

Moving Forward is a vision document that does not establish any mandatory requirements or goals; instead, it provides a framework for future decisions regarding transportation investments and improvements in Marin County. It establishes a multi-modal vision designed to relieve congestion, create a livable county, and protect the environment.

The *Draft 2005 CWP Update* would be consistent with the main strategies proposed in *Moving Forward*. Both documents advocate highway interchange and HOV lane improvements, improved public transit services and expanded bicycle and pedestrian facilities. Both documents also recognize that land use development should be focused near transit and provide a mix of uses to help reduce the number of new auto trips.

Conclusion

The above analyses of the community plans, the Marin County Local Coastal Program, and other relevant plans and programs did not identify inconsistencies with the *Draft 2005 CWP Update* that would result in adverse physical impacts under CEQA. Accordingly, this would be a less-than-significant impact and no mitigation would be required.

Mitigation Measure 4.1-1 None required.

Impact 4.1-2 Growth and Concentration of Population

Land uses and development consistent with the Draft 2005 CWP Update would induce substantial growth within the unincorporated portion of Marin County. This would be a significant impact.

CWP Land Use Designation Changes

The *Draft 2005 CWP Update* proposes amendments to existing land use designations as in ***Chapter 3.0 Description of the Proposed Project***. The majority of the proposed amendments would be to achieve technical corrections, to recognize and correct existing non-conforming land uses, to accommodate public facilities or to achieve consistency with a Countywide Plan policy change proposed by *Draft 2005 CWP Update*.

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41 *Moving Forward: A 25-year Transportation Vision for Marin County*, Marin County Congestion Management Agency, Marin County Board of Supervisors, Marin County Transit District, February 2003.

Changes to agricultural land use designations (i.e., Agriculture and Conservation, or Agriculture) would occur in the Novato and West Marin Planning Areas. In the Novato Planning Area, changes to agriculture would occur due to the purchase of land by the State of California, such as land that is a part of the Olompali State Historic Park, or land purchased by the Marin Audubon Society to protect the site's sensitive habitat. In the West Marin Planning Area, designated agricultural land would decrease by approximately 3,290 acres as these lands purchased and owned by the State and federal government (i.e., as part of the Tomales Bay State Park, Golden Gate National Recreation Area, or Point Reyes National Seashore) would be changed to an Open Space designation.

Residential land use designations changes would occur in the Novato, Las Gallinas Valley, San Rafael, Upper Ross Valley, Lower Ross Valley, Tamalpais, and West Marin Planning Areas. The majority of the proposed residential land use designations would be to change the designation to a non-residential land use designation to reflect the property's actual use.

In the San Rafael Planning Area, approximately 15 acres would be changed from SF5 to MF2 to allow for affordable housing opportunities. In the Lower Ross Valley Planning Area, 0.5 acres would be changed from SF2 to SF1 to be consistent with zoning. In the West Marin Planning Area, 198 acres would be changed from Open Space to Residential to reflect the existing zoning and use.

The largest change in the reduction of residential land use designation would occur in the Tamalpais Planning Area where 235 acres would be changed to Open Space. In most cases, these changes would be on land within the Golden Gate National Recreation Area. In the other cases, the properties are owned by the Marin County Open Space District. There would be a decrease of approximately 211 acres of residential land use designation in the West Marin Planning Area. Most of these changes would be due to properties located within the Golden Gate National Recreation Area, Point Reyes National Seashore, or the State and County Park system.

In regard to commercial / mixed use land use designations, all parcels with a RT designation would be changed to GC and all parcels with an RS designation would be changed to the NC designation. This would be a universal change to be consistent with the *Draft 2005 CWP Update* land use designations. Other minor commercial / land use land use designation changes would occur to acknowledge existing uses. In the Novato Planning Area, there would be a decrease of three acres of RC designated land at Gnoss Field because the land proposed for the rear crosswind runway has been purchased by the State for conservation purposes. In the Tamalpais Planning Area, there would be a change of five acres from PF to GC in Marin City since the site has been redeveloped.

The *Draft 2005 CWP Update* proposes the establishment of a Planning Designation land use category with three subcategories (Planning Designation – Agricultural and Environmental Resource Area [PD – Agricultural and Environmental Resource Area], Planning Designation – Transit Village [PD – Transit Village Area], and Planning Designation – Reclamation Area [PD – Reclamation Area]).

In the Las Gallinas Valley Planning Area, the St. Vincent's / Silveira properties (approximately 1,204 acres) would receive the PD – Agricultural and Environmental Resource Area designation. In the San Rafael Planning Area, the San Rafael Rock Quarry (approximately 289 acres) would receive the PD – Reclamation Area designation and in the Lower Ross Valley Planning Area, the San Quentin site

(approximately 280 acres) would receive the PD – Transit Village Area designation. [42] Projects in this land use category would be subject to approval of a Specific or Master Plan, including consistency with the Countywide Plan.

As a result of the land use designation changes discussed above for Agriculture and Conservation, Agriculture, or Residential land, there would be a substantial increase in lands with an Open Space designation. For example, in the Novato and West Marin Planning Areas approximately 6,000 acres with an agricultural land use designation (either Agriculture and Conservation or Agriculture) would be changed to Open Space. This would primarily be the result of lands purchased by a local, State or federal agency for permanent protection as parkland. It also includes lands purchased by the Marin Audubon Society for protection of sensitive habitat lands. In the Tamalpais and West Marin Planning Areas, approximately 446 acres with a residential land use designation would be changed to Open Space. This would primarily be the result of lands purchased by a local, State or federal agency for permanent protection as parkland.

Population Growth

Draft 2005 CWP Update relies upon Association of Bay Area Governments (ABAG) *Projections 2003* for future population levels (see **Exhibit 3.0-4**). As of January 1, 2006, the unincorporated portion of Marin County had a population of 69,239 persons. The *Draft 2005 CWP Update* projects a 2030 population of 76,400 persons. This would be a 10.3 percent increase between 2006 and 2030 for a total of 7,161 additional residents.

As of January 1, 2006, Marin County (i.e., incorporated plus unincorporated areas) had a total population of 253,341 persons. The population within the unincorporated area therefore represents 27 percent of the total county population. By 2030, Marin County would have an estimated total population of 283,100 persons, an 11.7 percent increase above the 2006 level. The portion of the population residing within the unincorporated area in 2030 would be consistent with its 2006 level, representing 27 percent of the total population of Marin County.

The Census 2000 population for the nine Bay Area counties was 6,783,762 persons. According to *Projections 2003*, the Bay Area is expected to have a population of 8,780,300 persons in the year 2030, a 29.4 percent increase above its 2000 level. In 2000, the unincorporated portion of Marin County represented approximately 1.0 percent of the Bay Area population. In 2030, the unincorporated portion of Marin County would represent 0.9 percent of the projected Bay Area population.

Population projections are based on full buildout of the *Draft 2005 CWP Update* land use plan assuming an average household size of 2.35 people. The *Draft 2005 CWP Update* projects 121,847 housing units countywide (see **Exhibit 3.0-5**). This number of housing units would equate to a countywide population of 286,340 persons. [43] Since ABAG projections indicate a 2030 population of 283,100 persons, the *Draft 2005 CWP Update* would result in population that slightly exceeds ABAG projections. The *Draft 2005 CWP Update* projects 89,133 housing units within the incorporated cities

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[42] As noted in ***Chapter 3.0 Description of the Proposed Project*** the Vision Plan for San Quentin will be removed prior to adoption of the Countywide Plan. With the deletion of the Vision Plan it will not be necessary to designate San Quentin with a PD – Transit Village designation.

[43] 121,847 housing units, multiplied by an average of 2.35 persons per housing unit equals 286,340 people.

and towns and 32,714 housing units in the unincorporated area. This number of housing units would equate to a population of 209,462 persons in the cities and towns and 76,877 persons in the unincorporated area. ABAG projections indicate a 2030 population of 76,400 persons in the unincorporated area. This split of population between the unincorporated area and incorporated area based on the *Draft 2005 CWP Update's* projections would be similar to the ABAG projections.

Population growth consistent with that projected for the *Draft 2005 CWP Update* would result in impacts to other areas of concern, including transportation, public services, biotic resources, etc. These impacts are discussed in their respective sections of this EIR.

The *Draft 2005 CWP Update* does not include projections that estimate the time by which a certain level of development is projected to occur. Rather, it presents a projection of development that could occur if land vacant in 2005 were fully developed according to zoning designations of the cities in Marin County and the Countywide Plan (see **Exhibit 3.0-5** in ***Chapter 3.0 Description of the Proposed Project***). For purposes of analysis in this EIR and for consistency with ABAG projections it is assumed that this buildout would occur in 2030.

Policies of the Draft 2005 CWP Update

The goals, policies, and programs contained in the *Draft 2005 CWP Update* would direct future growth towards the City-Centered Corridor and the existing urban service areas of unincorporated communities to ensure that biotic, agricultural, open space, and other resources would be protected.

Goal **CD-1** would establish a land use management framework based on the County's designated environmental corridors. Policies **CD-1.1** and Program **CD-1.a** would direct land uses to appropriate areas and concentrate urban development within the City-Centered Corridor. This compact land use pattern would help ensure that resources are protected and the character of each of the corridors is maintained. Programs **CD-1.b** and **CD-1.e** would preserve resources in the Baylands Corridor and maintain agriculture in the Inland Rural Corridor. Preservation of these lands would contain sprawl, reduce adverse effects to sensitive natural communities, and prevent the conversion of agricultural lands by ensuring that agricultural operations remain viable.

Goals **CD-5** and **CD-6**, would strive to manage growth by ensuring that new development would be confined to areas where adequate public services are available. Policies **CD-5.1** and **CD-5.2** and Program **CD-5.d** would coordinate the provision, timing, and funding of public services such that new growth would be appropriate to the specific area and constrained by available services such as water supply and wastewater treatment. Policy **CD-1.2** and Program **CD-1.g** would discourage the extension of urban services beyond existing service areas as well as consider amending existing service area boundaries to reflect areas appropriate for development.

Policies **CD-6.1** and **CD-6.2** would coordinate urban planning with the Local Agency Formation Commission (LAFCo) and the county's incorporated cities and towns to concentrate new medium to high-intensity land uses at infill areas where services can be provided. Restricting medium to higher-intensity uses to existing developed areas can help contain sprawl and adverse environmental effects at the urban fringe (e.g., the conversion of agricultural lands to non-agricultural uses). In addition, as discussed in ***Sections 4.5 Hydrology, Water Quality, and Flood Hazards*** and ***4.10 Public Services***, a compact land use pattern would reduce greenhouse gases and energy consumption from transportation as well as provide more undeveloped land (i.e., less impervious surface) that would improve drainage and water quality by reducing flooding, erosion, and sedimentation.

Policies **CD-1.3**, **CD-2.8**, and Program **CD-1.c** would reduce potential impacts from urban development in areas of high natural resources, hazard areas, sensitive habitat, and within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems. If implemented these policies would require that the residential density and commercial Floor Area Ratio (FAR) be calculated at the low end of the applicable zoning designation. Policies **CD-2.2** and **CD-2.3** and Programs **CD-2.d** and **CD-2.e** would provide for the reallocation of those units removed from these areas to the City-Centered Corridor where adequate services and public transportation is available via the creation of the Housing Bank and Housing Overlay Designation.

Conclusion

The *Draft 2005 CWP Update* projects future population growth, economic development, and needed housing and jobs in accordance with the environmental corridor land use framework. As described in ***Section 6.1 Growth Inducing Impacts***, while the *Draft 2005 CWP Update* does not directly propose any specific development projects, it would indirectly result in growth as its land use maps and designations as well its goals, policies, and programs would provide a framework for future growth and development in the unincorporated area. Under CEQA, growth is not considered necessarily detrimental or beneficial. Implementation of the goals, policies, and programs of the *Draft 2005 CWP Update* would incrementally increase the demand and / or require new facilities for public services and utilities including water supply, wastewater treatment, fire protection and other emergency services, public education, and parks and recreation facilities. Accordingly, the *Draft 2005 CWP Update* would be growth inducing.

Development consistent with the *Draft 2005 CWP Update* would result in an additional 5,391 housing units, 1,236,781 square feet of nonresidential floor area, and approximately 7,638 residents above existing conditions. This corresponds to an annual growth rate of 0.7 percent for housing, 1.3 percent for nonresidential floor area, and 0.4 percent for population during the period 2005-2030. As discussed in *Impact 4.1-6 Jobs-to-Housing Ratio*, the fact that nonresidential floor area would increase faster than both housing and population would contribute to an improved jobs-to-housing ratio in Marin County.

The *Draft 2005 CWP Update* would induce growth or concentration of population above existing conditions. This would be a significant project impact and would make a cumulatively significant contribution to a cumulative growth and concentration of population impact. The following mitigation would be required.

Mitigation Measure 4.1-2 Add the following policies and programs to the Community Development Section of the Built Environment Element.

Policy **CD-(new)** *Provide Adequate Infrastructure Capacity*. Plan the circulation system and public infrastructure and services to provide capacity for the unincorporated County's realistic buildout.

Policy **CD-(new)** *Correlate Development and Infrastructure.:* For health, safety and general welfare, new development should only occur when adequate infrastructure is available consistent with the following findings:

a) Project related traffic will not cause level of service established in the circulation element to be exceeded;

b) Any circulation improvements needed to maintain the level of service standard established in the Circulation Element have been programmed and funding has been committed;

c) Environmental review of needed circulation improvement projects has been completed;

d) The time frame for completion of the needed circulation improvements will not cause the level of service in the Circulation element to be exceeded.

e) Wastewater, water and other infrastructure improvements will be available to serve new development by the time the development is constructed.

Program **CD-(new)** *Monitor Growth and Circulation.* At least every five years review the unincorporated County's growth, planned land use, traffic capacity, funded traffic improvements, traffic mitigation list and traffic fees. Assess growth assumptions and modify land use and circulation policies as needed to ensure adequate circulation capacity to serve development.

Program **CD-(new)** *Review and Correlate Countywide Growth and Infrastructure*. Work with the proposed City-County Committee or a similar collaborative venue (to be established pursuant to Policy CD-4) to review the countywide growth, planned land use and traffic and service capacity. As warranted by the monitoring information, encourage all jurisdictions to amend their respective general plans and zoning from allowing "theoretical full buildout" [44] of non-residential uses to allowing "realistic buildout" to ensure correlation of planned land uses and traffic capacity and the capacity of all essential public services. [id]

Program **CD-(new)** *Development Review:* Through the development and environmental review processes, ensure that policy provisions are evaluated and implemented. If required by statute or case law, the County Review Authority may waive or modify policy requirements determined to have removed all economically viable use of the property.

Significance After Mitigation While the additional policies and programs of Mitigation Measure 4.1-2 would reduce impacts associated with growth and concentration of population, they would not do so to a less-than-significant level. Substantial growth and concentration of population would still occur in the unincorporated area above existing conditions as a result of implementation of the *Draft 2005 CWP Update*. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting Mitigation Measure 4.1-2 as a part of the *Marin Countywide Plan 2005*.

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[44] Theoretical full buildout refers to General Plan Floor Area Ratio or intensity limits applied to each parcel in a jurisdiction. Realistic buildout refers to the likely buildout of all parcels in a jurisdiction based on constraints, existence of economically viable uses under the allowable FAR, application of policy restrictions, and the like.

Impact 4.1-3 Land Use Conflicts between Agricultural and Urban Uses

Implementation of the Draft 2005 CWP Update could result in the intrusion of residential uses into agricultural areas and result in the exposure of residents to noise, odors, dust, and other nuisances generated by agricultural operations. Such residential development may be incompatible with existing agricultural operations. However, the Draft 2005 CWP Update and the Marin County Code contain policies and ordinances to reduce this impact to a less-than-significant level.

Land use conflicts between agricultural and urban uses result when residential and other incompatible uses become the primary use of lands adjacent to or surrounded by agricultural uses. Complaints and / or lawsuits from residents about noise, odors, flies, spraying and similar "nuisances" attendant to adjacent agricultural practices have discouraged and sometimes prevented farmers and ranchers from managing their operations in an efficient and economically viable manner.

The two most typical complaints are odor and noise. In general, for grazing and dairy operations, the larger the livestock herd is, the greater the probability that odors may be a concern. However, the smell generated by a small number of horses, cows, goats, etc. may also be objectionable. These odors are common by-products of agricultural production. Furthermore, farmers and ranchers have no control over wind, humidity, or weather conditions that may exacerbate odor. Producers follow standard or best farm management practices as well as governmental regulations in order to keep odor problems to a minimum.

Noise may also problematic. In some instances, noise and odor issues cannot be separated, such as in the case of dairy operations or field spraying. Farm equipment makes noise and farm animals such as dairy cows generate odors. Wind drift from field spraying may also create concerns regarding the safety of the chemicals being used in agricultural areas. Another noise problem is the operation of farm equipment late at night and early in the morning when homeowners are trying to sleep. While some individuals may object to the time of day when agricultural equipment is being used, these noises are commonplace, especially during planting and harvesting times.

Not only do residents complain about aspects of farming operations, but residential areas often directly affect operations. For example, residential intrusion can lead to increased incidence of vandalism and theft as well as damage to farm animals or crops from urban neighbors driving through fields or from pests that find sanctuary in residential areas.

Urban intrusion into agricultural lands could occur as a result of implementation of the *Draft 2005 CWP Update* Land Use Plan. *Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses*, discusses the mechanisms by which agricultural lands would be converted to residential and other non-agricultural uses.

Maintaining parcels in large, minimum sizes no longer protects agricultural resources as effectively as in the past as such parcels have become attractive places to live for an increasing number of people that can afford them. The development of high-value residential estates on agricultural lands is the most common way conversion takes place in Marin County as this development drives the cost of land ownership beyond the revenues that agricultural operations can generate. In addition, parcelization has occurred both on the urban fringe and in the midst of agricultural areas that has resulted in residential use being the primary use of the land. County zoning has permitted small residential lots to be clustered together, surrounded by large agricultural areas. This type of development withdraws some land from production, exposes a large perimeter area to conflicts, and threatens the interior areas. Along with the increased costs, land use conflicts create a disincentive to continue agricultural operations.

Competition also occurs between urban and agricultural uses along the boundaries of Marin County's incorporated cities and towns as well as unincorporated communities. Urban growth produces pressures on agricultural lands that tend to discourage new agricultural investment and uses, raises the price of land making purchase for farming unrealistic, and increases the likelihood of conversion to a non-agricultural use.

In addition, the *Draft 2005 CWP Update* contains changes to the land use designation of agricultural lands to non-agricultural designations, primarily Open Space (OS). However, with the exception of proposed development of the St. Vincent's / Silveira properties, none of the proposed changes to agricultural land use designations would convert agricultural land to residential uses or other urban uses. Rather, the changes would reflect State or federal ownership or acquisition as part of their respective parks or recreational areas (e.g., the Tomales Bay State Park or the Golden Gate National Recreation Area).

Implementation of the *Draft 2005 CWP Update* would allow new residential development on the St. Vincent's / Silveira properties. Such development could result in land use conflicts as these properties have existing agricultural operations and the State classifies the majority of the acres as Farmlands of Local Importance. As shown in **Exhibit 4.1-13**, the Marin Community Development Agency staff estimate that approximately 1,080 acres would be available for development on the two properties: 740 acres on the St. Vincent's property and 340 acres on the Silveira property.[45] Policy **SV-2.4** would make five percent of the land of each property available for future development. This would amount to 37 acres on the St. Vincent property and 17 acres on the Silveira property for a combined future development area of 54 acres.

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[45] Nichols • Berman communication with Dan Dawson, Marin County Department of Public Works, June 2006.

Exhibit 4.1-13
Existing and Future Development Footprint – St. Vincent's / Silveira Properties

St. Vincent's Property	***Acres***	***Percent of Total***
Total Acres	740.0	
Total Developed Acres (Existing)	31.2	4.2
Non-Agricultural Development	2.5	0.3
Agricultural Development	28.7	3.9
Total Developed Acres (Existing plus 5% of Total Acres)	68.2	9.2
Non-Agricultural Development	39.5	5.3
Agricultural Development	28.7	3.9
Silveira Property	***Acres***	***Percent of Total***
Total Acres	340.0	
Total Developed Acres (Existing)	20.3	6.0
Non-Agricultural Development	13.3	3.9
Agricultural Development	7.0	2.1
Total Developed Acres (Existing plus 5% of Total Acres)	37.3	11.0
Non-Agricultural Development	30.3	8.9
Agricultural Development	7.0	2.1
Total – St. Vincent's / Silveira	***Acres***	***Percent of Total***
Total Acres	1,080	
Total Developed Acres (Existing)	51.5	4.8
Non-Agricultural Development	15.8	3.3
Agricultural Development	35.7	1.5
Total Developed Acres (Existing plus 5% of Total Acres)	105.5	9.8
Non-Agricultural Development	69.8	8.3
Agricultural Development	35.7	1.5

Source: Marin County Community Development Agency, 2006.

Goal **AG-1** and its implementing policies would preserve agricultural resources by maintaining parcels large enough to sustain agricultural production, preventing conversion to non-agricultural uses, and prohibiting uses that are incompatible with long-term agricultural production. Accordingly, the *Draft 2005 CWP Update* would limit land use conflicts between residential and agricultural uses by preventing the intrusion of residential uses into agricultural areas, concentrating growth in the City-Centered-Corridor and existing unincorporated communities, and supporting the needs and practices of agriculture as the highest priority in areas designated for agricultural use. In addition, land use conflicts would be mitigated by the continued application of the Right to Farm Ordinance contained in the Marin County Code.

Right to Farm (RTF) ordinances are intended to reduce land use conflicts between agricultural and residential neighbors.[46] Such ordinances are not regulatory mechanisms but rather informational tools whereby new residents, especially those from urban areas unfamiliar with rural living, are educated about the realities of modern farming. A RTF ordinance reduces the opposition of urban neighbors to agricultural operations as a nuisance generator and in doing so, makes residents less inclined to complain or file lawsuits over common nuisances such as sprays, dusts, odors, and noise. As a result, the normal activities of farmers and ranchers are thereby protected.

The Marin County Right to Farm Ordinance, contained in the Marin County Code, would support the policies of the *Draft 2005 CWP Update* in reducing agricultural and residential land use conflicts. Since 1995, this ordinance requires the disclosure of potential nuisances from agricultural operations to affected parties in annual tax bills, at issuance of building permits, and at close of escrow for existing home sales. In addition, it requires the developer and purchaser to sign and file the disclosure notice with the County Recorder's Office. Such a filing assures the disclosure is attached to the property deed and transmitted to future buyers during the title search process.

The ordinance provides that a legal and properly conducted agricultural operation will not be considered a nuisance under the Marin County Code. The ordinance further reduces the potential for land use conflicts through asserting (both to the County and its residents) the importance of preserving agriculture as a policy matter, by providing a factual basis from which the County can respond to complaints, and by providing a framework for discussion between farmers and residential neighbors.

The Marin County RTF ordinance is effective because it fully informs those directly affected and the community at large about the importance of maintaining a productive agricultural sector in the face of urban growth. Furthermore, it provides a full education of the consequences of residing near agricultural operations that generate noise, dust, odor, traffic and other negative effects. Buyers can then weigh these consequences against other factors such as the price of the home or the importance of rural aesthetics.

However, a RTF ordinance is a limited answer to the problem of conflict and incompatible land uses. It does not prevent lawsuits even if the practice in question is normally accepted. A comprehensive solution depends upon more active measures. These include the planning and design of urban development sensitive to agricultural operations. The *Draft 2005 CWP Update* contains a number of policies designed to limit the intrusion of urban development into agricultural areas. The issues of land use conflicts between agricultural and urban uses and conversion to non-agricultural uses are closely related. *Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses* discusses all of the relevant *Draft 2005 CWP Update* policies that would preserve agricultural lands and maintain the economic viability of agricultural operations. This discussion focuses on policies that would limit both the intrusion of urban uses into agricultural areas and land use conflicts between these uses.

Policy **AG-1.1** and Programs **AG-1.a** and **AG-1.b** would limit residential development and building size in order to maintain agricultural production as the principal use on agricultural lands. Program **AG-1.a** would consider four options to limit the size of dwelling unit and non-agricultural accessory structures in order to avoid the development of large residential estates that could increase land

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46 *County Right-to-Farm Ordinances in California: An Assessment of Impact and Effectiveness*, Matthew Wacker, Alvin D. Sokolow and Rachel Elkins, University of California Agricultural Issues Center, available online at http://aic.ucdavis.edu/pub/briefs/brief15.pdf

ownership costs beyond revenues that agricultural operations can generate. These options are discussed in detail in *Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses*.

Policy **AG-1.3** would preserve agricultural zoning in order to maintain very low-density development in the Inland Rural and Coastal Corridors. Maintaining low densities in agricultural areas would support land-extensive agricultural production and discourage conversion to non-agricultural uses. As previously described, Policy **CD-1.3** would reduce the development density for a number of parcels in West Marin and reallocate the units to the City-Centered Corridor.

Program **AG-1.g** would revise agricultural zoning districts to create a more uniform approach to preservation of agricultural lands by applying consistent development standards (e.g., clustering of structures) and limiting incompatible uses in agricultural areas. Implementation of this program would consolidate suitable agricultural lands in the Inland Rural Corridor into a strengthened agricultural zoning district similar to the Agricultural Production Zoning District and create compatible zoning districts to accommodate lands currently zoned for, but not suited for, agriculture as a principal use. This program would help ensure that land -intensive and -extensive agricultural production would continue to occur on State classified important farmlands by designating by these lands as Agricultural Production Zoning. This program, in conjunction with Program **AG-1.h** would also provide for an Agricultural Residential Planned District Zoning (ARP), which would protect potential and historical agriculture, especially in green belt areas and in the City-Centered Corridor, but also allow residential and compatible commercial uses in areas that are transitional between residential and agricultural production uses.

Similarly, Policy **AG-1.4** would minimize intrusion of residential uses into areas of agricultural production. This policy would apply non-agricultural zoning only in areas where conflict with agricultural uses would be limited and would ensure that development standards preserve and enhance nearby agricultural uses. Program **AG-1.c** would encourage merger of parcels on lands protected by agricultural conservation easements to create larger and more economically viable agricultural operations.

Policies **AG-1.6**, **AG-1.7**, and Program **AG-1.k** would limit non-agricultural development in the Agricultural Production Zone and agricultural lands to allow only residential and accessory uses ancillary to and compatible with agricultural production. This policy, in conjunction with Program **AG-1.a** described above would require dwellings and other non-agricultural development to be limited in size and clustered or grouped together in building envelopes covering up to five percent of the property depending on the size of the property and agricultural and environmental constraints.

With respect to the St. Vincent's / Silveira property, Policy **SV-2.4** would require that non-agricultural development be clustered on up to five percent of the land area of each property or as determined through a site-specific analysis of agricultural and environmental constraints and resources observing habitat protection policies including, but not limited to, streamside conservation, ridge and upland greenbelt, wetland, tidelands, and community separation. Locating clustered development away from identified agricultural resources would reduce the development footprint and the amount of agricultural land withdrawn from production. In addition, it would minimize the perimeter between these uses that could be exposed to conflicts.

In conclusion, development and population growth in the unincorporated areas consistent with the *Draft 2005 CWP Update* may increase the number of complaints received by the Agricultural Commissioner's Office. However, policies of the *Draft 2005 CWP Update* and the Right to Farm ordinance would adequately address incompatibility issues between agricultural and urban / residential uses and continue to minimize the frequency at which nuisance complaints become lawsuits.

Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.1-3 None Required.

Impact 4.1-4 Agricultural Processing, Retail Sales, and Visitor-Serving Uses
Implementation of the Draft 2005 CWP Update could result in new or expanded agricultural processing, retail sales, or visitor-serving uses on agricultural lands in unincorporated Marin County. Such uses could result in land use conflicts with existing agricultural operations and residential areas as well as result in indirect impacts such as additional noise and traffic. This would be a significant impact.

Goal **AG-2** and its supporting policies (see Section 2.10, Agricultural and Food, of the Natural Systems & Agricultural Element) would aim to enhance the economic viability of Marin County farms, ranches, and agricultural industries. The development of agricultural processing (e.g., cheese making), retail sales, and visitor-serving uses (e.g., tasting rooms) would be of substantial benefit in keeping agricultural operations economically viable as well as prevent the loss of these lands to expanded residential development or other land uses permitted by the *Draft 2005 CWP Update*.

Policy **AG-2.4** would encourage processing and distribution of locally produced foods in order to support local food security and strengthen Marin's agricultural industry. Policy **AG-2.5** would further support this effort and aid local farmers and ranchers in developing more diverse and profitable markets for Marin County agricultural products, including permanent public markets and direct markets to local and regional restaurants.

In addition to these policies, the Marin County Development Code (Development Code) provides for agricultural processing, retail sales, and visitor-serving uses to enhance the economic viability of agriculture. Chapter 22.08 of Development Code describes the allowable uses of land, land use permit requirements, and basic development standards for County agricultural zoning districts.

For example, Section 22.08.030 permits the development of agricultural processing uses under certain conditions. In the Agricultural Limited, Agricultural and Conservation, and Agricultural Residential Planned zoning districts, agricultural processing facilities with a floor area of less than 5,000 square feet, are a permitted use. The facility must process agricultural products grown on-site or on other properties located in Marin County that are owned or leased by the processing facility owner or operator. A Use Permit is required if the proposed processing facility exceeds 5,000 square feet.

In the Agricultural Limited, Agricultural and Conservation, and Agricultural Residential Planned zoning districts the sale of agricultural products are permitted if the building(s) and outdoor sales area is less than 500 square feet. The products must be grown on-site or on other properties located in Marin County that are owned or leased by the processing facility owner or operator. A use permit is required if the proposed building area and outdoor sales area exceeds 500 square feet. The sale of agricultural products is only permitted when the primary use of the property is agriculture. Agricultural processing facilities and agricultural retail sales facilities are required to comply with the Stream Conservation Area (SCA) standards.

While the development of agricultural processing and visitor-serving uses would have beneficial economic impacts and would protect against future loss of the county's agricultural base, a tension exists between these policies that promote such uses with those intended to protect land needed for agricultural production. In addition, issues have been raised regarding the potential environmental

impacts of facilities for processing, retail sales, and visitor-serving uses on agricultural land as permitted by the Development Code. [47]

The introduction of new agricultural processing, retail, sales, and visitor-serving facilities in the unincorporated area could result in land use conflicts. Such uses would remove agricultural lands from production and could be of greater scale and / or increased density than currently exist. [48] These facilities could also result in increased noise levels, increased truck and tourist traffic, pedestrian / bicyclist and vehicle conflicts, degrade the visual character in rural areas, or be incompatible with existing rural residential development, agricultural operations, and other land uses. [49]

Exhibit 4.1-14 lists recently approved agricultural processing facilities. Relatively few agricultural processing facilities and retail facilities have been approved in recent years. While these projects have taken relatively small amounts of land out of agricultural production, given the potential for development of these uses permitted by the Development Code, a substantial number of acres could be converted to agricultural processing, retail sales, or visitor-serving uses.

Exhibit 4.1-14
Recently Approved Agricultural Processing Facilities

Project	***Description***	***Year of Approval***
Point Reyes Farmstead Cheese Company in Point Reyes Station	1,600 square foot processing, storage, and refrigeration facility, and a 9,500 square foot "multi purpose" facility with a kitchen, offices, and a viewing room used for retail sales and marketing (by appointment only)	Initial approval received in 2004
Volpi Cheese in Petaluma	3,000-square foot barn for cheese processing	2003
Strauss Family Creamery in Marshall	28,000 square feet, including two dry storage buildings of 4,300 and 6,500 square feet respectively	2002
McEvoy Ranch Processing Facility in Petaluma	Processing facility – 6,800 square feet Storage / maintenance facility – 3,400 square feet	1999
Point Reyes Vineyards in Point Reyes Station	110 square foot wine tasting and sales room and a 680 square foot wine processing facility	1999

Source: Marin Community Development Agency, November 2006.

The *Draft 2005 CWP Update* and the Development Code contain measures to reduce the amount, size, and / or type of these uses on agricultural lands. Program **AG-2.c** would prepare criteria and standards

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47 See response to the notice of preparation from Marjorie Macris, Sierra Club Marin Group dated October 24, 2005.

48 ***Section 4.8 Agriculture*** discusses conversions of agricultural land to nonagricultural uses.

49 ***Section 4.12 Visual Resources*** discusses visual impacts associated with the *Draft 2005 CWP Update*.

to identify compatible agricultural activities and applicable development code requirements. Agricultural processing facilities and agricultural retail sales facilities that are permitted uses or require Use Permit also are subject to the County's Design Review requirements (Chapter 22.42 of the Development Code).

While design review and implementation Program **AG-2.c** would limit the amount of agricultural processing, retail sales, and visitor-serving development; related land use conflicts; and removal of land from agricultural production, they would not do so to a less-than-significant level. With the potential for a significant amount of development of such uses this would be a significant impact. In addition, based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, it cannot be certain that Program **AG-2.c** would be implemented in a timely manner as it requires supplemental funding. [50] [51] Therefore, this would be a significant project impact. However, as discussed in ***Section 6.2 Cumulative Impacts***, there are few acres of agricultural land within the incorporated areas. Even if development of agricultural processing, retail sales, and visitor-serving uses were to occur in the incorporated area, it would not result in a cumulative impact associated with land use conflicts between these uses and agricultural operations. The following mitigation would be required.

Mitigation Measure 4.1-4 In order to reduce impacts associated with agricultural processing, retail sales, and visitor-serving uses, the County would be required to revise Program **AG-2.c** (*Prepare Criteria and Standards)* and obtain funding for this program.

Mitigation Measure 4.1-4(a) Revise Program **AG-2.c** of the *Draft 2005 CWP Update* as follows

> **AG-2c** *Prepare Criteria and Standards*. ~~Prepare criteria and standards to identify compatible agricultural activities and applicable development code requirements.~~ Amend the Development Code to include criteria and standards to encourage agricultural processing and strengthen Marin's agricultural industry, including limitations on uses that are not compatible with sustainable agriculture. Continue to support the efforts of the UC Cooperative Extension, Marin Resource Conservation District, the Marin County Farm Bureau, Marin Agricultural Land Trust, Marin Organic, Marin County Agriculture Commissioner, and the Marin County Farmer's Market to plan for agriculture in Marin and ensure that the new criteria and standards are consistent with the County's goals of improved agricultural viability and preservation and restoration of the natural environment.

Mitigation Measure 4.1-4(b) The County shall obtain funding for Program **AG-2.c**.

Significance After Mitigation Implementation of Mitigation Measure 4.1-4 would reduce project specific impacts associated with agricultural processing, retail sales, and visitor-serving uses to a less-than-significant level.

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[50] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[51] As described in **Figure 2-30** Agriculture and Food Program Implementation in the *Draft 2005 CWP Update*.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting Mitigation Measure 4.1-4 as a part of the *Marin Countywide Plan 2005*.

Impact 4.1-5 Development of Residential Land Uses Incompatible with Established Land Use
Development of some of the identified Housing Overlay Designation sites would be inconsistent with the proposed Draft 2005 CWP Update criteria and result in land use conflicts. This would be a significant impact.

Policy **CD-2.3** would establish a Housing Overlay Designation to encourage construction of housing units to meet the need for workforce housing, especially for very low- and low-income households, and for special needs housing. These housing units would be located in the City-Centered Corridor on sites close to transit, employment, and / or public services (see **Exhibit 3.0-6**). Up to 1,694 housing units from the Housing Bank (established by the implementation of Policy **CD-2.2**) may be approved within the Housing Overlay Designation in addition to the development permissible under the underlying land use category as shown on the applicable Land Use Policy Map.

Parcels within the Housing Overlay Designation must meet all of the following criteria:

- Located within the unincorporated portion of the City-Centered Corridor;
- Designated by the *Draft 2005 CWP Update* as Planned Designation (PD) Transit Village Area or Reclamation Area, Multifamily (MF), General Commercial (GC), Neighborhood Commercial (NC), Office Commercial (OC), Recreation Commercial (RC), or Public Facility (PF);
- Located within one-half mile of a transit node or route with daily, regularly scheduled service;
- Located within one mile of a medical facility, library, post office, or commercial center;
- Site does not exceed an average 20 percent slope and is not within the Ridge or Upland Greenbelt; or
- Site is not within a Wetland Conservation Area or Streamside Conservation Area.

The Housing Overlay Designation sites shown on **Exhibit 3.0-6** represent approximately 430 individual parcels. A review of the individual parcels revealed that a number of the parcels do not meet all of the criteria established in Policy **CD-2.3**. For example, some of the designated parcels are within a Stream Conservation Area, contain wetlands, have an average slope over 20 percent, or are within the County's Ridge and Upland Greenbelt.

Housing density within the Housing Overlay Designation would be at least 25 units per acre (see Program **CD-2.d**). Residential development of 25 units per acre on parcels that contain a Stream Conservation Area, wetlands, an average slope of over 20 percent or are within the County's Ridge and Upland Greenbelt would result in significant impacts, including hydrologic, biotic, geologic, and / or visual impacts. It was also determined that several of the individual parcels have an existing (i.e., *1994 CWP*) Open Space land use designation and are currently being used for parks. Conversion of an existing park site to a residential use could be incompatible with adjacent existing land uses.

Based on the above, an additional analysis was completed to identify and eliminate those parcels that do not meet the criteria listed in Policy **CD-2.3**. Based on the analysis of the initial approximately 430 parcels, 232 parcels were identified that do not conflict with the Housing Overlay Designation criteria regarding Stream Conservation Area, slope, wetlands and Ridge and Upland Greenbelt. In addition,

none of the 232 parcels have a *1994 CWP* Open Space land use designation. **Exhibit 4.1-15** shows all of the Housing Overlay Designation sites shown on **Exhibit 3.0-6** in the Draft EIR and **Maps 3-2a** and **3-2b** in the *Draft 2005 CWP Update* and those Housing Overlay Designation sites consistent with the recommended criteria of Policy **CD-2.3**.[52] This would be a significant project impact. Since implementation of the *Draft 2005 CWP Update* would not result in a Housing Overlay Designation within Marin County's cities and towns, there would be no cumulative impact.

Mitigation Measure 4.1-5 In order to reduce impacts associated with development of Housing Overlay Designation sites, those individual parcels that do not meet the criteria listed in Policy **CD-2.3** *(Establish a Housing Overlay Designation)* shall be removed from further consideration.

Significance After Mitigation Implementation of Mitigation Measure 4.1-5 would reduce physical impacts due to inconsistency with the recommended criteria to a less-than-significant level.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting Mitigation Measure 4.1-5 as a part of the *Marin Countywide Plan 2005*.

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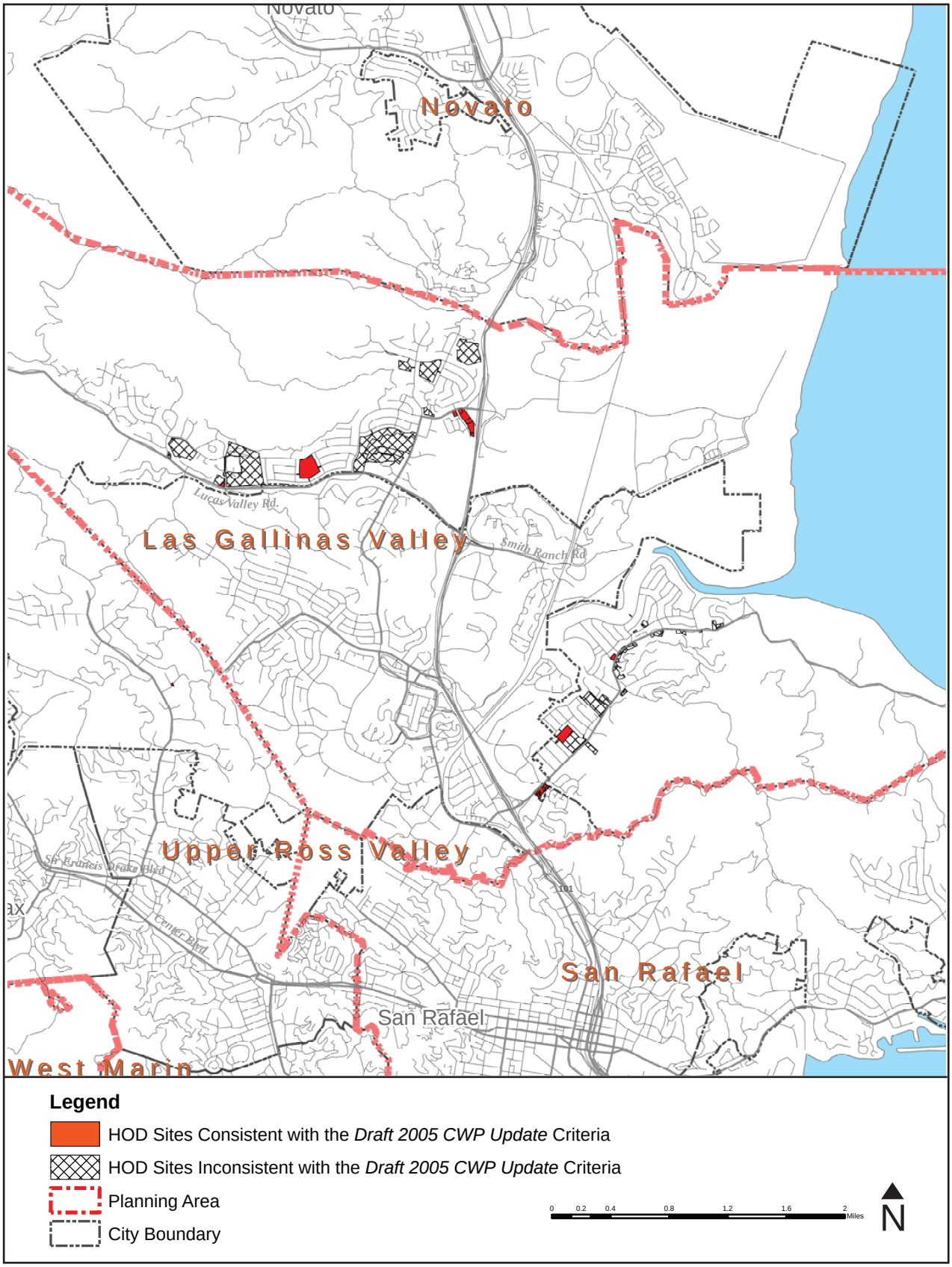
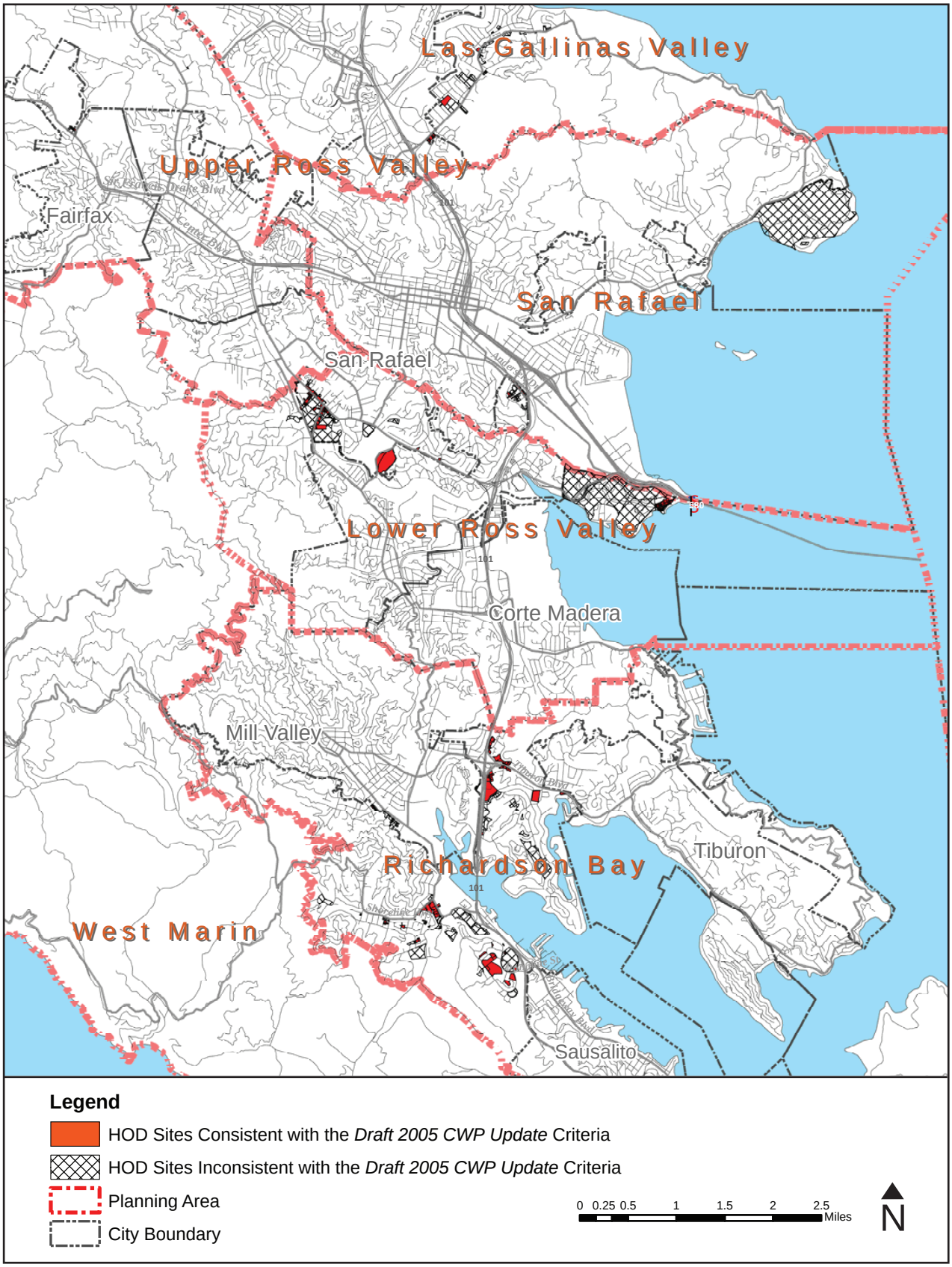
52 A complete list of the Housing Overlay Designation parcels that meet the criteria described above is available at the County of Marin Community Development Agency, 3501 Civic Center Drive, Room #308, San Rafael, CA 94903.

Exhibit 4.1-15(a)
Housing Overlay Designation - Consistency with Draft 2005 CWP Update Criteria



Source: County of Marin Community Development Agency, 2006.

Exhibit 4.1-15(b)
Housing Overlay Designation - Consistency with Draft 2005 CWP Update Criteria



Source: County of Marin Community Development Agency, 2006.

Impact 4.1-6 Jobs-to-Housing Ratio

Development consistent with the Draft 2005 CWP update would decrease the employed residents per job ratio. This would be a less-than-significant impact.

Marin County calculates job-housing balance as a ratio based on the number of employed residents divided by the number of total jobs in the county. **Exhibit 4.1-16** shows existing and projected employed residents per job ratio for Marin County.

Exhibit 4.1-16
Marin County Employed Residents per Job Ratio

	1980	***1990***	***2000***	***2030***
Employed Residents	118,569	127,759	140,955	166,100
Jobs	77,853	101,060	122,960	163,980
Employed Residents per job	***1.52***	***1.26***	***1.15***	***1.01***

Source: **Figure 3-1**, *Draft 2005 CWP Update.*

In 2000, Marin County's employed residents-per-job ratio was estimated at approximately 1.15 employed residents per job. [53] This is a decrease from 1990 (1.26 employed residents per job) and a further decrease from 1980 (1.52 employed residents per job). Development consistent with the *Draft 2005 CWP Update*, together with development in the county's 11 cities and towns would be expected to increase the number of employed residents to 166,100 and the number of jobs to 163,980 in the year 2030. This would result in an employed residents per job ratio of 1.15 (1.15 employed residents to jobs).

Development consistent with the *Draft 2005 CWP Update* would result in an additional 5,391 housing units, 1,236,781 square feet of nonresidential floor area, and approximately 7,638 residents in the unincorporated area beyond existing conditions. This projected development corresponds to an annual growth rate of 0.7 percent for housing, 1.3 percent for nonresidential floor area, and 0.4 percent for population during the period 2005 to 2030. An increase in the amount of nonresidential floor area would also result in an increase in the number of jobs. With an increase in the amount of nonresidential floor area (and thus jobs) that is greater than the increase in both housing and population this would contribute to an improved employed residents per job ratio. This would represent an overall improvement in the countywide employed residents per job ratio.

Exhibit 4.1-16 indicates that Marin County is moving towards supplying more jobs for its resident workers, increasing the likelihood that those who live in Marin would also be able to work in Marin. It is important to note that while the creation of new jobs has historically outpaced the growth of housing, this does not necessary mean that Marin is any closer to providing sufficient housing for its local workforce, nor is the local workforce necessary more likely to find housing available for their income. The difficultly of providing a housing supply affordable to workers in the San Francisco Bay

[53] This is the most current information available.

Area (and particularly Marin County) is well documented. The per capita income for a Marin resident increased from $44,608 in 1995 to $65,642 in 2003 while the median home price in Marin County went from $352,000 in 1997 to $718,000 in 2003. [54] Between 1995 and 2003, the average yearly wage in Marin increased by about $16,000; meanwhile, housing prices increased by $380,500. [55]

The difficultly of local workers to find housing in Marin County is illustrated by the commute patterns. Slightly more than half of Marin's entire residential workforce (52 percent) travel within the county for work. The next largest destination is San Francisco (28 percent). The remaining workers travel in equal numbers to the East Bay (eight percent) and Sonoma or other North Bay locations (eight percent). [56]

Approximately two-thirds (63 percent) of those who work in Marin County also live within the county. The next largest group of workers reside in Sonoma County (14 percent), followed by San Francisco (six percent), Contra Costa (six percent), and Alameda (five percent) counties. [57]

Secondary impacts related to the number of employed residents per job ratio are described in other section of this EIR. For example, traffic impacts are discussed in ***Section 4.2 Transportation*** and air quality impacts are discussed in ***Section 4.3 Air Quality***.

A number of goals, policies and programs in the 2003 County of Marin Housing Element also help promote an improved jobs housing linkage. The focus on local workforce housing (Policy **H-3.1**, **H-3.2**, **H-3.3**, and **H-3.4**), the recommendation to study the nexus between local jobs and housing in coordination with surrounding cities (Program **H-3.A**), and promoting the adoption of a jobs / housing linkage ordinance (Program **H-3.B**) are all aimed at improving the difficulty of local workers to find housing in Marin County.

A number of additional goals, policies, and programs of the *Draft 2005 CWP Update* would result in providing additional housing opportunities for Marin County workers in Marin County. The increased emphasis on smart infill policies within urban and suburban areas of the county including an emphasis on transit oriented development (Program **TR-3.f**, Policy **HS-3.11** and Policy **HS-3.12**), mixed-use development (Policy **HS-3.14**), promoting second units (Policies **HS-3.24** through **HS 3.28**), and linking commercial growth to housing supply (Policy **HS-3.2**) would all be directed towards providing additional workforce housing opportunities.

As discussed above, the number of employed residents per job would improve from 1.15 in 2000 to 1.01 in 2030. Therefore, the socio-economic impacts of employed residents to jobs would be a less-than-significant project and cumulative impact. However, the growing disparity between housing costs and income would result in significant physical environmental impacts to traffic and air quality (see ***Sections 4.2 Transportation*** and ***4.3 Air Quality***).

Mitigation Measure 4.1-6 None required.

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54 *Marin Profile*, Marin Economic Commission, November 2005, pages 11 and 18.

55 Bureau of Economic Analysis (Table CA04), http://www.bea.gov/bea/regional/reis/action/cfm.

56 *Moving Forward: A 25-Year Vision for Marin County*, Nelson/Nygaard Consulting Associates, 2003.

57 *Moving Forward: A 25-Year Vision for Marin County*, Nelson/Nygaard Consulting Associates, 2003.

4.2 TRANSPORTATION

4.2 TRANSPORTATION

Transportation – Environmental Setting

This section contains an overview of the transportation facilities in Marin County, including the major road network, transit systems, bicycle and pedestrian facilities, and airports. Existing transportation facilities are described in the *Final Transportation Background Report*, March 2003, updated November 2005. This report is included in **Appendix 1** to the Draft EIR, incorporated by reference, and summarized below.

MAJOR HIGHWAYS AND ARTERIALS

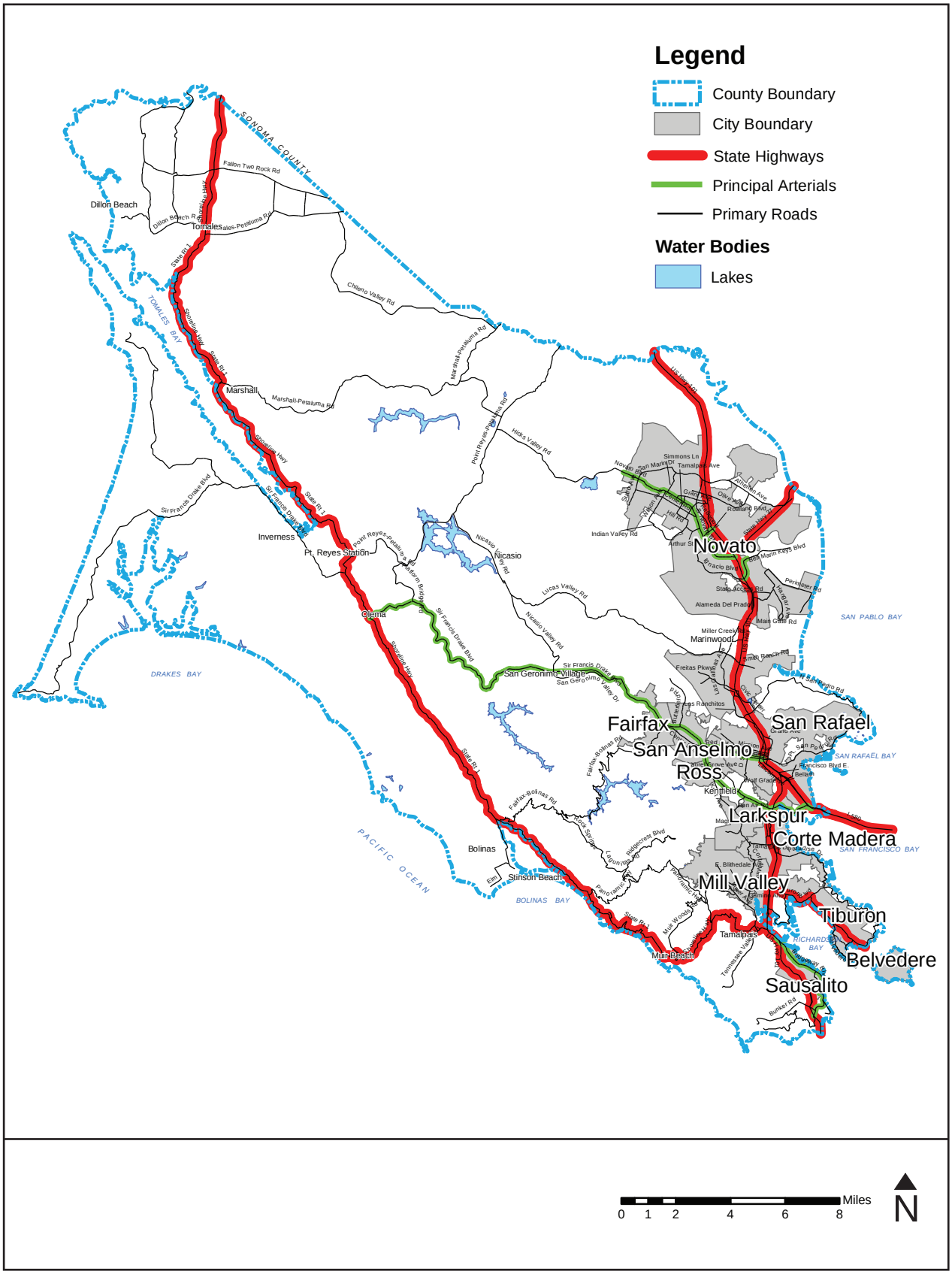
Exhibit 4.2-1 shows the major highways and arterials in Marin County.

Roadway Level of Service

For a road system of a given capacity, the volume-to-capacity ratio is the primary indicator of the transportation system's performance. Volume-to-capacity is a measure of demand and supply, and is equal to the number of vehicles assigned to a segment divided by the vehicular capacity of that segment. For example, if the assigned volume is 1,500 vehicles and the segment capacity is 2,000 vehicles, the volume-to-capacity ratio is 0.75. This ratio is converted to a letter grade called Level of Service (LOS).

The LOS is identified with a letter from A through F, and is described in terms of speed and travel time, freedom to maneuver, interruptions, comfort, convenience, and safety. The letter A represents free traffic flow with few vehicles and easy maneuverability while the letter F represents severe congestion with bumper-to-bumper traffic at slow speeds. LOS is key to all modes since all modes depend on streets and related facilities for access and in many cases for direct operations. **Exhibit 4.2-2** shows the relationship between LOS grades and volume-to-capacity ratios.

Exhibit 4.2-1
Roadway Network of Marin County



Source: 2004 Marin Congestion Management Program, Nelson / Nygaard Consulting Associates.

Exhibit 4.2-2
Level of Service, Volume-to-Capacity Ratio Formula

For Freeways		***For Local Streets***	
Level of Service	***Volume-to-Capacity Ratio***	***Level of Service***	***Volume-to-Capacity Ratio***
A	0.00 - 0.35	A	0.00 - 0.60
B	0.36 - 0.54	B	0.61 - 0.70
C	0.55 - 0.77	C	0.71 - 0.80
D	0.78 - 0.93	D	0.81 - 0.90
E	0.94 - 1.00	E	0.91 - 1.00
F	>1.00	F	>1.00

Source: Marin County Performance Measures Monitoring Report, 2005.

The design of an intersection is the key determinant in an arterial's ability to handle the flow. Design components include such elements as the number of lanes, special turn lanes, signal phasing, length of red and green cycles, and "right turn on red".

Generally, LOS E is associated with traffic flowing near the capacity of a road. Speeds are low and unstable; maneuvering is difficult; comfort and convenience levels are poor; user frustration is high. When the freeway is at capacity, the vehicle density per lane mile is 67 vehicles and freeway speeds fall below 30 miles per hour. If more vehicles are added to the road, breakdowns or stop-and-go traffic is experienced (LOS F).

Major Highways

U.S. 101

U.S. 101 is Marin County's primary roadway, which varies between two and five lanes in either direction and forms a north-south corridor along Marin's eastern edge where development is most dense between the Cities of Mill Valley and Novato. U.S. 101 is highly congested because it is the primary surface link to City of San Francisco, the Bay Area's financial base, which draws large numbers of workers each day. The highway also intersects with other important highways, such as Interstate 580, which provide important inter-county and inter-regional links. U.S. 101 is also vital in connecting communities within the county for everyday activities such as shopping, school, and recreation.

Golden Gate Bridge

The Golden Gate Bridge is the only direct surface link between the City of San Francisco and Marin County, following the path of U.S. 101. Although all day traffic volumes across the Golden Gate Bridge have not appreciably changed in over a decade, peak periods have spread out, creating congested conditions for more hours each day. Additionally, weekend travel has increased, so that Sunday afternoon traffic exceeds some weekdays, creating extreme traffic congestion pressure in southern Marin on U.S. 101, Highway 1, and other highway approaches. The Golden Gate Bridge has six reversible lanes; four lanes are provided in the peak direction during commute hours, with two lanes provided opposite the peak travel direction.

Level of Service

Exhibit 4.2-3 shows existing volume / capacity ratios and the levels of service on U.S. 101 for the AM and PM peak hours. While the exhibit shows a great range in level of service on U.S. 101, most segments are operating below capacity (LOS F).

Exhibit 4.2-3
Level of Service on U.S. 101

Location / Segment	AM Peak Hour				PM Peak Hour			
	Direction	Volume	V/C	LOS	Direction	Volume	V/C	LOS
at Golden Gate Bridge	N/B	3,541	0.89	D	N/B	7,195	0.90	D
	S/B	6,177	0.77	C	S/B	3,503	0.88	D
Paradise Drive to CA 131	N/B	3,991	0.40	B	N/B – MFL	6,259	0.81	D
	S/B – MFL	5,012	0.65	C	N/B – HOV	1,239	0.56	C
	S/B – HOV	1,248	0.57	C	S/B	6,641	0.67	C
I-580 to Sir Frances Drake Boulevard	N/B	3,950	0.51	B	N/B	7,044	0.91	D
	S/B	7,846	1.19	F	S/B	6,113	0.93	D
2nd St to I-580	N/B	5,358	0.70	C	N/B	7,556	0.98	E
	S/B	8,652	1.12	F	S/B	6,678	0.87	D
Lucas Valley Road to Freitas Parkway	N/B	4,594	0.46	B	N/B –MFL	6,040	0.78	D
	S/B – MFL	7,033	1.07	F	N/B – HOV	1,293	0.59	C
	S/B – HOV	1,296	0.59	C	S/B	5,842	0.66	C
Nave Drive and Miller Creek	N/B	4,411	0.45	B	N/B – MFL	5,985	0.78	D
	S/B – MFL	6,849	0.89	D	N/B – HOV	1,284	0.58	C
	S/B – HOV	1,290	0.59	C	S/B	5,505	0.56	C
at Sonoma / Marin County Line	N/B	2,565	0.58	C	N/B	4,317	0.98	E
	S/B	5,055	1.15	F	S/B	2,791	0.63	C

a MFL = mixed flow lane

b HOV = high occupancy vehicle lane; Shaded areas show peak direction of flow.

Sources: Marin Travel Model (MTM), Transportation Authority of Marin (TAM), December 2006 and land use data from *Projections 2003,* Association of Bay Area Governments, 2003.

Highway 101 Improvement Projects

The HOV Lane Gap Closure project, which is expected to be complete by 2008, will improve congestion for drivers and transit users by adding a dedicated traffic lane on U.S. 101 and providing a continuous HOV lane through Marin.

The Transportation Authority of Marin, (Marin's Congestion Management Agency) regularly prepares a Congestion Management Program (CMP) that prioritizes transportation improvement projects every

other year, as required by statute. [1] For the past decade, TAM has focused much attention and funding on the HOV Lane Gap Closure project. With this project now mostly completed, the TAM has been able to develop new priorities. The most recent CMP was prepared in September 2005 and is included in **Appendix 1** to the Draft EIR. [2] The highest priority highway improvement projects are intended to provide "spot relief" for major bottlenecks in the highway system. Critical bottlenecks occur in the Marin-Sonoma Narrows area and at critical interchanges throughout the county. Accidents and incidents are often concentrated in these "choke points" where the system slows down dramatically due to spot congestion. Six interchanges are identified as high priorities for future projects. The exact nature of these projects will be determined through further study by a partnership of TAM, Caltrans, and local stakeholders. The high priority interchanges are:

- U.S. 101 / Tiburon / East Blithedale
- U.S. 101 / Greenbrae
- U.S. 101 / Lucas Valley Road
- U.S. 101 / Tamalpais
- U.S. 101 / Atherton
- U.S. 101 / Sausalito (Alexander Avenue)

Additionally, Caltrans is currently drafting an Environmental Impact Report with alternatives for improving the Marin-Sonoma Narrows area by completing the HOV lane system throughout most of the county. This project will have the special benefit of making transit service in this area more competitive by improving travel times, while at the same time encouraging carpool and vanpool services.

Interstate 580

Interstate 580 (I-580) is a four-lane east-west highway that enters Marin County from the East Bay. Interstate 580 terminates in San Rafael at the U.S. 101 / I-580 interchange. Interstate 580 absorbs and diffuses traffic among northbound and southbound motorists on U.S. 101, and westbound and eastbound motorists on Sir Francis Drake Boulevard.

Interstate 580 feeds traffic west across the Richmond – San Rafael Bridge and branches out into U.S. 101 and East Sir Francis Drake Boulevard in Marin County.

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1 Congestion Management Programs (CMPs) are designed to address existing and future transportation problems in urban areas of the State of California. A Congestion Management Agency (CMA) has been designated in each urban county in California. Marin County and its cities and towns have designated the Transportation Authority of Marin (TAM) as their CMA.

2 *2005 Marin County Congestion Management Program*, prepared by Wilbur Smith Associates for the Transportation Authority of Marin, September 2005.

The Richmond-San Rafael Bridge

Marin County's position as a job center continues to fuel travel demand over the Richmond – San Rafael Bridge, with over 75 percent of all AM trips entering Marin County from the bridge destined for locations within the county. The vast majority (78 percent) of eastbound evening I-580 trips begin in Marin County, as workers employed here head home to the East Bay. The bridge is 5.5 miles long (including approaches) and supports two lanes of traffic in each direction. Some of the 78 percent eastbound evening I-580 trips are residents of northwest Contra Costa County, returning home from work in San Francisco.

Level of Service

Exhibit 4.2-4 shows existing volumes / capacity ratios and levels of service on I-580 for the AM and PM peak hours. While LOS along I-580 between East Sir Francis Drake Boulevard and the Richmond – San Rafael Bridge, worsened considerably from LOS C in 1999 to a reported LOS F in 2001, traffic has improved and currently does not demonstrate a level of service worse than LOS C on any of these segments.

Exhibit 4.2-4
Level of Service on Interstate 580 Year 2005

Location / Segment	AM Peak Hour				PM Peak Hour			
	Direction	Volume	V/C	LOS	Direction	Volume	V/C	LOS
at Richmond Bridge	E/B	2,686	0.61	C	E/B	3,377	0.77	C
	W/B	3,140	0.71	C	W/B	2,768	0.63	C
Sir Francis Drake Boulevard to Bellam Boulevard	E/B	2,134	0.49	B	E/B	2,062	0.47	B
	W/B	2,113	0.48	B	W/B	1,905	0.43	B

Sources: Marin Travel Model (MTM), Transportation Authority of Marin (TAM), December 2006 and land use data from *Projections 2003,* Association of Bay Area Governments, 2003.

State Highways

Exhibit 4.2-5 shows the volume / capacity ratios and levels of service for the state highways in Marin County for the AM and PM peak hour.

State Route 1 (Shoreline Highway)

State Route 1 is a two-lane highway that runs north to south in West Marin. With the exception of its access point from U.S. 101 at Tamalpais Valley, State Route 1 follows the east side of the Golden Gate National Recreation Area and the entire recreational corridor of West Marin for the duration of its length through the county. There is relatively little development surrounding State Route 1. The corridor is used primarily for intercommunity travel within West Marin or by visitors to the county.

Segments of Marin's arterial roadway network that had reported substandard LOS ratings include State Route 1 between U.S. 101 and Almonte Boulevard, with a V / C ratio of 1.53 for the northbound direction, PM peak and 1.35 for the southbound direction, AM peak. This is primarily due to the performance of the signal at State Route 1 and Almonte Boulevard.

Exhibit 4.2-5
Level of Service on State Highways in Marin Year 2005

Highway / Segment	AM Peak Hour				PM Peak Hour			
	Direction	Volume	V/C	LOS	Direction	Volume	V/C	LOS
SR 1 (Shoreline Highway) / U.S. 101 to Almonte Boulevard	N/B	352	0.44	A	N/B	1,220	1.53	F
	S/B	1,077	1.35	F	S/B	764	0.96	E
SR 37 (Novato Boulevard) / U.S. 101 to Atherton Avenue	E/B	1,197	0.27	A	E/B	3,275	0.74	C
	W/B	2,111	0.48	B	W/B	1,295	0.29	A
SR 131 (Tiburon Boulevard) / U.S. 101 to Strawberry Drive	E/B	949	0.49	A	E/B	1,813	0.94	E
	W/B	1,105	0.58	A	W/B	1,341	0.70	B

Sources: Marin Travel Model (MTM), Transportation Authority of Marin (TAM), December 2006 and land use data from *Projections 2003*, Association of Bay Area Governments, 2003.

State Route 37 (Highway 37; Novato Boulevard)

State Route 37 in Marin County is a four-lane highway that runs primarily east-west and borders the City of Novato, intersecting U.S. 101 in the southern limits of the city. The highway feeds into Novato Boulevard to the west. In addition to being an important link to U.S. 101, State Route 37 (Highway 37) creates a loop with San Marin Drive and Atherton Avenue to provide circulation within Novato to serve Marin County's fastest growing and most densely populated city.

State Route 131 (Tiburon Boulevard)

State Route 131 is a four-lane highway from State Route 101 to Trestle Glen Boulevard., and a two-lane highway from Trestle Glen Boulevard. to its southern terminus that stems off U.S. 101 and runs northwest-southeast in Marin County's southeast section. The highway is locally known as Tiburon Boulevard, which serves the Tiburon Peninsula, connecting with ferry service at the southern tip of the peninsula. The peninsula is moderately developed and provides recreation opportunities for residents and visitors. In the PM peak hour State Route 131 between U.S. 101 and Strawberry Drive operates poorly in the eastbound direction at LOS E.

Major County Arterials

Exhibit 4.2-6 shows the volume / capacity ratio and levels of service for major Marin County arterials for the AM and PM peak hours.

Sir Francis Drake Boulevard

Sir Francis Drake Boulevard is an important arterial roadway that runs primarily east-west, linking U.S. 101 to State Route 1 in West Marin. Much of the suburban segment between U.S. 101 and State Route 1 is primarily a four-lane rural highway. The road widens to six lanes approaching Larkspur Landing east of U.S. 101 and narrows to two lanes as it extends west beyond Fairfax, curving north along the southern portion of Tomales Bay and then turning southwest towards the Point Reyes Peninsula. Sir Francis Drake Boulevard is the primary east-west corridor in Marin County.

Exhibit 4.2-6
Level of Service on Major Arterial Roads in Marin County Year 2005

Road / Segment	AM Peak Hour				PM Peak Hour			
	Direction	Volume	V/C	LOS	Direction	Volume	V/C	LOS
Bridgeway Boulevard *Gate 5 & Gate 6 Road*	N/B	390	0.20	A	N/B	1,202	0.63	B
	S/B	951	0.50	A	S/B	998	0.52	A
Sir Francis Drake Boulevard *Bon Air Road to Wolfe Grade*	E/B	1,906	0.79	C	E/B	1,762	0.73	C
	W/B	1,470	0.61	B	W/B	1,758	0.73	C
Sir Francis Drake Boulevard *U.S. 101 to Eliseo Drive*	E/B	2,487	1.04	F	E/B	2,207	0.92	E
	W/B	2,378	0.99	E	W/B	2,492	1.04	F
East Sir Francis Drake Boulevard *Larkspur Ferry to San Quentin*	E/B	538	0.56	A	E/B	910	0.95	E
	W/B	1,110	1.16	F	W/B	1,135	1.18	F
3rd Street (in San Rafael) *at Union Street*	E/B	241	0.13	A	E/B	891	0.46	A
	W/B	1,125	0.59	A	W/B	602	0.31	A
Lucas Valley Road *Las Gallinas Avenue and Los Gamos*	E/B	678	0.85	D	E/B	492	0.62	B
	W/B	252	0.32	A	W/B	562	0.70	B
South Novato Boulevard *U.S. 101 to Sunset Parkway*	N/B	115	0.14	A	N/B	329	0.41	A
	S/B	363	0.45	A	S/B	261	0.33	A

Sources: Marin Travel Model (MTM), Transportation Authority of Marin (TAM), December 2006 and land use data from Projections 2003, *Association of Bay Area Governments, 2003.Lucas Valley Road*

Lucas Valley Road runs from U.S. 101 in the eastern portion of the county to Nicasio and Point Reyes in the northwestern part of the county. For most of its length, Lucas Valley Road is within unincorporated areas of the county, with the exception of the approximately two miles closest to U.S. 101, which forms the northern border of Terra Linda.

Other Arterials

With the exception of Sir Francis Drake Boulevard and Lucas Valley Road discussed above, the major arterials listed in **Exhibit 4.2-6** are entirely or mostly within incorporated portions of cities. Nevertheless, with the exception of Sir Francis Drake Boulevard, all segments of Marin County's major arterial network remain at LOS A.

Freight and Goods Movement

Freight and goods movement is primarily handled by trucks within Marin County. An accurate estimate of total heavy truck trips does not currently exist for Marin County. Caltrans does provide heavy truck estimates based on vehicle classification studies at count stations on selected state routes. In Marin County, Caltrans performs counts every three years from the Manuel Freitas Parkway Weigh Station. [3]

The most recent counts, performed in 2004, show that the average daily truck traffic traveling northbound on U.S. 101 was 7,832 or 4.4 percent of total traffic. This percentage has remained steady for the last ten years. Because the Caltrans data only provide counts for the northbound direction of U.S. 101, they are not indicative of the total freight / goods movement across the county.

Presently, there is no truck / warehousing center in Marin County (where large tractor / trailer truckloads are broken into smaller shipment sizes for local area delivery). This often means that a large (e.g., 70-foot) tractor / trailer is used for deliveries on local roadways, creating traffic obstructions as well as undue wear and tear on local streets and roads. Large trucks do have an impact on pavement maintenance and, in the case of rural two-lane highways, on traffic safety. High truck volumes tend to be associated with specific businesses (e.g., the quarry operation) or dairy / agricultural operations in West Marin.

TRANSIT SERVICE

Marin County Transit District

The Marin County Transit District (MCTD) was formed by a vote of the Marin County electorate in 1964 to develop, finance, and provide local transit service within Marin County. MCTD provides local fixed route services which operate throughout the day within Marin County, supplemental school services which operate during school bell times only, rural and recreational services, that operate both all year and seasonally, depending on the type of service, and paratransit services which provide specialized service to individuals with disabilities that cannot ride the regular fixed route services. **Exhibit 4.2-7** illustrates the providers and routes of the MCTD.

MCTD does not directly provide services with its own drivers or vehicles, but contracts with operating agencies to provide service. As of May 2006, MCTD will be financially responsible for all local transit services within Marin County. Currently, Golden Gate Transit operates most of the local routes within the county and manages about half of them. MCTD's responsibilities include managing and monitoring all service, including setting route alignments, establishing fare and transfer policies, setting service frequencies and hours of operation, and providing funding for all local routes and services.

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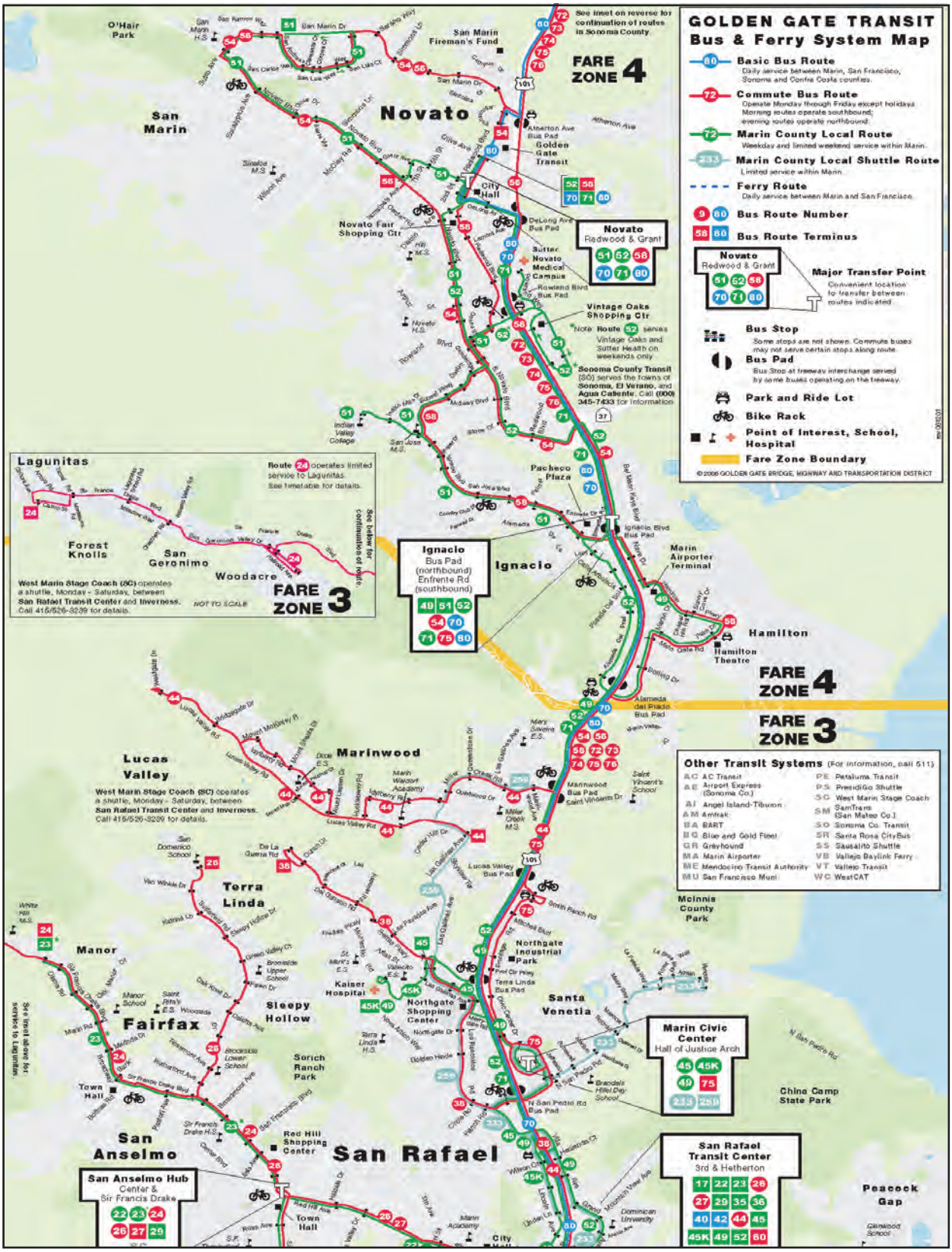
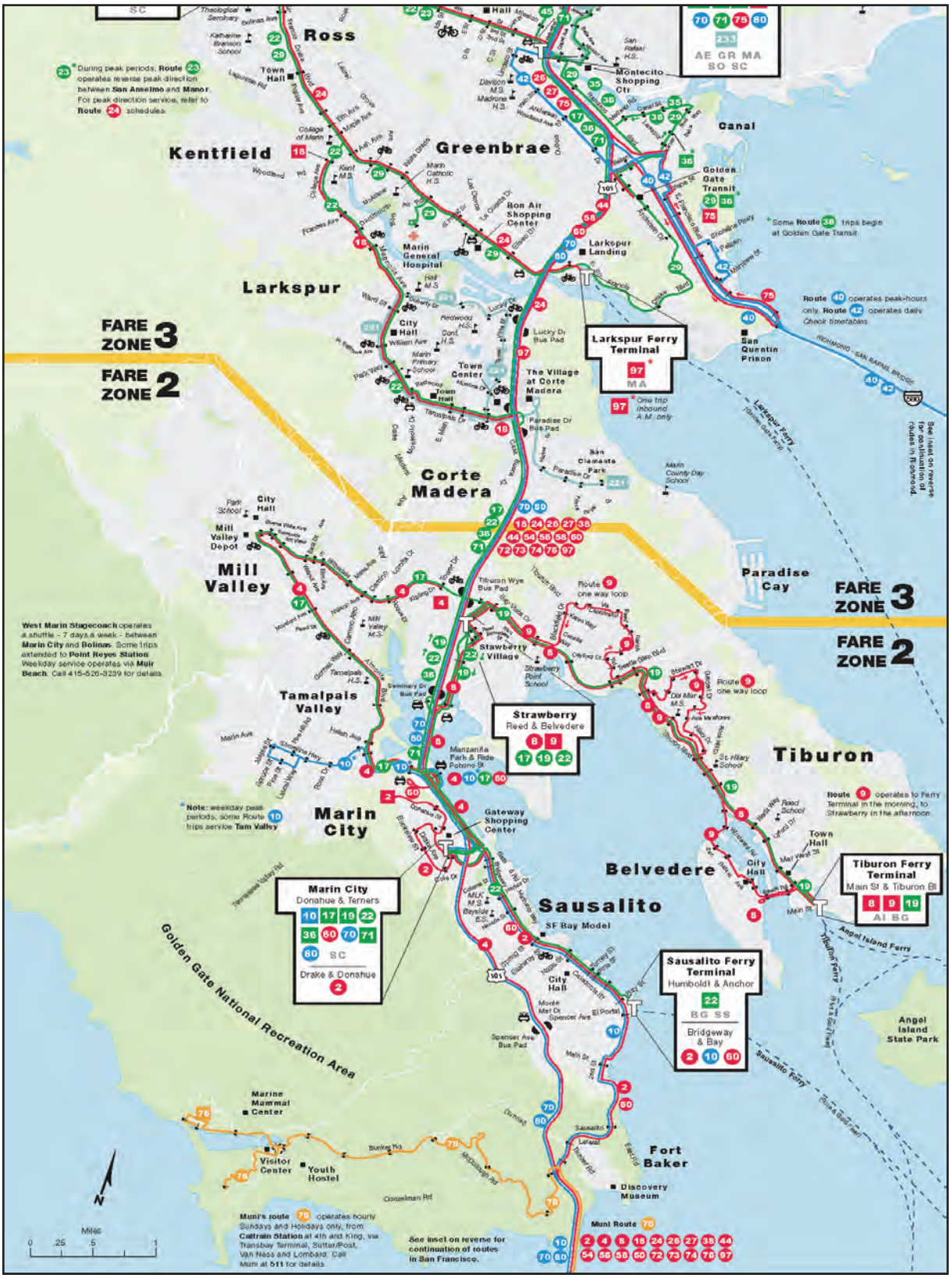
3 *2004 Annual Average Daily Truck Traffic on the California State Highway System*. p. 156. Compiled by Traffic and Vehicle Data Systems, State of California Business, Transportation and Housing Agency, Department of Transportation. Prepared in cooperation with the U.S. Department of Transportation Federal Highway Administration.

Exhibit 4.2-7(a)
Current Marin County Transit System



Source: Nelson / Nygaard Consulting Associates.

Exhibit 4.2-7(b)
Current Marin County Transit System



Source: Nelson / Nygaard Consulting Associates (See **Exhibit 4.2-7(a)** for Legend).

There are currently two primary operators providing transit service under contract to MCTD. Golden Gate Transit (GGT) provides local fixed route bus services, including all day and school service, which begin and end within the county. Whistlestop Wheels, operated by the Marin Senior Coordinating Council, provides rural fixed route and specialized paratransit service for eligible elderly and disabled individuals.

MCTD is funded by the recently approved transportation sales tax (43 percent), property taxes (18 percent), fares (18 percent), and Transportation Development Act (TDA) and State Transit Assistance funds (21 percent). The regular adult fare is $2.00 per trip on all MCTD fixed routes, with elderly, youth, and disabled passengers receiving a 50 percent discount

MCTD recently finished completing a Short Range Transit Plan (SRTP). **Exhibit 4.2-8** describes MCTD's local routes, with their current service hours, and frequencies.

Local and School Service

As of May 1, 2006, MCTD will be fully responsible for 13 regular local routes provided by MCTD through a contract with Golden Gate Transit. For the District's fiscal year ending June 2005, Marin local service (routes 15, 21, 22, 23, 29, 33, 35, 36, 53, 55, 57, 59, 71 and school routes) carried about 3,500,000 patrons.

There are also 12 supplemental school routes that provide service at bell times or to schools not served by a regular local route. In fiscal year 2005, school services carried approximately 307,000 annual riders. School services are also provided under contract to Golden Gate Transit.

Exhibit 4.2-9 shows the school routes.

Rural Service

Whistlestop Wheels is the contract operator for the West Marin Stagecoach, which provides four round trips on weekdays from Bolinas / Stinson Beach to Mill Valley / Marin City and from Inverness to San Anselmo. Feeder service is also available for qualified transit-dependent riders with hardships in reaching the Stagecoach routes. Since implementation of Stagecoach shuttle service in June 2002, ridership has been robust with an average of over 80 riders carried per day, or approximately 21,500 annual passengers.

Exhibit 4.2-10 provides information about the MCTD rural routes.

Exhibit 4.2-8
Summary of the Marin County Transit District Routes – Local Routes

Route # and Description		Days of Operation	Service Span		Weekday Frequency		Sat/Sun Frequency	
			Weekdays	Weekends	Peak	Base	Peak	Base
17	Marin City – San Rafael	MTuWThFSatSun	5:30am-11:07pm	7:30am-11:07pm	30	60	--	60
19	Tiburon – Marin City	MTuWThFSatSun	6:55am-10:15pm	6:57am-10:17am	--	60	--	60
22	Sausalito – San Rafael	MTuWThFSatSun	5:37am-11:55pm	6:49am-10:55pm	30	60	--	60
23	San Anselmo/San Rafael – Fairfax/Manor	MTuWThFSatSun	5:30am-11:56pm	6:45am-11:57pm	--	30	--	60
29	San Rafael – College of Marin/San Anselmo	MTuWThFSat	6:30am-8:25pm	7:30am-7:25pm	--	60	--	60
35	San Rafael Transit Center/Marin City - Canal	MTuWThFSatSun	5:07am-12:56am	5:09am-12:56am	15	30	--	30
36	Marin City – Canal	MTuWThFSat	5:53am-9:12am 2:21pm-6:12pm	6:54am-9:27am 2:53pm-6:06pm	30	--	30	--
45	San Rafael – Kaiser Hospital/Northgate	MTuWThFSatSun	5:00am-8:55pm	7:06am-7:50pm	--	30	--	60
49	San Rafael – Ignacio	MTuWThFSatSun	6:04am-8:55pm	7:00am-7:55pm	--	60	--	60
51	Ignacio – San Marin	MTuWThF	6:54am-8:43pm	--	--	60	--	--
52	Ignacio – Novato	MTuWThFSatSun	6:27am-7:32pm	7:36am-9:02pm	--	60	--	60

Source: Golden Gate Transit, available online at http://goldengatetransit.org/schedules/pages/Bus-Schedules.html

Exhibit 4.2-9
Summary of the Marin County Transit District Routes – School Routes

Route No.	Description
107	Sausalito / Tamalpais High/ St Hilary's
113	Redwood High School / Paradise Cay
115	Tiburon / Redwood High School
117	East Corte Madera / Neil Cummings School / Hall Middle School
123	San Anselmo / White Hill School
125	San Anselmo / Drake High School / Lagunitas
126	San Anselmo / Brookside
127	Sleepy Hollow / White Hill School
139	Lucas Valley / Terra Linda High School
143	Sausalito / Tamalpais High School
145	San Rafael Transit Center / Terra Linda High School
151	Novato / Hamilton Theater
153	San Marin / San Marin High School / Novato

Source: Golden Gate Transit, accessed online at http://goldengatetransit.org/schedules/pages/Bus-Schedules.html

Exhibit 4.2-10
Summary of the Marin County Transit District Routes – Rural Routes

Route # and Description	Days of Operation	Service Span		Weekday Frequency		Sat / Sun Frequency	
		Weekdays	Weekends	Peak	Base	Peak	Base
West Marin Stagecoach – South Route 61	MTuTh	7:15am-7:45am	--	--	150	--	--
West Marin Stagecoach – South Route 61e	WF	8:29am - 7:45pm	--	--	Varies	--	--
West Marin Stagecoach – South Route 61w	SatSun	--	8:31am-7:35pm	--	--	--	150
West Marin Stagecoach – North Route 68	MTuWThF-Sat	6:35am-7:26pm	6:30am-7:32pm	--	180	--	210

Source: Marin Transit District, accessed online at http://www.marintransit.org/stageschedules.html

Paratransit Service

Paratransit service is specialized curb-to-curb service provided to persons with disabilities meeting the eligibility criteria established by the American's With Disabilities Act (ADA). Service is provided throughout the county, with priority given to trips within the service area mandated by ADA. Fares for the service are $2.00 per trip within the ADA mandated area (i.e., within 0.75 miles from a local transit route) and $2.50 for trips that begin or end outside of this area. Whistlestop Wheels is the contract operator for this service, which carried 83,000 riders in fiscal year 2004-05. Users make reservations for their trip at least one day and up to seven days in advance. MCTD also contracts with Whistlestop Wheels for the Novato EZ Rider, which provides a flexible route and demand responsive service targeted to seniors and persons with disabilities. While this service is not ADA-mandated, reducing the demand for ADA service provides service to those who may not be eligible under ADA criteria.

Studies and Planned Projects

Marin County Transit District Short Range Transit Plan

This transit plan is the first to focus entirely on transit within Marin County.[4] The plan includes a complete assessment of the current system and its riders, as well as a thorough identification of transit needs in Marin County and alternative techniques for meeting those needs. The goal of the plan is the development of a financially sustainable transit system for Marin County riders that maximizes productivity and mobility for everyone who travels within the county.

Transportation Authority of Marin Strategic Plan

This Strategic Plan develops programs for funding local transit, local infrastructure, U.S. 101 Gap Closure and School Access and Safety as required by the Measure A half cent sales tax. The goal of the plan is to enhance local mobility, create more livable communities and provide county residents and workers an alternative to the single occupant vehicle.

The Golden Gate Bridge, Highway, and Transportation District

In 1969, the State of California passed legislation allowing the Golden Gate Bridge Highway and Transportation District (District) to provide public transit bus and ferry services to keep traffic congestion levels down; through its transit division, Golden Gate Transit (GGT). The District has an important influence on transportation planning and funding in Marin County. The District controls toll revenue from the Golden Gate Bridge, which it uses to subsidize both its ferry and regional bus transit services. The District's general priority is to serve longer distance travel, focusing on commutes that end in San Francisco. Law prohibits the District from using toll revenue to subsidize local bus service within Marin County, which is fully supported with local funds. Golden Gate's regional bus service supplements and coordinates with the local system by allowing Marin County passengers to ride locally on regional buses operating on the U.S. 101 corridor, and by maximizing connections between the local service area and regional destinations. **Exhibit 4.2-7** illustrates GGT routes.

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4 *Marin County Transit District Short Range Transit Plan, Public Comment Draft*, prepared by Nelson / Nygaard for the Marin County Transit District, January 2006.

The District's regional services are not subsidized by local sales tax measures or dedicated general funds and does not have the authority to levy taxes. The current operating and capital budget is funded by: 35.2 percent tolls; 34.1 percent government funds; 13.1 percent bus and ferry fares; 6.2 percent from other District sources (e.g., Bridge Gift Center & Café, transit rents, concessions and advertising). Regional services include bus services that cross county lines and ferry services from Marin County to San Francisco.

The Golden Gate Bridge, Highway and Transportation District presently consists of an administrative District Division and three operating divisions: Bridge, Bus, and Ferry. The District provides three types of transit service: Basic Regional, Commute, and Ferry. Details of these services are provided below.

Basic Regional Service

Basic regional service consists of five fixed routes (Routes 10, 40 / 42, 70, and 80) that operate along the U.S. 101 and Interstate 580 corridors seven days per week, between the hours of 4:00 AM and 3:00 AM. [5] What distinguishes these routes from local service is that they serve more than one county and are subsidized with toll revenue. Fares are $2.00 for travel within Marin County, and up to $7.60 for destinations outside of Marin. Currently, 182 weekday runs and 131 weekend runs are made along these five routes.

Commute Service

Passengers are also carried on Golden Gate Transit commute bus routes that primarily link Marin County with San Francisco. Twenty-two routes operate during peak hours, in the peak direction. Commuter routes carried 6,800 daily passengers during the 2005 fiscal year.

Ferry Service

The Golden Gate Bridge, Highway and Transportation District offers ferry service from Larkspur and Sausalito to the Ferry Building terminal in San Francisco. The Golden Gate service departing from Larkspur carried a weekday average of 4,482 passengers and the ferry from Sausalito carried a weekday average of 1,085 passengers during fiscal year 2005.

Park Access

Marin's National Parks are a major draw for recreational users from around the San Francisco Bay area. In fact, the Muir Woods Shuttle Evaluation found that Marin residents accounted for only 16 percent of visitors to the park. In addition to the MCTD's Route 63 and the West Marin Stagecoach Routes to West Marin, there are a few other options to access Marin's parklands by transit.

San Francisco Municipal Railway (MUNI)

MUNI's route 76 provides hourly service between 10:30 AM and 7:30 PM on Sundays and holidays to Rodeo Beach in the Marin Headlands. This route begins at the Caltrain Station at 4th and King in San

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[5] Route 80 runs between San Francisco and Santa Rosa. Due to the length of this route, buses are operating 23 hours per day, however southbound buses depart Santa Rosa between 4:00 am and 10:00 pm, and northbound buses depart San Francisco between 5:00 am and 12:30 pm.

Francisco, and continues via the Transbay Terminal, Sutter / Post, Van Ness, and Lombard to the Marin Headlands.

Muir Woods Shuttle

The County developed a three-year pilot for a shuttle to reduce congestion and parking impacts at Muir Woods and on access roads leading to the park. The shuttle route carries passengers from park and ride lots near U.S. 101 directly to Muir Woods during summer weekends. In its 2005 inaugural year, the shuttle was a success, with ridership averaging over 300 passengers per service day, and further improvements are slated for the summer of 2006.

A number of projects are being developed to improve access to Marin's recreational areas and reduce related congestion. Coordinated by both Marin County and the National Park Service, the studies include participation of federal, State and local agencies.

Marin Headlands Fort Baker Transportation Management Study [6]

The Marin Headlands Fort Baker Transportation Management Study is a comprehensive study of alternative transportation options for the Marin Headlands and Fort Baker. Included within the Study are proposals for internal shuttles, park and ride shuttles, and transit improvements.

GGNRA Ferry Access Study [7]

The study is examining land use, market data, and the existing transportation network surrounding the GGNRA in order to plan and implement better access to the recreation area with a ferry terminal at Horseshoe Bay in Fort Baker. The study identifies potential terminal sites that will support visitor flow, and facilitate transit linkages while remaining ADA compliant to create as seamless a transportation network as possible. Mode preference surveys have helped forecast ridership by trip purpose in order to develop routes that serve an identifiable market.

Both the capital costs of pier and landside facilities, and annual operations and maintenance costs are to be carefully compared with expected visitor flow and anticipated ferry revenue. Environmental considerations are being made along all federal, State and Bay Area regulatory guidelines, including tidal flow and range, dredging, and wave impact, wake erosion and noise pollution in the context of habitat. Other factors include tidal flow and range, depths around potential piers and the need for dredging.

National Park Service Transportation Demand Management Program (TDM)

The National Park Service is developing a TDM program for park tenants, which will reduce commute traffic generated by the headlands. The study focuses on the southern Marin Headlands and Fort Baker, and considers the area's connectivity with surrounding gateway communities while placing it, appropriately, in its regional context. The program promotes alternative transportation modes, and

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6 *Planning, Environment, and Public Comment*, National Park Service, available online at http://parkplanning.nps.gov/projectHome.cfm?parkID=303&projectId=12152

7 *Golden Gate, Division of Planning and Technical Services*, National Park Service, available online at http://www.nps.gov/archive/goga/admin/transportation/ferryaccess.htm

maintains special events guidelines to regulate events in Fort Baker. The program coordinates with Bay Area Discovery Museum and the retreat and conference center there to reduce single vehicle trips and to minimize parking demand.

Specialized Transit

Greyhound Lines, Inc

Greyhound Lines, Inc. provides interregional bus service from its terminal in San Rafael. There are two northbound and two southbound departures each day with an additional departure in either direction during the summer months. The northbound buses originate in San Francisco and terminate at Crescent City, Vancouver, and Seattle. The southbound buses originate in Crescent City, Vancouver, and Portland, and terminate in San Francisco. Each departure from San Rafael receives an average of two passengers.

Ferries

The Blue and Gold Fleet provides commuter and recreational ferry service between Tiburon and San Francisco, and between Sausalito and Fisherman's Wharf in San Francisco. The Angel Island – Tiburon Ferry provides weekend service between Tiburon and Angel Island and limited, special-request-only, weekday service between Tiburon and Angel Island.

Water Transit Authority Study – New Ferry Service for the North Bay[8]

Governor Gray Davis' Transportation Congestion Relief Program initiated the Bay Area Water Transit Authority (WTA). The WTA is currently evaluating terminal, service and technology enhancements to ferry services, which could greatly expand ferry service to the North Bay. Potential new terminal locations at Port Sonoma and San Quentin are recommended for further study. Among the criteria being considered is the availability of multi-modal connections, including potential rail and bus transit services. Existing ferry harbors at Sausalito, Tiburon, and Larkspur are sufficient to handle current demand, although a new multi-modal facility at San Quentin could make the current Larkspur terminal redundant.

The Marin Airporter

The Marin Airporter provides regularly scheduled service to and from the San Francisco airport. Buses operate on 30-minute headways from San Francisco International Airport and 30- and 60-minute headways from Marin between 4:00 AM and 11:00 PM. The Marin Airporter is based in Larkspur Landing and provides service to Hamilton, San Rafael, Larkspur Landing, Mill Valley, and Sausalito. Ridership averages between 25,000 and 30,000 passenger trips per month.

Sonoma Marin Area Rail Transit (SMART)

The Sonoma – Marin Area Rail Transit System (SMART) is proposed to operate from Cloverdale in Sonoma County to San Rafael, with a planned ferry connection in southern Marin at Larkspur. **Exhibit 4.2-11** shows the proposed route and station locations of SMART.

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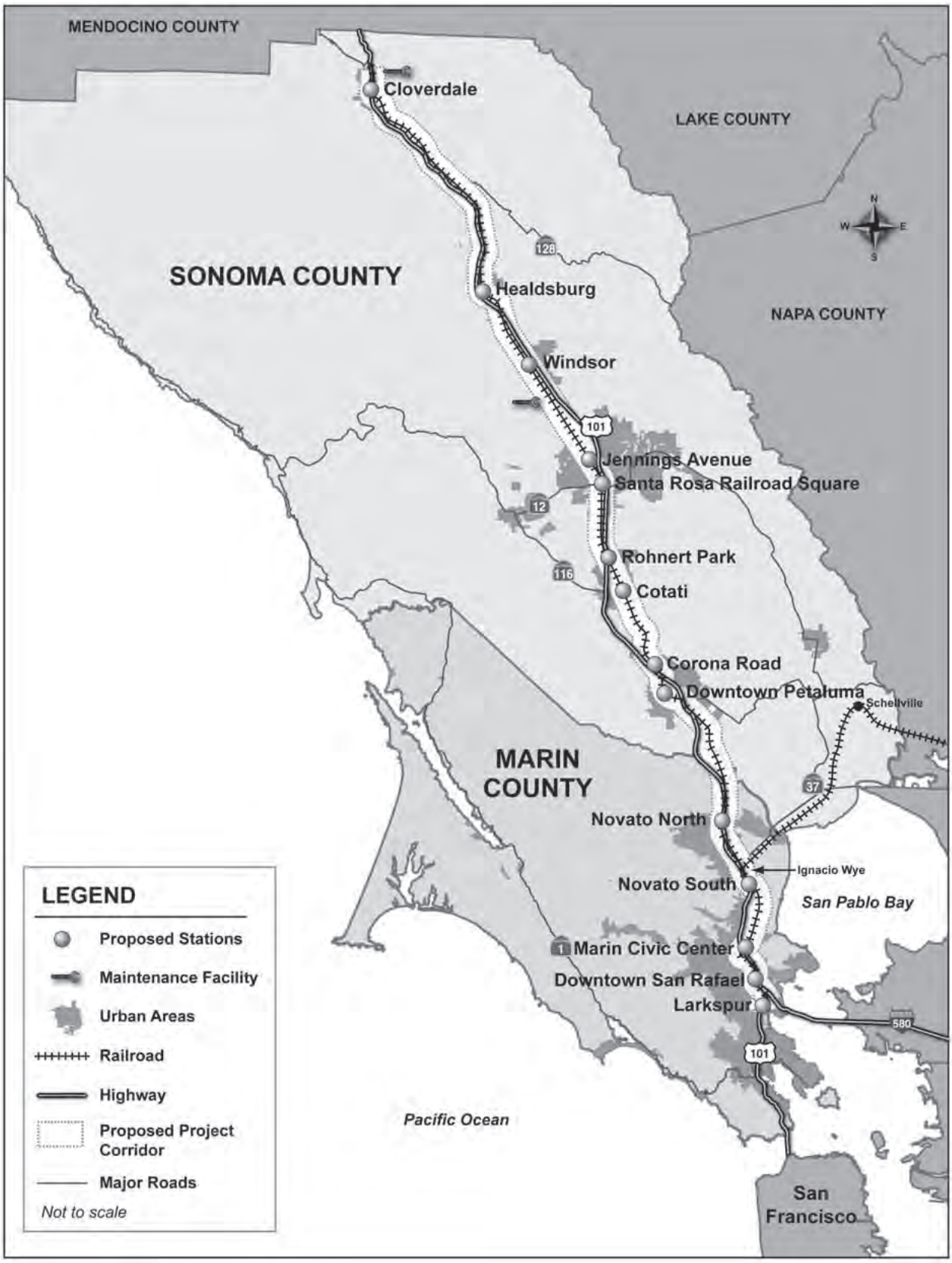
8 Bay Area Water Transit Authority, accessed online at http://www.watertransit.org

Exhibit 4.2-11
Potential SMART Route



Source: *SMART Draft Environmental Impact Report*, Sonoma Marin Area Rail Transit, 2005.

Marin County stations would be sited in northern Novato, southern Novato (Ignacio), near the Marin County Civic Center area, and Downtown San Rafael, and would terminate north of Sir Francis Drake Boulevard. to serve the Larkspur Ferry Terminal. Each of these stations would provide multi-modal transfer opportunities with extensive bus and shuttle services, bicycle facilities and pedestrian access. The Marin Terminus is planned to connect with the Larkspur Ferry Terminal allowing riders to make a seamless trip into San Francisco.

In the 2025 horizon year, average weekday ridership to, from, and within Marin, is estimated by SMART at 1,360 trips, only 56 of which would be during non-peak commute times. [9] The SMART project also includes construction of 53 miles of multi-use pathway along the railroad right of way. While estimates of bicycle and pedestrians trips are difficult to make, the Final EIR estimates that the total daily weekday trips in Marin and Sonoma Counties on the pathway would be approximately 6,950 trips. Weekend use levels are typically 30 percent higher than weekday use, or approximately 2,743,000 annual trips. [10] In the November 2006 election, Measure R, which would have authorized SMART to construct, operate, and maintain passenger rail and a multi-use pathway on the right of way, and which would have imposed a one-quarter cent sales tax failed. A supermajority or 66.6 percent of those voting in Marin and Sonoma counties combined was required for approval. The measure fell just short of passing, with 65 percent voting in favor. Currently, SMART is planning to re-introduce the initiative for the 2008 election.

BICYCLES, PEDESTRIANS, AND TRANSPORTATION DEMAND MANAGEMENT

Bicycle and Pedestrian Facilities and Travel

The 2000 U.S. Census indicates that four percent of work trips in Marin County are made by bicycle and pedestrian modes. A survey conducted by the Regional Rideshare agency, RIDES, to gauge perceptions of commute conditions and options showed that 18 percent of commuters see bicycling as a viable commute alternative. Bicycle use for commutes within Marin County is lower than might be expected due to inadequate or non-existent connections between communities, particularly over hilly terrain. **Exhibits 4.2-12** and **4.2-13** show the bicycle facilities in unincorporated Marin County as of June 2001 and bicycle and pedestrian counts taken at key locations.

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9 *Sonoma-Marin Area Rail Transit Project Final Environmental Impact Report*, prepared by Parson Brinckerhoff for Sonoma-Marin Area Rail Transit, June 2006, page 3.2-12.

10 *Sonoma-Marin Area Rail Transit Project Final Environmental Impact Report*, prepared by Parson Brinckerhoff for Sonoma-Marin Area Rail Transit, June 2006, page 3.2-31.

Exhibit 4.2 12
Bicycle Facilities in Unincorporated Marin County

Segment	*Type*	*Miles*
Golden Gate Bridge Access [b]	Path [a]	0.20
Golden Gate Bridge to Alexander Avenue [b]	Path [a]	0.25
Samuel P. Taylor path [b]	Path [a]	2.20
Tamalpais Valley connector	Path [a]	0.35
College of Marin (sidewalk pathway)	Path [a]	0.50
Total Multi-Use Paths		***3.50***
Bunker Road [b]	Bike lane	0.25
Almonte Boulevard	Bike lane	0.50
East Sir Francis Drake Boulevard	Bike lane	0.25
Butterfield Road	Bike lane	1.25
Barry-Baker Tunnel	Bike lane	0.40
Total Bike Lanes		***2.65***
Alexander Avenue north of Golden Gate Bridge [b]	Bike Route [a]	1.00
East Road north of Golden Gate Bridge [b]	Bike Route [a]	1.00
East Sir Francis Drake Boulevard	Bike Route [a]	1.00
Total Bike Routes		***3.00***
Total Facilities		***9.15***

a Many of the facilities do not meet Caltrans standards.
b These facilities are under the jurisdictions of other agencies

Source: *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan*, prepared by Alta Transportation Consulting for the Marin County Department of Public Works, June 2001.

Exhibit 4.2-13
Bicycle and Pedestrian Counts

Location	*Bicycle*		*Pedestrian*	
	Weekday	*Weekend*	*Weekday*	*Weekend*
Sir Frances Drake Boulevard / Wolfe Grade	22	--	9	--
College Avenue	24	14	126 [a]	24
Golden Gate Bridge	640	160	--	--
Mill Valley Path Entrance	144	88	52	14

a Count conducted February 2001.

Note: Unless otherwise noted, bicycle / pedestrian counts conducted in the same one-hour period in September 1999.

Source: *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan*, prepared by Alta Transportation Consulting for the Marin County Department of Public Works, June 2001.

Installation of bicycle racks on buses improves the functioning of the transportation network by allowing seamless connections between these two alternative modes. Golden Gate Transit (GGT) / Marin County Transit District (MCTD) has installed bike racks on the majority of their buses.

Marin County is one of four communities throughout the United States that has been designated as a Nonmotorized Transportation Pilot Program. Each of the four pilots will receive a total of $25 million over the next four years to build a bicycle and pedestrian network that will connect directly with transit stations, schools, residences, businesses, recreation areas, and other community activity centers.

As discussed in the Marin County Unincorporated Bicycle and Pedestrian Plan:

Many of Marin's unincorporated communities, particularly those in West Marin, are small, rural villages that may lack sidewalk facilities. Residents have expressed a desire to balance the need to safely and adequately satisfy the needs of residents who need to move about safely on foot with the desire to retain a rural or small-town character of their communities. There are numerous places were sidewalks do not exist or end abruptly. In many cases where sidewalks are provided, such as in downtown Point Reyes Station and Tomales, wheelchair access is nonexistent. These sidewalks, however, are limited to the downtown commercial areas and often do not connect to the nearby residential areas.

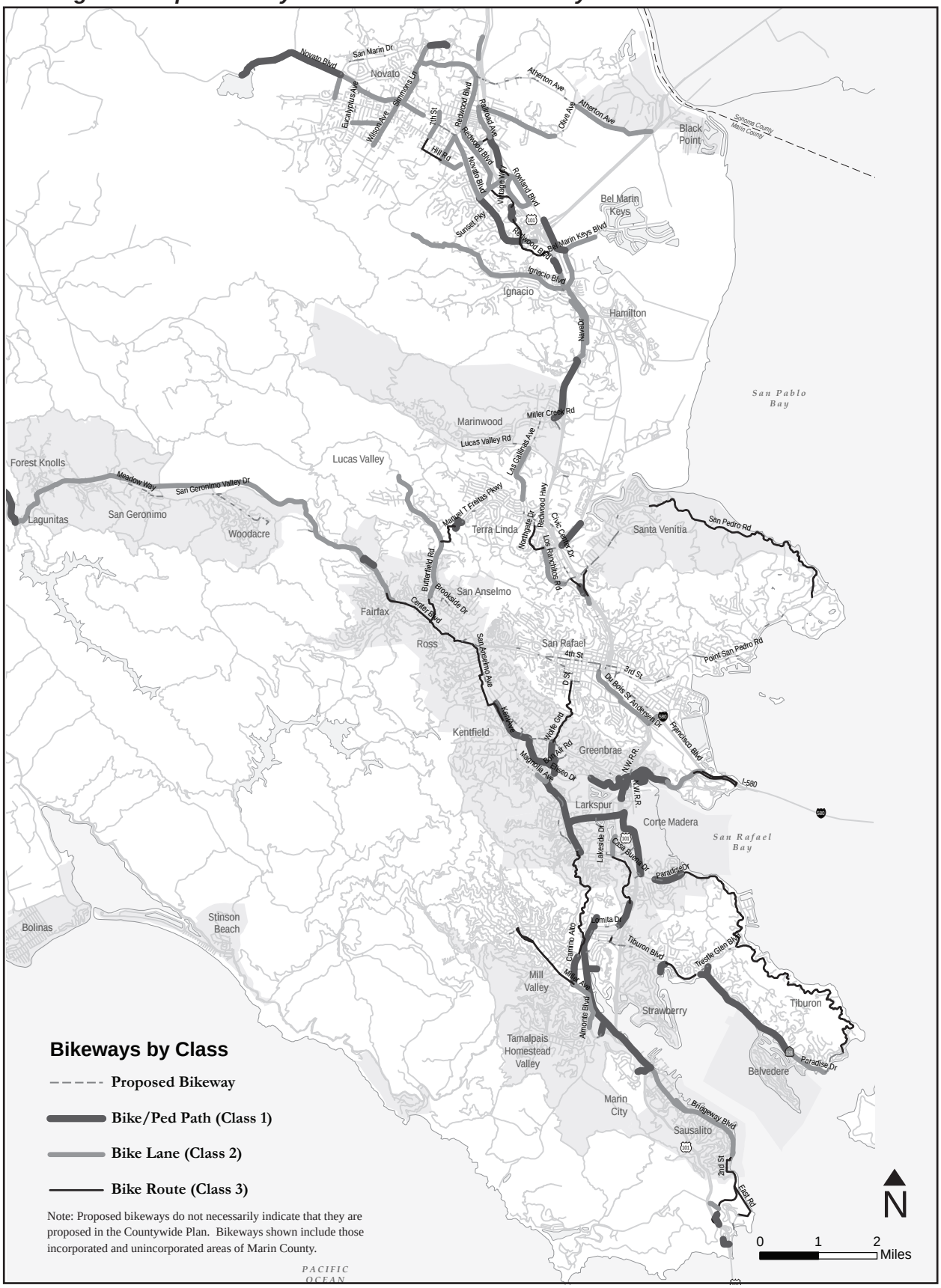
Studies and Planned Projects

Marin County Unincorporated Area Bicycle and Pedestrian Master Plan

Adopted in June 2001, the *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan* provides a blueprint for making bicycling and walking an integral part of daily life in Marin County. The 20-year plan calls for the completion of a countywide network of primary and secondary bikeways. It also calls for the completion of pedestrian improvements, both local and linear in nature. The long-term system intends to connect all of the major destinations in the county as well as providing continuous connections between communities. Along with specific physical projects, the plan provides bicycle and pedestrian facility design standards and guidelines and provides recommendations for education, marketing, and other programs that ultimately will be implemented by public or private groups.

The plan promotes inter-modal connections by providing direct and convenient bicycle- and pedestrian-ways to major transit stops. If fully implemented, the plan would include significant investment in bicycle facilities at transit nodes, including both bus transfer points and rail and ferry terminals. The existing *Countywide Plan* is supplemented by individual local bicycle and pedestrian plans, prepared by each town / city in the county. An expanded Safe Routes to Schools Program managed by TAM, which addresses congestion problems in Marin County and has reduced auto use at schools by 15 percent annually in its first two years, also supplements it. The Safe Routes to Schools program provides training to students and parents, and promotes engineering and construction projects that enhance bicycle and pedestrian safety around schools.

Exhibit 4.2-14
Existing and Proposed Bicycle Network in Marin County



Source: *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan*, prepared by Alta Transportation Consulting for the Marin County Department of Public Works, June 2001.

Cal Park Hill Path and Tunnel Project

The Cal Park Hill Path and Tunnel project to restore the Cal Park Hill Tunnel for bicycle / pedestrian travel and potential passenger rail shared use. The County, in partnership with Sonoma Marin Area Rail Transit (SMART), and the Transportation Authority of Marin (TAM), is implementing the project. This 1,105-foot long tunnel, originally used for rail operations, will be structurally rehabilitated and a one-mile long Class 1 bicycle and pedestrian path will be constructed between Andersen Drive and West Francisco Boulevard in San Rafael and the vicinity of Larkspur Landing Circle in Larkspur, mainly within the existing railroad right of way. The project is fully funded and is currently in design phase.

Rail with Trail along SMART corridor

Sonoma Marin Area Rail Transit (SMART) has included in its Environmental Impact Report the construction of a bicycle and pedestrian path within the rail right of way. This pathway would extend along the entire rail corridor from Cloverdale in Sonoma County to the rail terminus in Larkspur.

Transportation Demand Management

Transportation Demand Management (TDM) strategies manage the “demand” side of transportation needs by encouraging the use of higher capacity modes for work trips, including carpooling and vanpooling as well as transit use and bicycling. TDM measures can also reduce peak period congestion by encouraging commuters to avoid the peak travel periods using techniques such as telecommuting, and flexible work schedules. Other TDM measures include vanpool and carpool matching services and incentives, employer shuttles connecting to regional transit services, subsidized transit passes, guaranteed ride home programs, showers and secure bike parking to encourage bicycling, parking cash-out and a host of education programs designed to foster awareness of transportation alternatives.

Currently, the 511 Regional Rideshare Program offers support to commuters in the nine Bay Area counties, including assistance with carpool and vanpool matching. Individual employers may also offer TDM programs to reduce their impact on the peak period commute. The County is a model employer, offering many commute incentives including subsidized transit passes, and carpool subsidies and incentives. A guaranteed ride home program provides “insurance” to employees who may be willing to try an alternative mode but require “insurance” that they will not be stranded if they have an emergency that requires them to miss their planned commute option. The County reports substantial increases in the use of alternative modes since implementing its program. In the first 18 months of the program, carpool use increased by 108 percent and transit ticket sales increased by 26 percent. The County continues to enhance and develop its program, and recently adopted a telecommute policy.

Safe Routes to School

The Marin County Safe Routes to Schools program began in 2000 to find ways to encourage students to bike and walk to school. Its purpose is to relieve congestion around schools and create a healthy lifestyle for children, as well as improving air quality, enhancing the environment, and creating safer, calmer streets and neighborhoods. Safe Routes to Schools is currently a project of the Transportation Authority of Marin, funded through Measure A sales tax.

During the 2004-2005 school year, the program served a record number of schools and students. A total of 37 schools, representing over 16,000 students participated in the program. The program has resulted in the following:

- "Chauffeured trips" or single student trips dropped by 13 percent among schools participating in the Safe Routes program. This translates into over 4,250 one-way trips saved every day through the Safe Routes program. The shift away from single-student driving translates into a reduction of nearly 2.6 million vehicle miles traveled (VMT). Fewer VMT relates directly to the reduction of pollutants that accelerate climate change and endanger public health.

- For the fifth straight year in a row, biking and walking modes continue to grow, with walking trips increasing from 14 percent to 20 percent of the total and biking trips increasing from seven percent to nine percent over the course of the year. The number of students carpooling to school also went up, to 22 percent of mode share, after having started the year at the highest level (17 percent) since 2001.

AIRPORT FACILITIES

Marin has one general aviation and one small craft airport: Gnoss Field, north of Novato (general aviation), and Marin Ranch (small craft) in northern San Rafael. Gnoss Field has a 3,300-foot asphalt runway that accommodates small private aircraft up to 18,500 pounds. It is classified by the Federal Aviation Administration as a "B-1" facility and a "reliever" airport. Gnoss Field has capacity for 320 aircraft, currently accommodating 301 aircraft. The airport currently handles 60,000 takeoffs and landings per year.

Marin Ranch Airport is a private airport with 2,180 feet of runway. The airport houses 100 aircraft and accommodates commuter, recreational and emergency response activities.

Transportation – Significance Criteria

The transportation analysis uses criteria from the *State CEQA Guidelines* and the Transportation Authority of Marin's *2005 Marin County Congestion Management Program.* [11] The Initial Study determined that the proposed project would have potentially significant transportation impacts.

For this EIR, significance criteria were developed for the unincorporated area's major arterial roads and State highways that are more specific than those of the *State CEQA Guidelines*. These criteria are discussed below:

Major Arterials

The County level of service (LOS) standard established by the *2005 Marin County Congestion Management Program* is LOS D for urban and suburban arterials including highways that serve as arterials (e.g., SR 1, SR 131). Therefore, the project would have a significant traffic and circulation impact if it:

- Caused an arterial with baseline traffic volumes operating at an acceptable level of service (i.e., LOS A, B, C, or D) to deteriorate to an unacceptable operation (i.e., LOS E or F); and / or

- For an arterial with baseline traffic volumes already at an unacceptable LOS, caused an increase in the calculated average V / C ratio of 0.05 or more. [12]

Freeways

LOS E is the threshold level of service established by the *2005 Marin County Congestion Management Program* for U.S. 101, Interstate 580 and State Route 37. Therefore, the project would have a significant traffic and circulation impact if it:

- Caused a freeway segment with baseline traffic volumes operating at an acceptable level of service (i.e., LOS A, B, C, D, or E) to deteriorate to an unacceptable operation (i.e., LOS F); and / or

- For a freeway segment with baseline traffic volumes already operating unacceptably at LOS F, caused an increase in the V/C ratio of 0.01 or more.

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[11] *2005 Marin County Congestion Management Program*, prepared by Wilbur Smith Associates for the Transportation Authority of Marin. September 2005.

[12] Under this methodology, the levels of service are based on the volume-to-capacity (V/C) ratios for each roadway segment. V/C ratio is a measure of the degree to which the total capacity of a roadway is used by vehicles. When V/C exceeds 1.00, the roadway is congested with longer queues and extended delays with stoppages for long periods because of downstream congestion.

Intersections

If an intersection with baseline traffic volumes is operating at an acceptable LOS (LOS A, B, C, or D) and deteriorates to an unacceptable LOS E or LOS F, the increase in intersection delay is a significant impact.

For intersections that already have an unacceptable level of service, any increase in delay at the intersection is considered a significant impact.

In addition to the criteria listed above, the County has developed specific significance criteria for Bicycle / Pedestrian- and Transit-related impacts. These criteria are discussed below:

Bicycle/Pedestrian

Bicycle / pedestrian impacts would be significant if the project:

- Substantially reduced bicycle or pedestrian access; and / or
- Substantially reduced safety for bicyclists or pedestrians.

Public Transportation

Transit impacts would be significant if the project:

- Increased demand for public transit service to such a degree that accepted service standards are not maintained; and / or
- Reduced availability of public transit to users, or interfered with existing transit users.

Transportation – Existing and Future Conditions

The traffic impacts of *Draft 2005 CWP Update* land development and transportation improvements were evaluated using traffic volumes forecast for the year 2030 by the Transportation Authority of Marin's traffic model. This section presents the future traffic conditions forecast by this model, and existing traffic conditions which serve as the baseline for evaluating the impacts of the *Draft 2005 CWP Update.*

MARIN COUNTY TRAVEL MODEL [13]

The Marin Travel Model forecasts future travel behavior using inputs from the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) regarding future growth in Marin County as well as surrounding counties in the Bay Area. The Marin Travel Model contains 117 traffic analysis zones (TAZs) within Marin County, 83 TAZs for San Francisco, 69 TAZs for Sonoma, and 24 TAZs corresponding with the MTC super-district level for other Bay

[13] The Marin Travel Model is maintained by the Transportation Authority of Marin. See the *2005 Marin Congestion Management Plan* (pages 32 to 38) for a complete description of the Marin Travel Model.

Area counties. The model, therefore, not only captures the traffic impacts of future growth in Marin County, but it also forecasts the cumulative impact of growth throughout the Bay Area on Marin County's roadways.

The Marin Travel Model is based on Association of Bay Area Governments (ABAG) *Projections 2003* [14] land use data. The model requires that land uses be allocated at a finer detail for Marin, Sonoma, and San Francisco counties than *Projections 2003* provides. In preparing the land use inputs, it was necessary to adjust some of the land uses. Overall, Marin County land use data are consistent with ABAG. Land use data outside of Marin were obtained from *Projections 2003*.

The county is particularly interested in understanding how the location, density and the mix of land uses near future residential development would influence the use of alternative modes of transportation such as transit, biking, and walking. The Marin Travel Model is responsive to some of these land use changes but cannot capture all of the factors that influence actual transportation decision making. Examples of how the Marin Travel Model is responsive to transportation and land use changes include the following:

- The number of trips forecast for each mode is dependent on the travel, wait, and access time of that mode. For example, expanding the HOV lane network, which would decrease HOV and transit travel time, would increase the number of HOV and transit trips forecast by the model; and

- As the density and diversity of land uses increases the model will forecast shorter trips and more trips via alternative modes of transportation.

ROADWAY IMPROVEMENTS

Exhibit 4.2-15 provides a list of the major proposed roadway transportation improvements included in the *Draft 2005 CWP Update*. **Maps 3-6a** and **3-6b** (Proposed Transportation Improvements) in the *Draft 2005 CWP Update* show the location of the proposed improvements. Many of these improvements would enable the roadway system to accommodate the increased traffic demand generated by *Draft 2005 CWP Update* development without causing unacceptable traffic congestion. However, only transportation improvements with a high likelihood of funding, and consequently a high likelihood for full implementation by 2025, were included in the traffic model in order to provide a more conservative evaluation of future traffic impacts. For each improvement, **Exhibit 4.2-15** indicates whether the improvement was included in the traffic model and an explanation of why specific improvements were not included in the traffic model.

All of the *Draft 2005 CWP Update* transportation projects are included in, and therefore consistent with the San Francisco Bay Area's Regional Transportation Plan (*Transportation 2030 Plan*). ***Section 4.1 Land Use, Population, and Housing*** provides a discussion of *Transportation 2030 Plan*. **Exhibit 4.1-12** presents a list of the *Draft 2005 CWP Update* transportation improvement projects and their corresponding *Transportation 2030 Plan* improvement project.

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14 *Projections 2003*, Association of Bay Area Governments.

Exhibit 4.2-15
Draft 2005 CWP Update Transportation Improvements

No.	Proposed Improvement	Included in Marin Travel Model
1.	New overcrossing at the Redwood Landfill.	No – Would not affect model
2.	Widen U.S. 101 from four to six lanes to include an HOV lane in each direction from Novato to Petaluma.	No – Full construction funding not secure
3.	Improve Atherton Avenue at U.S. 101 interchange.	No – Not funded, not studied
4.	New northbound auxiliary lane on U.S. 101 from State Route 37 off-ramp to South Novato Boulevard off-ramp.	Yes
5.	New northbound auxiliary lane from Nave Road onramp to State Route 37.	No – Not funded
6.	New traveler information system along State Route 37.	No – Would not affect model
7.	New southbound auxiliary lane from Miller Creek Road to the truck scales.	Yes
8.	Improve U.S. 101/Lucas Valley Road interchange.	Yes
9.	A new southbound auxiliary lane on U.S. 101 from Manuel T. Freitas Parkway to the North San Pedro Road exit.	No – Not funded, not studied
10.	New HOV gap closure project on U.S. 101 both north and southbound.	Yes
11.	I-580 interchange improvements: West I-580 to south U.S. 101 West I-580 to north U.S. 101 to 2nd Street.	No – Not funded,
12.	Reconfigure U.S. 101/Sir Francis Drake interchange.	Improvements not described in detail – Details to be determined
13.	New southbound auxiliary lane on U.S. 101 from Sir Francis Drake Boulevard to Andersen Drive.	Yes
14.	Add a northbound auxiliary lane on U.S. 101 from Paradise Drive to Lucky Drive.	No – Not funded, not studied
15.	Widen Sir Francis Drake Boulevard from the Larkspur Ferry terminal to Anderson Drive.	No – Not funded, not studied
16.	Improve U.S. 101/Tamalpais interchange.	No – Would not affect model
17.	Widen Tiburon Boulevard overrcrossing to six lanes (divided with dual southbound ramps) from U.S. 101 to Redwood Frontage Road.	Yes
18.	Widen southbound off-ramp of U.S. 101/Tiburon interchange.	No – Would not affect model
19 and 20.	Widen and improve signals on State Route 1 between Flamingo Road and U.S. 101, including replacement of Tennessee Valley (Coyote Creek) bridge.	No – Funding not secure
21.	Access management for State Route 1 from U.S. 101 to Stinson Beach and Tennessee Valley Road for access to the Golden Gate, Mt. Tamalpais and Stinson Beach Recreation areas.	No – Would not affect model
22.	Regional express bus operations on U.S. 101 from Santa Rosa to San Rafael/San Francisco.	Yes

Source: *Draft 2005 CWP Update* and Marin County Department of Public Works

The Sonoma-Marin Area Rail Transit (SMART) District proposes the establishment of passenger rail service along a 70 mile corridor from Cloverdale in Sonoma County to Larkspur in Marin County. The right-of-way is the former Northwestern Pacific Railroad right-of-way. The proposed passenger rail service would serve 14 stations, nine in Sonoma County and five in Marin County. Policy **TR-3.2** supports the establishment of rail service on the Northwestern Pacific Railroad right-of-way. Program **TR-3.d** would encourage the County to participate in planning for rail transportation through SMART. At this time, however, secure funding for the passenger rail service does not exist. The proposed SMART rail transportation project, therefore, was not included in the traffic model.

ROADWAY CONDITIONS

Weekday AM and PM peak hour roadway operations were evaluated at 19 key locations, called screenlines. The county used various criteria to select screenlines; roadway segments most likely to be significantly impacted by development were selected as were segments that presently carry a large number of vehicles. The 19 screenlines are listed below in **Exhibit 4.2-16**. A map of the screenline locations is presented in **Exhibit 4.2-18**.

The *2005 Marin County Congestion Management Program*[15] provides for the identification of "grandfathered" roadway segments. A "grandfathered" segment was operating at a LOS lower than the minimum acceptable LOS standard when that standard was established in 1991. These segments are allowed to continue to operate at an unacceptable LOS until they are improved or the traffic load is diverted. It is also recommended in the Congestion Management Plan that an improvement plan be developed to address congestion on "grandfathered" segments. An improvement plan consists of a description of the actions required to improve the LOS on the facility, by either increasing capacity or managing the demand for travel in a manner that effectively improves LOS. Several of the roadway segments studied in this EIR are "grandfathered" segments. Those segments are noted in the **Exhibit 4.2-16** with a '*'. However, a roadway's designation as "grandfathered" does not affect this analysis, it provides context for why some roadways have been allowed to operate at substandard operating conditions.

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15 *2005 Marin County Congestion Management Program*, prepared by Wilbur Smith Associates for the Transportation Authority of Marin, September 2005. The complete list of "grandfathered" segments is provided in Table 1 of the *2005 Marin County Congestion Management Program*.

Exhibit 4.2-16
Screenline Locations

No.	*Screenline Locations*
1.	U.S. 101 at Golden Gate Bridge
2.	Bridgeway Blvd. between Gate 5 and Gate 6 Rd.
3.	SR-1 between U.S. 101 and Almonte Blvd.*
4.	SR-131 between U.S. 101 and Strawberry Dr.
5.	U.S. 101 (Alto Hill) between Paradise Dr. and SR-131*
6.	Sir Francis Drake Blvd. between Bon Air Road and Wolfe Grade*
7.	Sir Francis Drake Blvd. between U.S. 101 and Eliseo Dr.*
8.	E. Sir Francis Drake Blvd. between Larkspur Ferry and San Quentin*
9.	I-580 at Richmond Bridge
10.	I-580 between E. Sir Francis Drake Blvd. and Bellam Blvd.*
11.	U.S. 101 (Cal Park Hill) between I-580 and Sir Francis Drake Blvd.*
12.	U.S. 101 between 2nd Street and I-580*
13.	3rd Street (in San Rafael) at Union St.
14.	U.S. 101 between Lucas Valley Rd. and Freitas Parkway*
15.	Lucas Valley Rd between Las Gallinas Ave. and Los Gamos
16.	U.S. 101 (Pacheco Hill) between Nave Dr. and Miller Creek
17.	South Novato Blvd. between U.S. 101 and Sunset Parkway
18.	SR-37 between U.S. 101 and Atherton Ave.
19.	U.S. 101 at Sonoma/Marin County Line*

* Roadway segments "grandfathered" by the *2005 Marin County Congestion Management Program*.

Source: County of Marin, Community Development Agency, 2006.

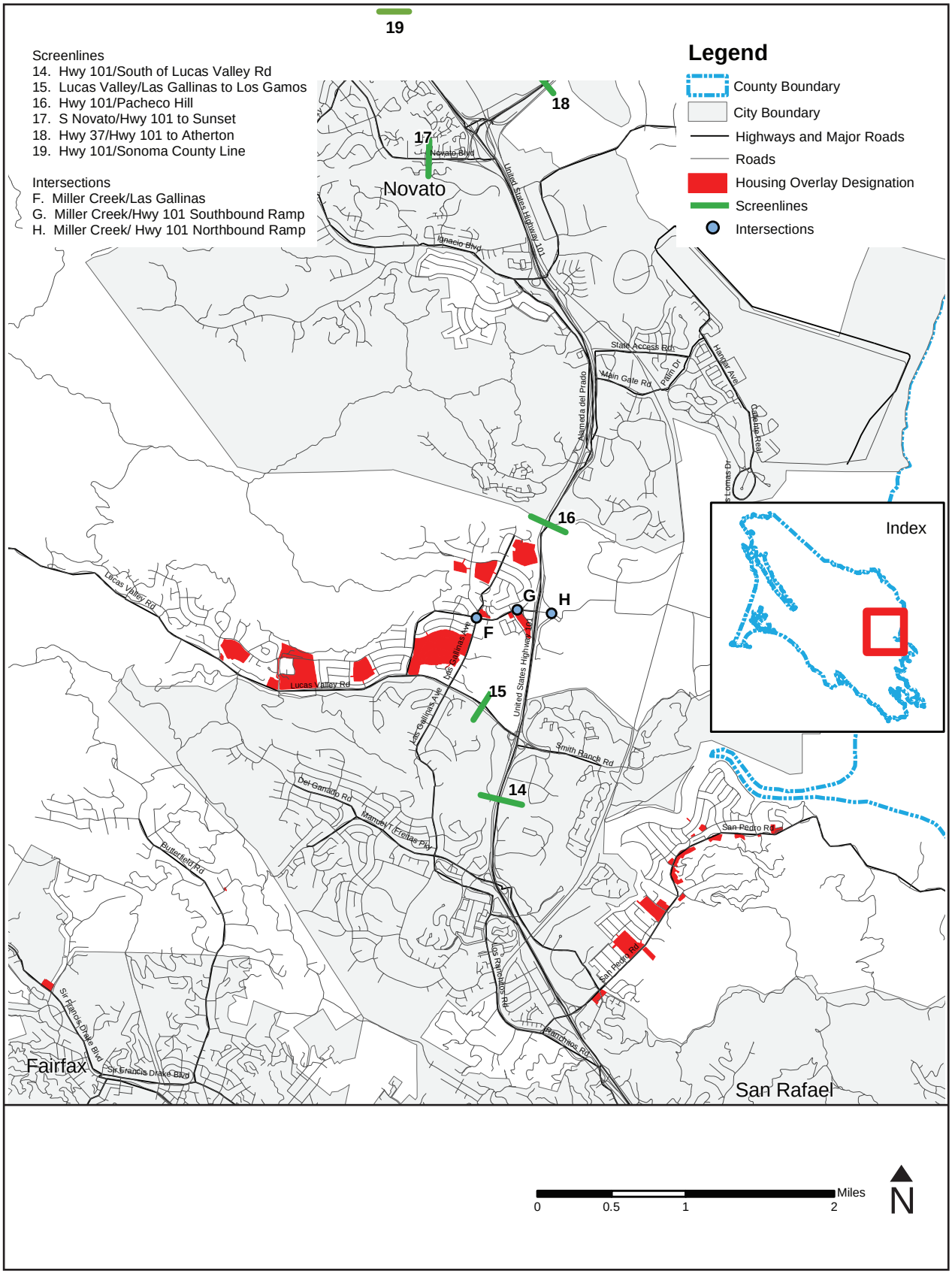
Weekday AM and PM peak hour intersection operations were evaluated at eight intersections (see **Exhibit 4.2-17**). These eight intersections (A through H) are key access roadways to *Draft 2005 CWP Update* Housing Overlay Designation areas where the amount of development would vary depending on the *Draft 2005 CWP Update* scenario that is ultimately implemented. These intersections were selected to help evaluate the relative traffic impacts of each *Draft 2005 CWP Update* scenario. The eight intersections are listed below. The location of the eight intersections is shown in **Exhibit 4.2-18**.

Exhibit 4.2-17
Intersection Locations

Intersection	*Intersection Locations*
A.	Bridge Blvd. at U.S. 101 SB off-ramp (Marin City)
B.	Redwood Highway Frontage Rd/De Silva Island Dr. at U.S. 101 NB on/off ramps (Strawberry)
C.	Tiburon Blvd. (SR-131) at Redwood Highway Frontage Rd. (Strawberry)
D.	2nd St. at Grand Ave. (San Rafael)
E.	3rd St. at Grand Ave. (San Rafael)
F.	Miller Creek Rd. at Las Gallinas Ave. (Marinwood)
G.	Miller Creek Rd. at U.S. 101 SB off-ramp (Marinwood)
H.	Miller Creek Rd. at U.S. 101 NB off-ramp (Marinwood)

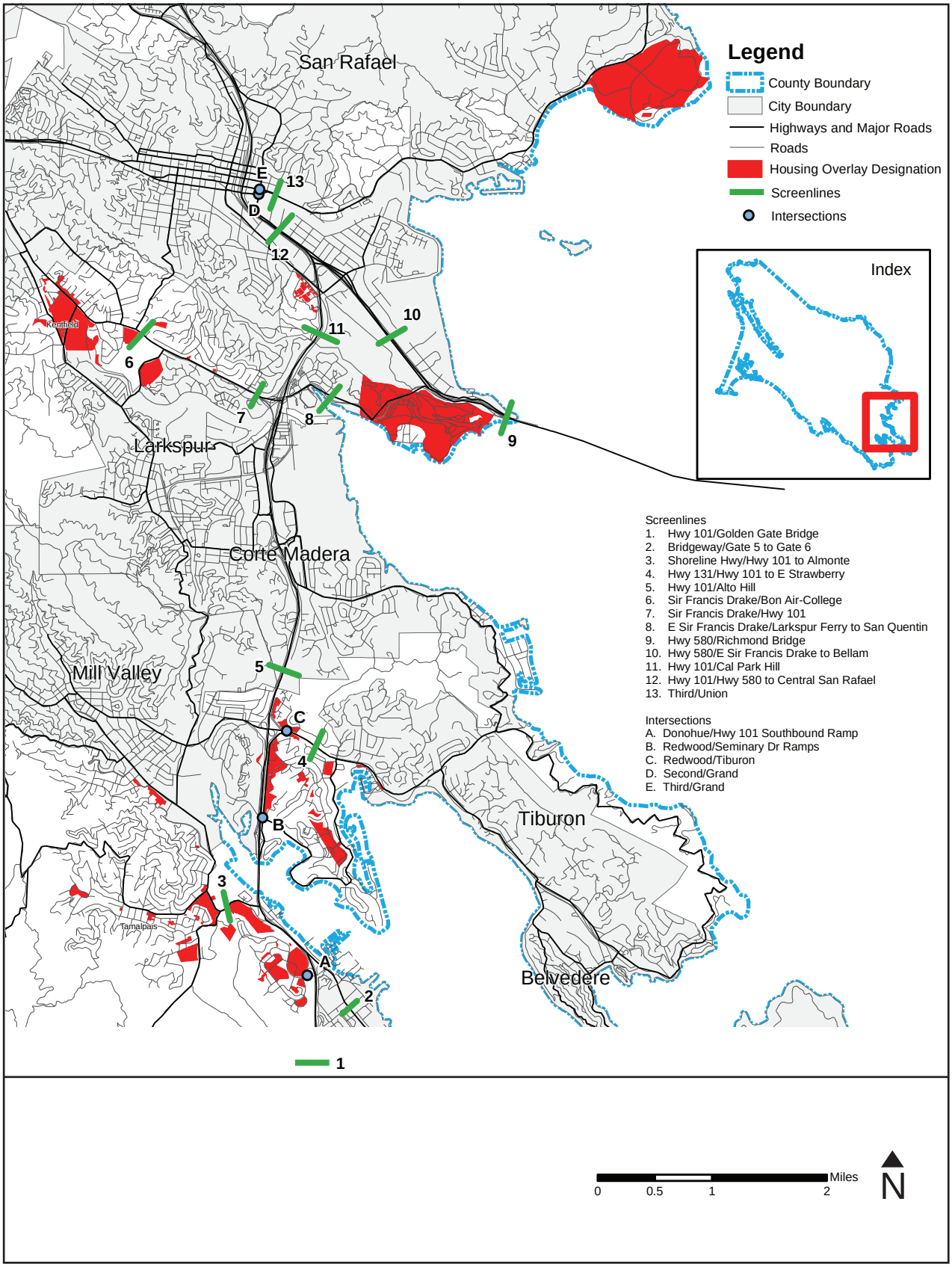
Source: County of Marin, Community Development Agency, 2006.

Exhibit 4.2-18(a)
Screenlines and Intersections



Source: County of Marin Community Development Agency, February 2006.

Exhibit 4.2-18(b)
Screenlines and Intersections



Source: County of Marin Community Development Agency, February 2006.

For each screenline, direction of travel, and time period, traffic volumes were calculated for existing conditions (year 2005) and buildout of the *Draft 2005 CWP Update* (year 2030). *Draft 2005 CWP Update* conditions represent the traffic conditions that would be present in 2030 if land uses and development plus the funded transportation improvements described in the *Draft 2005 CWP Update* occurred. The traffic volumes, V/C ratio and the level-of-service for each segment and direction are presented in **Exhibit 4.2-19** for the AM peak and in **Exhibit 4.2-20** for the PM peak. Significant impacts, shaded grey, are discussed in the next section.

The *Draft 2005 CWP Update* (year 2030) delay and level-of-service of each intersection were calculated based on actual traffic counts collected at each intersection that were scaled up according to the growth forecast by the county's traffic model for each *Draft 2005 CWP Update* scenario. The existing and future intersection conditions are presented in **Exhibit 4.2-21**.

For each *Draft 2005 CWP Update* scenario [16] two types of impacts were analyzed for the roadway segments, however; it was not possible to do this for the intersection analysis due to limitations of the traffic model. The "Project" impacts were calculated by adding the existing (year 2005) traffic volumes to the traffic volume generated by development consistent with the *Draft 2005 CWP Update* that would occur between 2005 and 2030. This identifies impacts that are exclusively due to development in the unincorporated areas of Marin County governed by the *Draft 2005 CWP Update*.

The second set of impacts, "Cumulative," represents projected growth in the unincorporated area of Marin County, as projected under the *Draft 2005 CWP Update*, as well as projected growth in each of the 11 cities and towns of the County. The cumulative impact analysis also includes growth outside of Marin County within the nine county Bay Area transportation planning region. The regional growth was based on *Projections 2003* land use data. This document is used by all Bay Area planning agencies to forecast future growth, thus projections for this analysis were based on *Projections 2003* to maintain consistency with other Bay Area plans.

For both project and cumulative conditions, impacts are measured against existing (2005) traffic conditions. Though the cumulative analysis presents a more complete picture of traffic conditions in 2030, the project analysis isolates the impact of the *Draft 2005 CWP Update* that is the subject of this EIR.

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16 The three *Draft 2005 CWP Update* scenarios are described in ***Chapter 3.0 Description of the Proposed Project***.

Exhibit 4.2-19
AM Peak Existing (2005) and Draft CWP Update (2030) Traffic Volumes, V/C, and LOS

Screen Line Segment	Direction	Existing Conditions (2005)			Draft 2005 CWP Update (2030)																	
					Scenario 1						Scenario 2						Scenario 3					
					Cumulative			Project			Cumulative			Project			Cumulative			Project		
		Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS
1. Hwy. 101	N/B	3,541	0.89	D	4,152	1.04	F	3,866	0.97	E	4,153	1.04	F	3,864	0.97	E	4,155	1.04	F	3,858	0.96	E
at Golden Gate Bridge	S/B	6,177	0.77	C	8,829	1.10	F	8,014	1.00	E	8,818	1.10	F	8,000	1.00	E	8,837	1.10	F	8,001	1.00	E
2. Bridgeway Blvd.	N/B	390	0.20	A	463	0.24	A	419	0.22	A	458	0.24	A	416	0.22	A	463	0.24	A	418	0.22	A
Gate 5 & Gate 6 Rd.	S/B	951	0.50	A	1,104	0.58	A	1,080	0.56	A	1,103	0.57	A	1,079	0.56	A	1,102	0.57	A	1,078	0.56	A
3. State Route 1	N/B	352	0.44	A	469	0.59	A	445	0.56	A	468	0.59	A	442	0.55	A	469	0.59	A	443	0.55	A
U.S. 101 to Almonte Blvd.	S/B	1,077	1.35	F	1,342	1.68	F	1,484	1.86	F	1,346	1.68	F	1,488	1.86	F	1,343	1.68	F	1,472	1.84	F
4. State Route 131	E/B	949	0.49	A	1,307	0.68	B	1,204	0.63	B	1,302	0.68	B	1,201	0.63	B	1,301	0.68	B	1,200	0.62	B
U.S. 101 & Strawberry Dr.	W/B	1,105	0.58	A	1,645	0.86	D	1,401	0.73	C	1,641	0.85	D	1,395	0.73	C	1,638	0.85	D	1,392	0.73	C
5. Hwy. 101 - Alto Hill	N/B	3,991	0.40	B	4,961	0.50	B	4,497	0.45	B	4,950	0.50	B	4,489	0.45	B	4,955	0.50	B	4,481	0.45	B
Paradise Dr. to SR 131	S/B - MFL	5,012	0.65	C	6,376	0.83	D	5,876	0.76	C	6,368	0.83	D	5,868	0.76	C	6,387	0.83	D	5,884	0.76	C
	S/B - HOV	1,248	0.57	C	1,772	0.81	D	1,580	0.72	C	1,775	0.81	D	1,581	0.72	C	1,777	0.81	D	1,583	0.72	C
6. Sir Francis Drake Blvd.	E/B	1,906	0.79	C	2,127	0.89	D	1,973	0.82	D	2,108	0.88	D	1,967	0.82	D	2,181	0.91	E	1,975	0.82	D
Bon Air Road to Wolfe Grade	W/B	1,470	0.61	B	1,556	0.65	B	1,564	0.65	B	1,569	0.65	B	1,580	0.66	B	1,578	0.66	B	1,587	0.66	B
7. Sir Francis Drake Blvd.	E/B	2,487	1.04	F	2,896	1.21	F	2,672	1.11	F	2,865	1.19	F	2,647	1.10	F	2,919	1.22	F	2,661	1.11	F
U.S. 101 to Eliseo Dr.	W/B	2,378	0.99	E	2,633	1.10	F	2,562	1.07	F	2,652	1.11	F	2,573	1.07	F	2,670	1.11	F	2,585	1.08	F
8. E. Sir Francis Drake B.	E/B	538	0.56	A	758	0.79	C	639	0.67	B	728	0.76	C	619	0.64	B	747	0.78	C	626	0.65	B
Larspur Ferry to San Quentin	W/B	1,110	1.16	F	1,122	1.17	F	1,098	1.14	F	1,139	1.19	F	1,033	1.08	F	1,102	1.15	F	1,116	1.16	F
9. I-580	E/B	2,686	0.61	C	4,012	0.91	D	3,096	0.70	C	4,025	0.91	D	3,102	0.70	C	4,023	0.91	D	3,095	0.70	C
at Richmond Bridge	W/B	3,140	0.71	C	4,071	0.93	D	3,320	0.75	C	4,083	0.93	D	3,323	0.76	C	4,076	0.93	D	3,323	0.76	C
10. I-580	E/B	2,134	0.49	B	2,977	0.68	C	2,395	0.54	B	2,966	0.67	C	2,399	0.55	C	2,944	0.67	C	2,390	0.54	B
SFD Blvd. to Bellam Blvd.	W/B	2,113	0.48	B	2,954	0.67	C	2,345	0.53	B	2,950	0.67	C	2,341	0.53	B	2,979	0.68	C	2,351	0.53	B
11. Hwy. 101 - Cal Park Hill	N/B	3,950	0.51	B	5,020	0.51	B	4,441	0.45	B	5,025	0.51	B	4,437	0.45	B	4,997	0.50	B	4,426	0.45	B
from I-580 to SFD Blvd.	S/B - MFL	7,846	1.19	F	8,097	1.23	F	7,215	1.09	F	8,119	1.23	F	7,445	1.13	F	8,114	1.23	F	7,454	1.13	F
	S/B - HOV	-	-	-	1,871	0.85	D	1,667	0.76	C	1,877	0.85	D	1,721	0.78	D	1,881	0.85	D	1,728	0.79	D
12. Hwy. 101 - n/o I-580	N/B	5,358	0.70	C	6,845	0.69	C	5,914	0.60	C	6,820	0.69	C	5,896	0.60	C	6,808	0.69	C	5,898	0.60	C
from 2nd Street to I-580	S/B - MFL	8,652	1.12	F	9,224	1.20	F	8,206	1.07	F	9,257	1.20	F	8,440	1.10	F	9,234	1.20	F	8,430	1.09	F
	S/B - HOV	-	-	-	1,771	0.81	D	1,576	0.72	C	1,777	0.81	D	1,620	0.74	C	1,781	0.81	D	1,626	0.74	C
13. 3rd Street (in San Rafael)	E/B	241	0.13	A	312	0.16	A	264	0.14	A	342	0.18	A	273	0.14	A	338	0.18	A	272	0.14	A
at Union Street	W/B	1,125	0.59	A	1,162	0.61	B	1,146	0.60	A	1,276	0.66	B	1,209	0.63	B	1,276	0.66	B	1,209	0.63	B
14. Hwy. 101 - s/o LV Rd.	N/B	4,594	0.46	B	6,257	0.63	C	5,381	0.54	B	6,277	0.63	C	5,387	0.54	B	6,284	0.63	C	5,384	0.54	B
Lucas Valley Rd. to Freitas Pkwy.	S/B - MFL	7,033	1.07	F	7,778	1.01	F	7,698	1.00	E	7,749	1.01	F	7,690	1.00	E	7,772	1.01	F	7,714	1.00	E
	S/B - HOV	1,296	0.59	C	1,646	0.75	C	1,608	0.73	C	1,644	0.75	C	1,615	0.73	C	1,644	0.75	C	1,617	0.73	C
15. Lucas Valley Road	E/B	678	0.85	D	1,069	1.34	F	904	1.13	F	1,070	1.34	F	914	1.14	F	1,069	1.34	F	913	1.14	F
Las Gallinas Ave. and Los Gamos	W/B	252	0.32	A	339	0.42	A	326	0.41	A	341	0.43	A	328	0.41	A	340	0.43	A	326	0.41	A
16. Hwy. 101 - Pacheco Hill	N/B	4,411	0.45	B	6,279	0.63	C	5,299	0.54	B	6,297	0.64	C	5,304	0.54	B	6,315	0.64	C	5,315	0.54	B
Nave Dr. and Miller Creek	S/B - MFL	6,849	0.89	D	7,307	0.95	E	7,169	0.93	D	7,289	0.95	E	7,234	0.94	E	7,320	0.95	E	7,263	0.94	E
	S/B - HOV	1,290	0.59	C	1,614	0.73	C	1,517	0.69	C	1,613	0.73	C	1,573	0.71	C	1,614	0.73	C	1,575	0.72	C
17. South Novato Blvd.	N/B	115	0.14	A	159	0.17	A	127	0.13	A	160	0.17	A	127	0.13	A	160	0.17	A	126	0.13	A
U.S. 101 to Sunset Parkway	S/B	363	0.45	A	804	0.84	D	489	0.51	A	816	0.85	D	555	0.58	A	806	0.84	D	538	0.56	A
18. State Route 37	E/B	1,197	0.27	A	2,684	0.61	C	1,361	0.31	A	2,739	0.62	C	1,373	0.31	A	2,665	0.61	C	1,372	0.31	A
U.S. 101 and Atherton Ave.	W/B	2,111	0.48	B	2,491	0.57	C	2,173	0.49	B	2,477	0.56	C	2,272	0.52	B	2,481	0.56	C	2,300	0.52	B
19. Hwy. 101	N/B	2,565	0.58	C	3,515	0.80	D	2,672	0.61	C	3,505	0.80	D	2,673	0.61	C	3,515	0.80	D	2,679	0.61	C
at Sonoma/Marin County Line	S/B - MFL	5,055	1.15	F	5,712	1.30	F	5,070	1.15	F	5,723	1.30	F	5,199	1.18	F	5,704	1.30	F	5,225	1.19	F
	S/B - HOV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: Nelson / Nygaard Consulting Associates, December 2006.

Exhibit 4.2-20
PM Peak Existing (2005) and Draft CWP Update (2030) Traffic Volumes, V/C, and LOS

Screen Line Segment	Direction	Existing Conditions (2005)			Draft 2005 CWP Update (2030)																	
					Scenario 1						Scenario 2						Scenario 3					
					Cumulative			Project			Cumulative			Project			Cumulative			Project		
		Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS
1. Hwy. 101	N/B	7,195	0.90	D	9,233	1.15	F	8,630	1.08	F	9,234	1.15	F	8,599	1.07	F	9,234	1.15	F	8,617	1.08	F
at Golden Gate Bridge	S/B	3,503	0.88	D	4,458	1.11	F	3,802	0.95	E	4,455	1.11	F	3,779	0.94	E	4,439	1.11	F	3,783	0.95	E
2. Bridgeway Blvd.	N/B	1,202	0.63	B	1,555	0.81	D	1,392	0.72	C	1,554	0.81	D	1,387	0.72	C	1,556	0.81	D	1,388	0.72	C
Gate 5 & Gate 6 Rd.	S/B	998	0.52	A	1,310	0.68	B	1,118	0.58	A	1,311	0.68	B	1,116	0.58	A	1,312	0.68	B	1,116	0.58	A
3. State Route 1	N/B	1,220	1.53	F	1,554	1.94	F	1,574	1.97	F	1,562	1.95	F	1,580	1.97	F	1,560	1.95	F	1,557	1.95	F
U.S. 101 to Almonte Blvd.	S/B	764	0.96	E	906	1.13	F	881	1.10	F	899	1.12	F	871	1.09	F	896	1.12	F	869	1.09	F
4. State Route 131	E/B	1,813	0.94	E	2,126	1.11	F	1,894	0.99	E	2,143	1.12	F	1,901	0.99	E	2,136	1.11	F	1,897	0.99	E
U.S. 101 & Strawberry Dr.	W/B	1,341	0.70	B	1,625	0.85	D	1,558	0.81	D	1,617	0.84	D	1,552	0.81	D	1,611	0.84	D	1,544	0.80	C
5. Hwy. 101 - Alto Hill	N/B -MFL	6,259	0.81	D	7,053	0.92	D	6,788	0.88	D	7,060	0.92	D	6,782	0.88	D	7,057	0.92	D	6,788	0.88	D
Paradise Dr. to SR 131	N/B - HOV	1,239	0.56	C	1,663	0.76	C	1,521	0.69	C	1,667	0.76	C	1,519	0.69	C	1,668	0.76	C	1,524	0.69	C
	S/B	6,641	0.67	C	8,160	0.82	D	7,364	0.74	C	8,170	0.83	D	7,328	0.74	C	8,124	0.82	D	7,318	0.74	C
6. Sir Francis Drake Blvd.	E/B	1,762	0.73	C	1,869	0.78	C	1,892	0.79	C	1,854	0.77	C	1,994	0.83	D	1,847	0.77	C	1,887	0.79	C
Bon Air Road to Wolfe Grade	W/B	1,758	0.73	C	2,202	0.92	E	1,971	0.82	D	2,188	0.91	E	1,958	0.82	D	2,177	0.91	E	1,958	0.82	D
7. Sir Francis Drake Blvd.	E/B	2,207	0.92	E	2,387	0.99	E	2,391	1.00	E	2,378	0.99	E	2,395	1.00	E	2,385	0.99	E	2,382	0.99	E
U.S. 101 to Eliseo Dr.	W/B	2,492	1.04	F	3,010	1.25	F	2,763	1.15	F	2,994	1.25	F	2,730	1.14	F	2,992	1.25	F	2,740	1.14	F
8. E. Sir Francis Drake B.	E/B	910	0.95	E	986	1.03	F	951	0.99	E	949	0.99	E	934	0.97	E	985	1.03	F	950	0.99	E
Larspur Ferry to San Quentin	W/B	1,135	1.18	F	1,168	1.22	F	1,147	1.19	F	1,151	1.20	F	1,138	1.19	F	1,190	1.24	F	1,140	1.19	F
9. I-580	E/B	3,377	0.77	C	4,134	0.94	E	3,530	0.80	D	4,165	0.95	E	3,533	0.80	D	4,162	0.95	E	3,537	0.80	D
at Richmond Bridge	W/B	2,768	0.63	C	4,488	1.02	F	3,365	0.76	C	4,484	1.02	F	3,346	0.76	C	4,490	1.02	F	3,355	0.76	C
10. I-580	E/B	2,062	0.47	B	2,509	0.57	C	2,196	0.50	B	2,583	0.59	C	2,214	0.50	B	2,551	0.58	C	2,212	0.50	B
SFD Blvd. to Bellam Blvd.	W/B	1,905	0.43	B	3,600	0.82	D	2,518	0.57	C	3,637	0.83	D	2,529	0.57	C	3,581	0.81	D	2,515	0.57	C
11. Hwy. 101 - Cal Park Hill	N/B -MFL	7,044	0.91	D	7,475	0.97	E	6,896	0.90	D	7,528	0.98	E	6,908	0.90	D	7,500	0.97	E	6,903	0.90	D
from I-580 to SFD Blvd.	N/B - HOV	-	-	-	1,378	0.63	C	1,271	0.58	C	1,384	0.63	C	1,270	0.58	C	1,387	0.63	C	1,276	0.58	C
	S/B	6,113	0.93	D	8,275	0.94	E	6,113	0.69	C	8,287	0.94	E	7,095	0.81	D	8,205	0.93	D	7,076	0.80	D
12. Hwy. 101 - n/o I-580	N/B -MFL	7,556	0.98	E	8,389	1.09	F	7,644	0.99	E	8,477	1.10	F	7,689	1.00	E	8,427	1.09	F	7,657	0.99	E
from 2nd Street to I-580	N/B - HOV	-	-	-	1,452	0.66	C	1,323	0.60	C	1,459	0.66	C	1,324	0.60	C	1,461	0.66	C	1,328	0.60	C
	S/B	6,678	0.87	D	9,189	0.93	D	6,678	0.67	C	9,280	0.94	E	6,678	0.67	C	9,173	0.93	D	6,678	0.67	C
13. 3rd Street (in San Rafael)	E/B	891	0.46	A	1,150	0.60	A	1,035	0.54	A	1,268	0.66	B	1,097	0.57	A	1,269	0.66	B	1,098	0.57	A
at Union Street	W/B	602	0.31	A	600	0.31	A	602	0.31	A	659	0.34	A	602	0.31	A	658	0.34	A	602	0.31	A
14. Hwy. 101 - s/o LV Rd.	N/B -MFL	6,040	0.78	D	6,863	0.89	D	6,699	0.87	D	6,875	0.89	D	6,718	0.87	D	6,857	0.89	D	6,705	0.87	D
Lucas Valley Rd. to Freitas Pkwy.	N/B - HOV	1,293	0.59	C	1,615	0.73	C	1,551	0.70	C	1,614	0.73	C	1,553	0.71	C	1,614	0.73	C	1,554	0.71	C
	S/B	5,842	0.66	C	8,273	0.84	D	5,842	0.59	C	8,305	0.84	D	5,842	0.59	C	8,271	0.84	D	5,842	0.59	C
15. Lucas Valley Road	E/B	492	0.62	B	760	0.95	E	492	0.62	B	763	0.95	E	492	0.62	B	759	0.95	E	492	0.62	B
Las Gallinas Ave. and Los Gamos	W/B	562	0.70	B	738	0.92	E	690	0.86	D	733	0.92	E	688	0.86	D	732	0.92	E	687	0.86	D
16. Hwy. 101 - Pacheco Hill	N/B -MFL	5,985	0.78	D	6,694	0.87	D	6,557	0.85	D	6,715	0.87	D	6,581	0.85	D	6,715	0.87	D	6,584	0.86	D
Nave Dr. and Miller Creek	N/B - HOV	1,284	0.58	C	1,610	0.73	C	1,547	0.70	C	1,610	0.73	C	1,550	0.70	C	1,610	0.73	C	1,551	0.71	C
	S/B	5,505	0.56	C	8,501	0.86	D	5,505	0.56	C	8,561	0.86	D	5,505	0.56	C	8,522	0.86	D	5,505	0.56	C
17. South Novato Blvd.	N/B	329	0.41	A	1,195	1.24	F	737	0.77	C	1,189	1.24	F	736	0.77	C	1,186	1.24	F	732	0.76	C
U.S. 101 to Sunset Parkway	S/B	261	0.33	A	981	1.02	F	261	0.27	A	963	1.00	E	261	0.27	A	957	1.00	E	261	0.27	A
18. State Route 37	E/B	3,275	0.74	C	4,324	0.98	E	3,389	0.77	C	4,410	1.00	E	3,392	0.77	C	4,378	1.00	E	3,408	0.77	C
U.S. 101 and Atherton Ave.	W/B	1,295	0.29	A	2,887	0.66	C	1,295	0.29	A	2,989	0.68	C	1,295	0.29	A	2,884	0.66	C	1,295	0.29	A
19. Hwy. 101	N/B - MFL	4,317	0.98	E	5,220	1.19	F	4,476	1.02	F	5,204	1.18	F	4,454	1.01	F	5,243	1.19	F	4,480	1.02	F
at Sonoma/Marin County Line	N/B - HOV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	S/B	2,791	0.63	C	4,191	0.95	E	2,791	0.63	C	4,147	0.94	E	2,791	0.63	C	4,154	0.94	E	2,791	0.63	C

Source: Nelson / Nygaard Consulting Associates, December 2006.

Exhibit 4.2-21
Existing and Draft 2005 CWP Update Intersection Conditions

	INTERSECTIONS		Existing		2030 Revised Option 1					2030 Revised Option 2					2030 Revised Option 3				
					Unmitigated		Mitigated			Unmitigated		Mitigated			Unmitigated		Mitigated		
			Delay	LOS	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation
A	**Bridge Boulevard @ Hwy 101 SB Off-ramp Marin City**	AM	8.2	A	10.6	B	-	-		10.4	B	-	-		10.3	B	-	-	
		PM	8.2	A	12.2	B	-	-		11.9	B	-	-		11.8	B	-	-	
B	**Redwood Highway Frontage Road @ Hwy 101 NB Off-ramp Strawberry**	AM	7.3	A	10.8	B	-	-		10.9	B	-	-		11.0	B	-	-	
		PM	9.6	A	9.2	A	-	-		9.0	A	-	-		9.1	A	-	-	
C	**Tiburon Boulevard @ Redwood Highway Frontage Road Mill Valley**	AM	**>80**	**F**	**>80**	**F**	48.1	D	Add EBT & NBR	**>80**	**F**	47.8	D	Add EBT & NBR	**>80**	**F**	50.4	D	Add EBT & NBR
		PM	**>80**	**F**	**>80**	**F**	**>80**	**F**	(Tiburon General Plan)	**>80**	**F**	**>80**	**F**	(Tiburon General Plan)	**>80**	**F**	**>80**	**F**	(Tiburon General Plan)
D	**2nd Street @ Grand Avenue San Rafael**	AM	20.9	C	39.8	D	34.8	C	Add NBR	40.9	D	34.9	C	Add NBR	39.1	D	34.9	C	Add NBR
		PM	22.8	C	**>80**	**F**	**57.5**	**E**	(San Rafael General Plan)	**>80**	**F**	**62.3**	**E**	(San Rafael General Plan)	**>80**	**F**	**63.1**	**E**	(San Rafael General Plan)
E	**3rd Street @ Grand Avenue San Rafael**	AM	16.9	B	**>80**	**F**	30.2	C	Add WBT	**>80**	**F**	40.1	D	Add WBT	**>80**	**F**	39.8	D	Add WBT
		PM	37.4	D	**>80**	**F**	**64.6**	**E**	(San Rafeal General Plan)	**>80**	**F**	**57.3**	**E**	(San Rafeal General Plan)	**>80**	**F**	**60.1**	**E**	(San Rafeal General Plan)
F	**Miller Creek Road @ Las Gallinas Avenue Marinwood**	AM	**>60**	**F**	**>60**	**F**	17.2	B	Signalize w/ WBL pocket	**>60**	**F**	22.1	C	Signalize w/ WBL pocket	**>60**	**F**	22.1	C	Signalize w/ WBL pocket
		PM	8.4	A	38.2	D	13.5	B	(Per Oakview EIR)	40.7	D	13.6	B	(Per Oakview EIR)	**40.2**	**E**	14.6	B	(Per Oakview EIR)
G	**Miller Creek Road @ Hwy 101 SB Off-ramp Marinwood**	AM	**>60**	**F**	**>60**	**F**	42.1	D	Signalize: SBL, SBT & SBR w/ WBL F	**>60**	**F**	50.4	D	Signalize: SBL, SBT & SBR w/ WBL F	**>60**	**F**	42.4	D	Signalize: SBL, SBT & SBR w/ WBL F
		PM	3.5	A	**>60**	**F**	38.8	D	(Per Oakview EIR)	**>60**	**F**	37.8	D	(Per Oakview EIR)	**>60**	**F**	37.0	D	(Per Oakview EIR)
H	**Miller Creek Road @ Hwy 101 NB Off-ramp Marinwood**	AM	13.7	B	**>60**	**F**	16.1	B		**>60**	**F**	17.1	B		**>60**	**F**	16.6	B	
		PM	24.0	C	**>60**	**F**	**54.7**	**E**	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	**>60**	**F**	49.2	D	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	**>60**	**F**	48.2	D	Signalize w/ EBL & NBL pockets (Per Oakview EIR)

Note: Unacceptable LOS shaded grey.

Source: Nelson / Nygaard Consulting Associates, December 2006.

Transportation and Circulation – Impacts and Mitigation Measures

DRAFT 2005 CWP UPDATE TRANSPORTATION POLICIES AND PROGRAMS

The Transportation Element (Section 3.9) of the *Draft 2005 CWP Update* includes several policies and programs that are designed to reduce potential traffic impacts. Combined, these policies and programs would help mitigate significant traffic impacts, but would not be enough to reduce the impacts to a less-than-significant level.

Programs such as **TR-1.a** *(Support Alternate Work Schedules)*, **TR-1.b** *(Allow Live-Work Arrangements)*, and **TR-1.c**, *(Promote Transportation Alternatives)*, would reduce the severity of traffic impacts by reducing the demand for auto transport or shifting that demand to less congested periods. Alternate work schedules allow more workers to commute off-peak when significance thresholds are less likely to be exceeded. Programs that encourage alternate forms of transportation such as carpooling, transit, or bicycling would reduce traffic congestion by shifting drivers out of their cars and into more efficient modes of transport.

Complementing the demand side programs, programs such as **TR-1.j** *(Install Highway Improvements)*, **TR-1.n** *(Obtain and Dedicate Transportation Funding)*, and **TR-1.d** *(Coordinate with Local Agencies)* would help ensure that future roadway improvement projects were well funded, planned and implemented. Expanding roadways to satisfy increasing traffic demand would help reduce the severity of traffic impacts.

Goals **TR-2** *(Increased Bicycle and Pedestrian Access)* and **TR-3** *(Adequate and Affordable Public Transportation)* would draw some drivers out of their vehicles by increasing the safety, comfort and convenience of alternate transportation modes. Reduced use of the private automobile would help decrease the severity of traffic impacts.

TRAFFIC IMPACTS AND MITIGATION MEASURES

The Marin Travel Model forecasts that traffic generated by development consistent with the *Draft 2005 CWP Update* would exceed significance thresholds on some screenlines, resulting in significant impacts. **Exhibit 4.2-22** indicates which screenlines would be significantly impacted under the *Draft 2005 CWP Update* conditions. **Boxes shaded grey and marked with a dot indicate a significant impact**.

Caltrans, the State agency with jurisdiction over freeway facilities, requested analysis of the following: [17]

- Vehicle queues for off-ramps;
- Volumes; and
- Individual LOS and traffic volumes applicable to all intersection road approaches and turn movements.

In this EIR, freeway analysis only examined LOS of the main through lanes. Although an assessment of merge / diverge movements, ramp, and ramp terminal intersections LOS can be useful in analyzing traffic operations, the information was not available to conduct this analysis. However, the mainline analysis is considered adequate for characterizing the transportation and circulation impacts of the *Draft 2005 CWP Update*.

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[17] Letter to Marin County Community Development Department from Timothy C. Stable, District Branch Chief, Department of Transportation, September 9, 2005.

Exhibit 4.2-22
Screenlines Exceeding Significance Thresholds

Screen Line Segment	*Draft 2005 CWP Update*													
	AM PEAK	*Scenario 1*		*Scenario 2*		*Scenario 3*		*PM PEAK*	*Scenario 1*		*Scenario 2*		*Scenario 3*	
		Cumulative	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*		*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*
1. Hwy. 101	N/B	●		●		●		N/B	●	●	●	●	●	●
at Golden Gate Bridge	S/B	●		●		●		S/B	●		●		●	
2. Bridgeway Blvd.	N/B							N/B						
Gate 5 & Gate 6 Rd.	S/B							S/B						
3. State Route 1	N/B							N/B	●	●	●	●	●	●
U.S. 101 to Almonte Blvd.	S/B	●	●	●	●	●	●	S/B	●	●	●	●	●	●
4. State Route 131	E/B							E/B	●	●	●	●	●	●
U.S. 101 & Strawberry Dr.	W/B							W/B						
5. Hwy. 101 - Alto Hill	N/B							N/B -MFL						
Paradise Dr. to SR 131	S/B - MFL							N/B - HOV						
	S/B - HOV							S/B						
6. Sir Francis Drake Blvd.	E/B							E/B						
Bon Air Road to Wolfe Grade	W/B							W/B	●		●		●	
7. Sir Francis Drake Blvd.	E/B	●	●	●	●	●	●	E/B	●	●	●	●	●	●
U.S. 101 to Eliseo Dr.	W/B	●	●	●	●	●	●	W/B	●	●	●	●	●	●
8. E. Sir Francis Drake B.	E/B							E/B	●				●	
Larspur Ferry to San Quentin	W/B							W/B					●	
9. I-580	E/B							E/B						
at Richmond Bridge	W/B							W/B	●		●		●	
10. I-580	E/B							E/B						
SFD Blvd. to Bellam Blvd.	W/B							W/B						
11. Hwy. 101 - Cal Park Hill	N/B							N/B -MFL						
from I-580 to SFD Blvd.	S/B - MFL	●		●		●		N/B - HOV						
	S/B - HOV							S/B						
12. Hwy. 101 - n/o I-580	N/B							N/B -MFL	●		●		●	
from 2nd Street to I-580	S/B - MFL	●		●		●		N/B - HOV						
	S/B - HOV							S/B						
13. 3rd Street (in San Rafael)	E/B							E/B						
at Union Street	W/B							W/B						
14. Hwy. 101 - s/o LV Rd.	N/B							N/B -MFL						
Lucas Valley Rd. to Freitas Pkwy.	S/B - MFL							N/B - HOV						
	S/B - HOV							S/B						
15. Lucas Valley Road	E/B	●	●	●	●	●	●	E/B	●		●		●	
Las Gallinas Ave. and Los Gamos	W/B							W/B	●		●		●	
16. Hwy. 101 - Pacheco Hill	N/B							N/B -MFL						
Nave Dr. and Miller Creek	S/B - MFL							N/B - HOV						
	S/B - HOV							S/B						
17. South Novato Blvd.	N/B							N/B	●		●		●	
U.S. 101 to Sunset Parkway	S/B							S/B	●		●		●	
18. State Route 37	E/B							E/B						
U.S. 101 and Atherton Ave.	W/B							W/B						
19. Hwy. 101	N/B							N/B	●	●	●	●	●	●
at Sonoma/Marin County Line	S/B	●		●	●	●	●	S/B						

Source: Nelson / Nygaard Consulting Associates, December 2006.

Impact 4.2-1 Increase in Vehicle Miles Traveled

Land uses and development consistent with the Draft 2005 CWP Update would result in a significant increase in vehicle miles traveled in Marin County. This would be a significant impact.

Population, employment, and vehicle miles traveled (VMT) projections are shown in **Exhibit 4.2-23**. The population of unincorporated Marin County would grow with development consistent with the *Draft 2005 CWP Update*. While population projections are available for unincorporated portions of Marin County, VMT projections are only available for the entire county. Population projections are based on full buildout of the *Draft 2005 CWP Update* assuming an average household size of 2.35 people. [18] From 2005 to 2030, the population would increase by 13 percent and employment would increase by 33 percent. Travel forecasts prepared by Marin County for the *Draft 2005 CWP Update* indicate a VMT increase of approximately 25 to 26 percent [19] for the 2030 population based on theoretical buildout (see **Exhibits 3.0-14** and **3.0-17**). [20]

Exhibit 4.2-23
Projected Populations and VMT Growth in Marin County

General Plan Alternative	Total Housing Units	Population	Percent Growth 2005 – 2030	Jobs	Percent Growth 2005 - 2030	Daily VMT	Percent Growth 2005-2030	VMT per Person
Existing Conditions	107,994	253,341 [a]	--	122,960	--	7,003,560		27.63
Draft 2005 CWP Update	121,847	286,340 [b]	13.0	163,980	33.0	Scenario 1 – 8,809,258	25.8	30.77
						Scenario 2 – 8,827,123	26.0	30.83
						Scenario 3 – 8,823,921	26.0	30.82
No Project (*1994 CWP*)	121,847	286,340	13.0	--	--	8,860,900	26.5	30.95

a Population estimate for January 1, 2006. State of California, Department of Finance, *E-5 Population and housing Estimates for Cities, Counties and the State, 2001-2006, with 2000* Benchmark, Sacramento, California, May 2006.
b Future population based on County projection of 2.35 persons per household.

Sources: Marin Travel Model and Nichols•Berman, 2006.

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18 **Figure 3-1** Land Use and Demographic Data for Marin County in the *Draft 2005 CWP Update* projects an average household size of 2.35 persons per household.

19 The 2030 VMT would vary slightly between the three *Draft 2005 CWP Update* scenarios.

20 The VMT increase based on the Marin Travel Model completed for the *Draft 2005 CWP Update* by the Marin County Department of Public Works.

Although the private automobile would continue to be the dominant mode of transport in Marin County due to already established auto-oriented land use patterns, with the *Draft 2005 CWP Update*, Marin County seeks to stem the increase in VMT per person by moving toward the vision outlined in *Moving Forward: A 25-Year Vision for Transportation in Marin County* [21] . This document calls for an integrated, multi-modal system that relies on travel by bus, rail, ferry, bicycle, and foot to supplement and supplant automobile use.

Achieving this vision would require more than expansion and enhancement of alternative modes of transport; the location, density, and design of future development would strongly influence travel behavior. Denser development, located near transit and a mix of other useful destinations, with safe and pleasant pedestrian environments has been shown to decrease the number of vehicle miles traveled per person by increasing the use of alternative modes of transportation.

As discussed in ***Section 4.3 Air Quality*** (see *Impact 4.3-1 Consistency with Clean Air Plan*), numerous policies and programs in the *Draft 2005 CWP Update* would reduce the rate of vehicle miles traveled from trips in Marin County. For example, the *Built Environment Element* contains policies and implementing programs that would encourage development in urban areas served by transit. Policies supporting Goal **HS-3** would implement "smart" and sustainable development principles to meet the housing needs in the county. This would include a focus of providing workforce housing (Policies **HS-3.2**, **HS-3.3**, and **HS-3.4)**. The addition of workforce housing would reduce VMT associated with worker commute travel. The Transportation section of the *Built Environment Element* includes numerous policies to expand pedestrian and bicycle facilities and access.

The *Draft 2005 CWP Update* seeks to create a built environment that would foster the use of alternative modes of transport by focusing future development in the City-Centered Corridor in denser, mixed use environments near transit. Policy **CD-2.2** would establish a Housing Bank. The Housing Bank would include 1,694 housing units that would be transferred from various environmentally sensitive areas. These areas would include sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands corridor or properties lacking public water or sewer. The housing units would be transferred to the City-Centered Corridor. The Housing Bank units would be constructed on designated sites within the Housing Overlay Designation. One of the criteria for the establishment of the Housing Overlay Designation is that housing shall be located within one-half mile of a transit node or transit route with daily, regular scheduled service (Policy **CD-2.3**).

The anticipated transportation benefits of these policies and the resulting land use changes include reduced vehicle-miles traveled (VMT) per person and an increased number of transit trips. The Marin County Travel Model forecasts improvements in both of these indicators under the *Draft 2005 CWP Update* future conditions (i.e., year 2030): a half percent decrease in VMT; a one percent increase in transit trips within Marin County; and a three percent increase in transit trips originating in Marin County destined for San Francisco compared to future conditions under the *1994 CWP*. Another indicator of the positive impacts of the *Draft 2005 CWP Update* would be a 0.5 percent decrease in VMT per person compared to the *1994 CWP*.

Though these improvements may seem small, they should be viewed in the context of the anticipated land use changes and the creation of the Housing Bank. The 1,694 housing units, transferred primarily from West Marin, would be constructed on parcels assigned with a Housing Overlay Designation in

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[21] *Moving Forward A 25-Year Transportation Vision For Marin County*, Marin County Congestion Management Agency, Marin County Board of Supervisors, Marin County Transit District, February 2003.

the City-Centered Corridor (see **Exhibit 3.0-6**). The number of housing units relocated to the City-Centered Corridor (1,694) would represent approximately 31 percent of the total number of new housing units developed in the unincorporated area by 2030 (5,391 housing units, see **Exhibit 3.0-14**) but only 12 percent of the total new housing development in Marin County (in both incorporated and unincorporated areas) and only one percent of the total number of housing units in Marin County by 2030 (121,847 housing units, see **Exhibit 3.0-14**). [22]

Because the number of new housing units reallocated to the City-Centered Corridor would be small relative to both the growth in housing units and the total number of housing units, the impact to alternative transportation use would be correspondingly small. A more substantial decrease in VMT per person and an increase in the use of alternative transport modes would require focusing a larger percentage of future development into denser, transit-oriented developments, a substantial investment in improving alternate modes of transport, significant incentives for using alternative modes of transport, and significant disincentives for traveling by single occupant automobile.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative transportation impact.

Mitigation Measure 4.2-1 Add a new policy and program to the Transportation section of the *Built Environment Element*:

> **Policy TR-1.(new)** *Reduce Vehicle Miles Traveled (VMT).* Reduce vehicle miles traveled per person by single-occupant automobile by ten percent.
>
> **Program TR-1.(new)** *VMT Reduction Monitoring.* Develop a program for monitoring VMT and implementing targeted strategies for reducing VMT per person including:
>
> - All new residential projects over 50 units shall be within five miles of a major public transportation node.
> - Require that all new multi-family residential projects over ten dwelling units have TDM measures in place such as charging parking fees separate from rent, subsidized public transportation passes, or ride-matching programs based on site specific review.
> - New residential development should provide safe, convenient connections to existing pedestrian and bicycle facilities and should provide secure bicycle parking.
> - Complete key regional bikeways including the Cal-Park Hill Path and Tunnel.
> - Require that new employers of 50 employees or more implement TDM programs such as parking cash out, subsidized transit passes, ridesharing incentives, and bicycle storage facilities.

Significance After Mitigation As a general trend, VMT per capita continues to increase year after year as personal wealth increases, cities continue to expand outwards, and affordable housing continues to be constructed further and further from job centers. This trend is difficult to stop or reverse without policy intervention. Because of this, aggressive programs such as those proposed in

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[22] The source of some of the 1,694 housing units would be from locations within the City-Centered Corridor (for example on sites within the Ridge and Upland Greenbelt), so the percentages would likely be less than cited here.

this mitigation measure would need to be implemented in order to hold constant or reduce VMT per person. Given the political and economic difficulties of actually implementing this full package of programs, achieving decreases in VMT per person is unlikely, therefore this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the new policy and program as described in Mitigation Measure 4.2-1 as part of *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Marin County Department of Public Works would share responsibility for monitoring implementation.

Roadway Impacts and Mitigation Measures

Impacts 4.2-2 through 4.2-13 describe impacts at the 19 screenline locations studied (see **Exhibit 4.2-16**). **Exhibit 4.2-22** indicates which screenlines would exceed the significance criteria and are discussed below further.

Both project and cumulative impacts were analyzed for the roadway segments (or screenlines). Project impacts are calculated by adding the existing (year 2005) traffic volumes to the traffic volume generated by development consistent with the *Draft 2005 CWP Update* that would occur between 2005 and 2030. This identifies impacts that are exclusively due to development in the unincorporated areas of Marin County governed by the *Draft 2005 CWP Update*.

Cumulative impacts represent growth in the unincorporated area of Marin County, as projected under the *Draft 2005 CWP Update* (see **Exhibits 3.0-14** and **3.0-17**), together with growth in each of the 11 cities and towns of the county (see **Exhibit 6.0-1**). [23] The cumulative impact analysis also includes growth outside of Marin County within the nine county Bay Area transportation planning region.

For both project and cumulative conditions, impacts are measured against existing (year 2005) traffic conditions. Though the cumulative analysis presents a more complete picture of traffic conditions in 2030, the project analysis isolates the impact of the *Draft 2005 CWP Update* that is the subject of this EIR.

Impact 4.2-2 Unacceptable LOS on U.S. 101 at Golden Gate Bridge (Screenline #1)

Land uses and development consistent with Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on U.S. 101 at the Golden Gate Bridge. This would be a significant project and cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, U.S. 101 at the Golden Gate Bridge would experience:

- Significant project impacts under all three *Draft 2005 CWP Update* scenarios northbound during the PM peak; and

- Significant cumulative impacts under all three *Draft 2005 CWP Update* scenarios in both directions during both the AM and PM peak periods.

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[23] As discussed in ***Chapter 3.0 Description of the Proposed Project*** these figures represent theoretical buildout for Marin County and may not represent a realistic buildout.

Though significant project impacts would occur northbound during the PM peak, much of this traffic would be generated by the number of San Francisco jobs exceeding the number of San Francisco residents in the year 2030. This situation would attract many Marin County residents into San Francisco (i.e., southbound across the Golden Gate Bridge) during the AM peak and conversely many Marin County residents would commute out of San Francisco (northbound across the Golden Gate Bridge) during the PM peak. Therefore, even though traffic destined for unincorporated Marin County destinations during the PM peak would create a significant impact northbound on the Golden Gate Bridge, much of this growth in traffic would be due to commercial development in San Francisco County rather than development governed by the *Draft 2005 CWP Update.*

The level of service standard for freeway segments is LOS E. For segments already operating at LOS F, a V/C ratio increase of 0.01 or more is considered unacceptable. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Under the worst operating conditions, traffic volumes at this screenline would exceed the significance threshold by 1,234 vehicles per hour. Mitigating this significant impact through roadway expansion would require constructing an additional lane in each direction on the Golden Gate Bridge.[24] This would provide an additional capacity of 2,000 vehicles per hour in each direction, more than enough to improve LOS to acceptable levels. This improvement is unlikely given the high implementation costs, significant environmental impacts, and lack of community support.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative transportation impact.

Mitigation Measure 4.2-2 Several policies and programs contained in the *Draft 2005 CWP Update* would help mitigate this impact. Goal **TR-3**, which seeks to provide efficient, affordable public transportation service countywide, and its supporting policies and programs would help reduce congestion on the Golden Gate Bridge by attracting more commuters to public transit services by increasing bus service, improving bus facilities, providing reduced cost transit passes, participating in regional transit initiatives, and promoting transit-oriented development. Though these initiatives would reduce congestion on the Golden Gate Bridge, the mitigating effects would not be substantial enough to reduce this impact to a less-than-significant level.

Significance After Mitigation This would be a significant unavoidable project and cumulative impact.

Impact 4.2-3 Unacceptable LOS on State Route 1 from U.S. 101 to Almonte Boulevard (Screenline #3)

Land uses and development consistent with Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on State Route 1 between U.S. 101 and Almonte Boulevard. This would be a significant project and cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, State Route 1 between U.S. 101 and Almonte Boulevard would experience:

- Significant project impacts under all three *Draft 2005 CWP Update* scenarios, southbound during the AM peak and northbound and southbound during the PM peak; and

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[24] The Golden Gate Bridge is owned and operated by the Golden Gate Bridge, Highway, and Transportation District.

- Significant cumulative impacts under all three *Draft 2005 CWP Update* scenarios, southbound during the AM peak and northbound and southbound during the PM peak.

The level of service standard for State Route 1 in Marin County is LOS D. For segments already operating at LOS E or F, a V/C ratio increase of 0.05 or more is considered unacceptable. Under existing conditions, State Route 1 is already operating at an unacceptable LOS southbound during the AM peak and both northbound and southbound during the PM peak. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative transportation impact.

The *Draft 2005 CWP Update* already includes two transportation improvements designed to help mitigate impacts at this screenline. The first would improve signals on State Route 1 [25] between Flamingo Road and U.S. 101 (i.e., improvement #19 in **Exhibit 4.2-15**), and the second would replace the Tennessee Valley (Coyote Creek) Bridge (i.e., improvement #20 in **Exhibit 4.2-15**). These improvements do not having funding or plans, therefore implementation within the timeframe of this plan is uncertain.

Mitigation Measure 4.2-3 Widen State Route 1 between U.S. 101 and Almonte Boulevard from one to two lanes in each direction, which would increase roadway capacity from 800 vehicles per hour to 1,600 vehicles per hour in each direction. This would improve conditions to LOS E, which would at least provide capacity that exceeds traffic demand, but would still not satisfy the LOS D criteria for this roadway. Though full mitigation would require three full traffic lanes in each direction, this improvement is unlikely due to significant environmental impacts and lack of community support. Currently there are no plans or funds for this improvement; therefore, it is unlikely it would be completed within the time frame of the *Draft 2005 CWP Update*.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-3 would not reduce this impact to a less-than-significant level and implementation within the timeframe of this plan is uncertain, thus this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County, would be responsible to implement any improvements.

Impact 4.2-4 Unacceptable LOS on State Route 131 from U.S. 101 to Strawberry Drive (Screenline #4)

Land uses and development consistent with Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on State Route 131 between U.S. 101 and Strawberry Drive. This would be a significant project and cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR State Route 131 between U.S. 101 and Strawberry Drive would experience:

- Significant cumulative impacts under all three *Draft 2005 CWP Update* scenarios, eastbound during the PM peak; and

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[25] State Route 1 is owned and operated by Caltrans.

- Significant project impacts under all three *Draft 2005 CWP Update* scenarios, eastbound during the PM peak.

The level of service standard for State Route 131 in Marin County is LOS D. For segments already operating at LOS E or F, a V/C ratio increase of 0.05 or more is considered unacceptable. Under existing conditions, State Route 131 is already operating at an unacceptable LOS eastbound during the PM peak. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative transportation impact.

The *Draft 2005 CWP Update* recommends widening the State Route 131 [26] overpass over U.S. 101 to six lanes (i.e., improvement #17 in **Exhibit 4.2-15**). This improvement was included in the traffic model and did not fully mitigate this impact.

Mitigation Measure 4.2-4 Expand State Route 131 from two to three lanes in the eastbound direction from southbound U.S. 101 to Strawberry Drive. This would expand roadway capacity in the eastbound direction from 1,920 to 2,880 vehicles per hour creating, at worst case, LOS C operating conditions and thus providing an acceptable LOS.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-4 would reduce this impact to a less-than-significant level. Funding for this mitigation measure is not currently available and, therefore, it is uncertain whether this improvement would be completed within the time frame of the *Draft 2005 CWP Update*. Therefore, as Mitigation Measure 4.2-4 may be infeasible, this would be a significant unavoidable project and cumulative impact. [27]

Responsibility and Monitoring Caltrans, in cooperation with Marin County, would be responsible to implement any improvements.

Impact 4.2-5 Unacceptable LOS on Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6)

Land uses and development consistent with Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on Sir Francis Drake Boulevard between Bon Air Road and Wolfe Grade. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, Sir Francis Drake Boulevard between Bon Air Road and Wolfe Grade would experience cumulative impacts under all *Draft 2005 CWP Update* scenarios westbound during the PM peak.

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[26] State Route 131 is owned and operated by Caltrans.

[27] It would be the responsibility of the Marin County decision makers (i.e., Planning Commission and Board of Supervisors) to determine if a specific mitigation measure is not feasible. To determine that the mitigation is not feasible the decision makers would need to make a finding that "specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation". See *State CEQA Guidelines* section 15091(a)(3).

Project impacts would be less-than-significant because development consistent with the *Draft 2005 CWP Update* alone would not generate enough traffic to exceed the significance threshold. Project impacts, however, would make a cumulatively significant contribution to a cumulative transportation impact.

The level of service standard for arterials in Marin County is LOS D. For segments already operating at LOS E or F, a V/C ratio increase of 0.05 or more is considered unacceptable. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-5 Expand Sir Francis Drake Boulevard between Bon Air Road and Wolfe Grade in the westbound direction from two to three lanes. This would expand capacity from 2,400 to 3,600 vehicles per hour, providing under worst case conditions an acceptable LOS A. Note that under worst case conditions traffic only exceeds the significance threshold by 42 vehicles per hours.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-5 would reduce this impact to a less-than-significant level. This improvement is neither funded nor designed, thus implementation of this project within the *Draft 2005 CWP Update* planning period would be unlikely. Therefore, as Mitigation Measure 4.2-5 may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring Marin County would be responsible to implement these improvements.

Impact 4.2-6 Unacceptable LOS on Sir Francis Drake Boulevard from U.S. 101 to Eliseo Drive (Screenline #7)

Land uses and development consistent with Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on Sir Francis Drake Boulevard between U.S. 101 and Eliseo Drive. This would be a significant project and cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, Sir Francis Drake Boulevard between U.S. 101 and Eliseo Drive would experience:

- Significant project impacts under all *Draft 2005 CWP Update* scenarios, in both directions during both peaks; and

- Significant cumulative impacts under all *Draft 2005 CWP Update* scenarios, in both directions during both peaks.

The level of service standard for arterials in Marin County is LOS D. For segments already operating at LOS E or F, a V/C ratio increase of 0.05 or more is considered unacceptable. Under existing conditions both directions during both peaks operate at an unacceptable LOS. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative transportation impact.

There are a number of transportation improvements included in the *Draft 2005 CWP Update* designed to improve the U.S. 101 / Sir Francis Drake Boulevard interchange, some of which were already included in this analysis (i.e., improvements #12, #13, #14 in **Exhibit 4.2-15**). Although these improvements would help improve traffic flow and safety in this area, they are not anticipated to fully mitigate the forecasted significant impacts.

Mitigation Measure 4.2-6 Widen Sir Francis Drake Boulevard from two to three lanes in each direction from U.S. 101 to Eliseo Drive in order to mitigate this impact via roadway expansion. This would increase roadway capacity from 2,400 to 3,600 vehicles per hour in each direction and under the worst case scenario provide LOS D operations, which would satisfy the LOS requirements for this roadway.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-6 would reduce this impact to a less-than-significant level. This improvement is neither funded nor designed, thus implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Furthermore, expanding Sir Francis Drake Boulevard from two to three lanes in each direction may be infeasible due to existing residential and commercial development. Therefore, as Mitigation Measure 4.2-6 may be infeasible, this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The City of Larkspur, in cooperation with Marin County would be responsible for implementing improvements.

Impact 4.2-7 Unacceptable LOS on East Sir Francis Drake Boulevard from Larkspur Ferry to San Quentin (Screenline #8)

Land uses and development consistent with Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on East Sir Francis Drake Boulevard between the Larkspur Ferry and San Quentin. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR East Sir Francis Drake Boulevard between Larkspur Ferry and San Quentin would experience:

- Significant cumulative impacts under *Draft 2005 CWP Update* Scenario 1, eastbound during the PM peak; and

- Significant cumulative impacts under *Draft 2005 CWP Update* Scenario 3, in both directions during the PM peak.

Project impacts would be less-than-significant because development consistent with the *Draft 2005 CWP Update* alone would not generate enough traffic to exceed the significance threshold. Project impacts, however, would make a cumulatively significant contribution to a cumulative transportation impact.

The level of service standard for arterials in Marin County is LOS D. For segments already operating at LOS E or F, a V/C ratio increase of 0.05 or more is considered unacceptable. Under existing conditions, East Sir Francis Drake Boulevard already operates at an unacceptable LOS in both directions during the PM peak and westbound during the AM peak. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

The *Draft 2005 CWP Update* recommends widening East Sir Francis Drake Boulevard from the Larkspur Ferry Terminal to Anderson Drive (i.e., improvement #15 in **Exhibit 4.2-15**) which would help mitigate this impact. However, this improvement was not included in the traffic modeling because funding and plans have not been finalized and implementation is unlikely within the *Draft 2005 CWP Update* planning period.

Mitigation Measure 4.2-7 Expanding East Sir Francis Drake Boulevard between the Larkspur Ferry Terminal and San Quentin from one to two lanes in each direction would expand capacity from 960 to 1,920 vehicles per hour, providing under worst case conditions an acceptable LOS B.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-7 would reduce this impact to a less-than-significant level. This improvement is neither funded nor designed, thus implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-7 may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring The County would be responsible for improvements to the portion of this roadway on unincorporated lands. The City of Larkspur would be responsible for improvements to this roadway within city boundaries.

Impact 4.2-8 Unacceptable LOS on I-580 at the Richmond Bridge (Screenline #9)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that cumulatively contributes to unacceptable LOS on I-580 at the Richmond Bridge. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, I-580 at the Richmond Bridge would experience a significant cumulative impact under all three *Draft 2005 CWP Update* scenarios, westbound during the PM peak. Project impacts would be less-than-significant because development consistent with the *Draft 2005 CWP Update* alone would not generate enough traffic to exceed the significance threshold. Project impacts, however, would make a cumulatively significant contribution to a cumulative transportation impact.

The level of service standard for I-580 is LOS E. For segments already operating at LOS F, a V/C ratio increase of 0.01 or more is considered unacceptable. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria. Note that under worst case conditions of the *Draft 2005 CWP Update*, traffic is only forecast to exceed the significance threshold by 90 vehicles per hour or two percent.

Mitigation Measure 4.2-8 Expand I-580 from two to three lanes in the westbound direction from the Richmond Bridge to Sir Francis Drake Boulevard. This would expand roadway capacity from 4,400 to 6,600 vehicles per hour thus providing acceptable LOS C operations under worst-case conditions.

Significance After Mitigation This roadway improvement is neither planned nor funded. Though a number of *Draft 2005 CWP Update* policies and programs would help reduce traffic congestion on I-580, the improvements would not reduce this impact to a less-than-significant level. This would be a significant unavoidable cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County and the City of San Rafael, would be responsible to implement any improvements.

Impact 4.2-9 Unacceptable LOS on U.S. 101 from I-580 to Sir Francis Drake Boulevard (Screenline #11)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that cumulatively contributes to unacceptable LOS on U.S. 101 between I-580 and Sir Francis Drake Boulevard. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, U.S. 101 from I-580 to Sir Francis Drake Boulevard would experience a significant cumulative impact under all three *Draft 2005 CWP Update* scenarios, southbound during the AM peak. Project impacts would be less-than-significant because development consistent with the *Draft 2005 CWP*

Update alone would not generate enough traffic to exceed the significance threshold. However, project impacts would make a cumulatively significant contribution to a cumulative transportation impact.

The level of service standard for U.S. 101 is LOS E. For segments already operating at LOS F, a V/C ratio increase of 0.01 or more is considered unacceptable. Under existing conditions traffic at this screenline is already operating at an unacceptable LOS southbound during the AM peak. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-9 Expand U.S. 101 between I-580 and Sir Francis Drake Boulevard from three to four mixed-flow lanes in the southbound direction. This would expand roadway capacity from 6,600 to 8,800 vehicles per hour and provide acceptable LOS D operations under worst-case traffic conditions.

Significance After Mitigation This roadway improvement is neither planned nor funded. Although a number of *Draft 2005 CWP Update* policies and programs would help reduce traffic congestion on U.S. 101, the improvements would not reduce this impact to a less-than-significant level. This would be a significant unavoidable cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County and the City of San Rafael, would be responsible to implement any improvements.

Impact 4.2-10 Unacceptable LOS on U.S. 101 from Second Street to I-580 (Screenline #12)
Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on U.S. 101 between Second Street and I-580. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, U.S. 101 from Second Street to I-580 would experience a significant cumulative impact under all three *Draft 2005 CWP Update* scenarios, northbound during the PM peak and southbound during the AM peak. Project impacts would be less-than-significant because development consistent with the *Draft 2005 CWP Update* alone would not generate enough traffic to exceed the significance threshold. However, project impacts would make a cumulatively significant contribution to a cumulative transportation impact.

The level of service standard for U.S. 101 is LOS E. For segments already operating at LOS F, a V/C ratio increase of 0.01 or more is considered unacceptable. Under existing conditions this screenline already operates at an unacceptable LOS southbound during the AM peak. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

A major roadway expansion project, the HOV Gap Closure (i.e., improvement #10 in **Exhibit 4.2-15**), would add an HOV lane to both directions of this segment of U.S. 101 in an effort to create a continuous HOV lane through Marin County. The scheduled completion date is December 2008. This improvement was included in the traffic model. However, this improvement alone would not reduce LOS to below the significance threshold.

Mitigation Measure 4.2-10 Widen U.S. 101 northbound and southbound from three lanes and one auxiliary lane to four lanes one auxiliary lane between Second Street and I-580 which would expand roadway capacity from 7,700 to 9,900 vehicles per hour. This would provide additional capacity to

accommodate the 1557 vehicles per hour, under worst-case conditions, in excess of the acceptable LOS threshold.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-9 would reduce this impact to a less-than-significant level. This improvement is neither funded nor designed, thus implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-9 may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with the City of San Rafael and Marin County, would be responsible to implement any improvements.

Impact 4.2-11 Unacceptable LOS on South Novato Boulevard from U.S. 101 to Sunset Parkway (Screenline #17)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that cumulatively contributes to unacceptable LOS on South Novato Boulevard from U.S. 101 to Sunset Parkway. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, South Novato Boulevard between U.S. 101 and Sunset Parkway would experience significant cumulative impacts under all *Draft 2005 CWP Update* scenarios northbound and southbound during the PM peak. Project impacts would be less-than-significant because development consistent with the *Draft 2005 CWP Update* alone would not generate enough traffic to exceed the significance threshold. However, project impacts would make a cumulatively significant contribution to a cumulative transportation impact.

The level of service standard for arterials in Marin County is LOS D. For segments already operating at LOS E or F, a V/C ratio increase of 0.05 or more is considered unacceptable. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

There are no transportation improvements in the *Draft 2005 CWP Update* designed to mitigate impacts on this roadway.

Mitigation Measure 4.2-11 Currently South Novato Boulevard is only one lane in each direction which provides 960 vehicles per hour of capacity. Under worst-case conditions, traffic volumes are forecast to exceed this capacity by 235 vehicles per hour and exceed the acceptable LOS threshold by 427 vehicles per hour. Thus, expanding South Novato Boulevard from one to two lanes in each direction from U.S. 101 to Sunset Parkway, which would expand roadway capacity to 1,920 vehicles per hour in each direction, would provide enough additional capacity to for an acceptable LOS.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-11 would reduce this impact to a less-than-significant level. This improvement is neither funded nor designed, thus implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. As Mitigation Measure 4.2-11 may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring As this roadway lies within the City of Novato, the City would be responsible for implementing improvements.

Impact 4.2-12 Unacceptable LOS on Lucas Valley Road from Las Gallinas Avenue to Los Gamos (Screenline #15)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on Lucas Valley Road from Las Gallinas Avenue to Los Gamos. This would be a significant project and cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, Lucas Valley Road between Las Gallinas Avenue and Los Gamos would experience:

- Significant project impacts under all *Draft 2005 CWP Update* scenarios eastbound during the AM peak; and

- Significant cumulative impacts under all three *Draft 2005 CWP Update* scenarios eastbound during the AM peak and in both directions during the PM peak.

The level of service standard for Lucas Valley Road is LOS D. For segments already operating at LOS E or F, a V/C ratio increase of 0.05 or more is considered unacceptable. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative transportation impact.

Mitigation Measure 4.2-12 Currently, Lucas Valley Road is one lane in each direction and provides 800 vehicles per hour of capacity in each direction. Under worst case conditions, traffic volumes are forecast to exceed this capacity and acceptable LOS by 270 vehicles per hour. In order to accommodate this excess capacity via roadway expansion, Lucas Valley Road would need to be expanded from one to two lanes in both directions from Las Gallinas Ave. to Los Gamos which would expand roadway capacity from 800 to 1600 vehicles per hour.

Significance After Mitigation The improvement in Mitigation Measure 4.2-12 would reduce this impact to a less-than-significant level. This improvement is neither funded nor designed, thus implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-12 may be infeasible, this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring Marin County would be responsible to implement these improvements.

Impact 4.2-13 Unacceptable LOS on U.S. 101 at the Sonoma / Marin County Line (Screenline #19)

Land uses and development consistent with Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS on U.S. 101 at the Sonoma/Marin County line. This would be a significant project and cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, U.S. 101 at the Sonoma/Marin County line would experience:

- Significant project impacts under all three *Draft 2005 CWP Update* Scenarios northbound during the PM peak and under scenarios 2 and 3 southbound during the AM peak; and

- Significant cumulative impacts under all *Draft 2005 CWP Update* Scenarios, northbound during the PM peak and southbound during the AM peak.

The level of service standard for U.S. 101 is LOS E. For segments already operating at LOS F, a V/C ratio increase of 0.01 or more is considered unacceptable. Under existing conditions U.S. 101 already operates at an unacceptable LOS southbound during the AM peak. **Exhibits 4.2-19** and **4.2-20** show the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative transportation impact.

The *Draft 2005 CWP Update* recommends widening U.S. 101 from four to six lanes by adding an HOV lane in each direction from Novato to Petaluma (i.e., improvement #2 in **Exhibit 4.2-15**). This improvement is part of the Marin-Sonoma Narrows project that Caltrans is managing. Because funding is still uncertain and construction of the first phase would not begin until 2010 at the earliest, this project was not included in the traffic model.

Mitigation Measure 4.2-13 Currently, U.S. 101 at this screenline is two lanes in each direction and provides 4,400 vehicles per hour of capacity. Under worst case conditions, traffic volumes are forecast to exceed this capacity and acceptable LOS by 1,323 vehicles per hour. In order to accommodate this excess capacity via roadway expansion, U.S. 101 would need to be expanded from two to three lanes in each direction from north of Atherton Avenue, where U.S. 101 drops to two lanes, to the Sonoma County Line. This expansion would increase roadway capacity from 4,400 to 6,600 vehicles per hour.

Significance After Mitigation The improvement in Mitigation Measure 4.2-13 would reduce this impact to a less-than-significant level. However, as this improvement is neither fully funded nor designed, implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-13 may be infeasible, this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin and Sonoma Counties, and the Cities of Novato and Petaluma, would be responsible for improvements.

Intersection Impacts and Mitigation Measures

The Marin Travel Model forecasts that traffic generated by land uses and development consistent with the *Draft 2005 CWP Update* would exceed significance thresholds at some intersections, resulting in significant impacts. Impacts 4.2-14 through 4.2-19 describe impacts at the eight intersections locations studied (see **Exhibit 4.2-17**). **Exhibit 4.2-21** indicates which intersections would be significantly impacted under the *Draft 2005 CWP Update* conditions. **Boxes shaded grey indicate a significant impact**. All intersection impacts would be cumulative because they are based on traffic generated by cumulative development as discussed above.

Impact 4.2-14 Unacceptable LOS at Intersection of State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road (Intersection C)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS at the intersection of State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, the intersection of State Route 131 (Tiburon Boulevard) and the Redwood Highway Frontage Road would experience significant cumulative impacts under all three *Draft 2005 CWP Update* scenarios during the AM and PM peak.

The level of service standard for intersections in Marin County is LOS D. Under existing conditions, this intersection operates at LOS F during the AM and PM peak. *Draft 2005 CWP Update* cumulative conditions would increase traffic at this already failing intersection. **Exhibit 4.2-21** shows the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-14 Add an eastbound through lane on Tiburon Boulevard and a northbound right turn lane on the Redwood Highway Frontage Road.

Significance After Mitigation While improvements noted in Mitigation Measure 4.2-14 would reduce this impact to less-than-significant during the AM peak, the intersection would still fail during the PM peak. As this improvement is neither funded nor designed, implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-14 may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County and the other cities / towns that contribute traffic, would be responsible for improvements on SR-131 (Tiburon Boulevard). Marin County would be responsible for improvements to the Redwood Highway Frontage Road.

Impact 4.2-15 Unacceptable LOS at Intersection of Second Street and Grand Avenue (Intersection D)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS at the intersection of Second Street and Grand Avenue. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, the intersection of Second Street and Grand Avenue would experience significant cumulative impacts under all *Draft 2005 CWP Update* scenarios during the PM peak.

The level of service standard for intersections in Marin County is LOS D. Under existing conditions this intersection operates at an acceptable LOS C during both peaks. Cumulative *Draft 2005 CWP Update* conditions would increase traffic to an unacceptable LOS F during the PM peak. **Exhibit 4.2-21** shows the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-15 Add a right turn lane to the northbound Grand Avenue approach at the Second Street and Grand Avenue intersection. This improvement is included as part of a fully funded roadway improvement project listed in the *San Rafael General Plan 2020*. This would be the responsibility of the City of San Rafael and it is both feasible and reasonable to expect them to implement this improvement.

Significance After Mitigation Implementation of this mitigation measure would create LOS E conditions during the PM peak under all three scenarios. Although this mitigation would improve traffic conditions, the intersection would still operate at an unacceptable level-of-service. Because no further improvements are planned this would be a significant unavoidable cumulative impact

Responsibility and Monitoring The City of San Rafael would be responsible to implement Mitigation Measure 4.2-15.

Impact 4.2-16 Unacceptable LOS at Intersection of Third Street and Grand Avenue (Intersection E)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS at the intersection of Third Street and Grand Avenue. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, the intersection of Third Street and Grand Avenue would experience significant cumulative impacts under all *Draft 2005 CWP Update* scenarios during the AM and PM peak.

The level of service standard for intersections in Marin County is LOS D. Under existing conditions this intersection operates at LOS D or better. Cumulative *Draft 2005 CWP Update* conditions would increase traffic to an unacceptable LOS F during both the AM and PM peak. **Exhibit 4.2-21** shows the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-16 Add a westbound through lane on Third Street at the intersection of Third Street and Grand Avenue.

Significance After Mitigation Implementation of this mitigation measure would improve the LOS to C and D during the AM peak but would only achieve LOS E during the PM peak. As this improvement is neither funded nor designed, implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-15 may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring The City of San Rafael would be responsible to implement Mitigation Measure 4.2-16.

Impact 4.2-17 Unacceptable LOS at Intersection of Miller Creek Road and Las Gallinas Avenue (Intersection F)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS at the intersection of Miller Creek Road and Las Gallinas Avenue. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, the intersection of Miller Creek Road and Las Gallinas Avenue would experience significant cumulative impacts under all *Draft 2005 CWP Update* scenarios during the AM peak and under Scenario 3 during the PM peak.

The level of service standard for intersections in Marin County is LOS D. Under existing conditions during the AM peak the intersection is already failing with a LOS F. Cumulative *Draft 2005 CWP Update* conditions would increase traffic at this already failing intersection. **Exhibit 4.2-21** shows the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-17 Signalize the Miller Creek Road and Las Gallinas intersection plus add a westbound left turn pocket on Miller Creek Road.

Significance After Mitigation Implementation of this mitigation measure would make this impact less-than-significant. This intersection is covered by Marin County's Transportation Improvement Fee Ordinance which collects fees from developments that would significantly impact this intersection that would be used to mitigate intersection impacts. However, development would only pay its fair share, which would not necessarily fully fund these improvements. Therefore, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring Marin County would be responsible for roadway improvements to this intersection.

Impact 4.2-18 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 Southbound Off-Ramp (Intersection G)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS at the intersection of Miler Creek Road and U.S. 101 SB off-ramp. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, the intersection of Miller Creek Road and U.S. 101 SB off-ramp would experience significant cumulative impacts under all *Draft 2005 CWP Update* Scenarios during the AM and PM peak.

The level of service standard for intersections in Marin County is LOS D. Under existing conditions this intersection operates at a failing LOS F during the AM peak and an acceptable LOS A during the PM peak. Cumulative *Draft 2005 CWP Update* would cause the intersection to operate an unacceptable LOS F during the AM and PM peak under all scenarios. **Exhibit 4.2-21** shows the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-18 Signalize the Miller Creek Road and U.S. 101 SB off-ramp intersection.

Significance After Mitigation Implementation of this mitigation measure would make this impact less-than-significant. This intersection is covered by Marin County's Transportation Improvement Fee Ordinance which collects fees that would be used to mitigate impacts from developments that would significantly impact this intersection. However, new development would only pay its fair share, which would not necessarily fully fund these improvements. Therefore this would be significant unavoidable cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County, would be responsible to implement any improvements to U.S. 101 ramps. The U.S. 101 ramps are owned and operated by Caltrans.

Impact 4.2-19 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 Northbound Off-Ramp (Intersection H)

Land uses and development consistent with the Draft 2005 CWP Update would result in traffic that contributes to unacceptable LOS at the intersection of Miler Creek Road and U.S. 101 NB off-ramp. This would be a significant cumulative impact.

Based on the results of the Marin Travel Model forecasts and the analyses completed as a part of this EIR, the intersection of Miller Creek Road and U.S. 101 NB off-ramp would experience significant cumulative impacts under all *Draft 2005 CWP Update* scenarios during the AM and PM peak.

The level of service standard for intersections in Marin County is LOS D. Under existing conditions this intersection operates at an acceptable LOS C during the PM peak. Cumulative *Draft 2005 CWP Update* would cause the intersection to degrade to an unacceptable LOS F during the AM and PM peak under all scenarios. **Exhibit 4.2-21** shows the forecasted V/C ratio and LOS for the year 2030 that exceed significance criteria.

Mitigation Measure 4.2-19 Signalize the Miller Creek Road and U.S. 101 NB off ramp intersection plus add eastbound and northbound left turn pockets.

Significance After Mitigation Implementation of this mitigation measure would make this impact less-than-significant under Scenarios 2 and 3 but would still create a significant impact under Scenario 1 during the PM peak. This intersection is covered by Marin County's Transportation Improvement Fee Ordinance which collects fees that would be used to mitigate impacts from developments that would significantly impact this intersection. However, development would only pay its fair share, which would not necessarily fully fund these improvements. Therefore this would be significant unavoidable cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County, would be responsible to implement any improvements to U.S. 101 ramps. The U.S. 101 ramps are owned and operated by Caltrans.

ANALYSIS OF CITY-CENTERED CORRIDOR HOUSING SITES

As discussed in ***Chapter 3.0 Description of the Proposed Project***, the *Draft 2005 CWP Update* assumes varying degrees of development on the St. Vincent's and Silveira properties and the San Rafael Rock Quarry. In addition, the *Draft 2005 CWP Update* proposes the establishment of a Housing Overlay Designation (Policy **CD-2.3**) and Housing Bank (Policy **CD-2.2**). The Housing Overlay Designation includes four specific sites: Marinwood Shopping Center, Strawberry Shopping Center, Marin City Shopping Center, and the Fairfax / Oak Manor Shopping Center.

Exhibit 3.0-13 describes the three *Draft Marin 2005 CWP Update* scenarios for the location of housing on the St. Vincent's / Silveira properties, the San Rafael Rock Quarry plus the Housing Overlay Designation. **Exhibit 3.0-13** describes the distribution of the housing units for the three scenarios for specific sites. The residual housing units (ranging from 1,508 in Scenario 1 to 878 in Scenario 3) were then assigned to general areas within the City-Centered Corridor (see **Exhibit 3.0-9**). The three *Draft 2005 CWP Update* scenarios allocate future housing development in Marin County identically except in the following areas:

- St. Vincent's / Silveira / Marinwood
- San Rafael Rock Quarry
- Kentfield Area

- Strawberry Area
- Tam Valley / Almonte Area
- Marin City Area

Consequently, project traffic impacts in these areas would differ based on the *Draft 2005 CWP Update* scenario that is ultimately selected for implementation. This section presents a discussion of the localized impacts of the *Draft 2005 CWP Update* Scenarios on select roadways and intersections near each of these development locations.

The number of housing units allocated to the housing overlay in each of these areas for each *Draft 2005 CWP Update* Scenario is presented in Exhibit **4.2-24**.

Exhibit 4.2-24
Planning Areas with Varying Levels of Housing Development

General Area	Draft 2005 CWP Update Housing (Units)		
	Scenario 1	Scenario 2	Scenario 3
St. Vincent's / Silveira / Marinwood	491	534	658
San Rafael Rock Quarry	0	350	350
Kentfield	270	184	157
Strawberry	225	153	131
Tam Valley / Almonte	305	208	177
Marin City	256	175	149

Source: Marin County Community Development Agency.

Impact 4.2-20 St. Vincent's / Silveira / Marinwood
Development in the St. Vincent's / Silveira / Marinwood area consistent with the Draft 2005 CWP Update would result in significant project and cumulative traffic and intersection impacts.

This area includes the St. Vincent's / Silveira properties specific-site development area and the housing overlay designation sites in the Marinwood overlay area.

The following screenlines and intersections were selected to characterize the localized impacts of development in this area:

- U.S. 101 between Lucas Valley Road and Freitas Parkway (Screenline #14).
- Lucas Valley Road between Las Gallinas Avenue and Los Gamos (Screenline #15).
- U.S. 101 (Pacheco Hill) between Nave Drive and Miller Creek Road (Screenline #16).
- Miller Creek Road at Las Gallinas Avenue (Intersection F).
- Miller Creed Road at U.S. 101 Southbound Ramp (Intersection G).
- Miller Creek Road at U.S. 101 Northbound Ramp (Intersection H).

The Marin Travel Model forecasts no significant project impacts for screenline #14 or #16, thus development in this area would not overburden U.S. 101 during either peak in either direction. However significant project and cumulative impacts would occur on Lucas Valley Road between Las

Gallinas Avenue and Los Gamos (Screenline# 15, see *Impact 4.2-12 Unacceptable LOS on Lucas Valley Road from Las Gallinas Avenue to Los Gamos*).

Cumulative traffic volumes generated by all three development scenarios would significantly impact the intersections of Miller Creek Road with both the north and southbound U.S. 101 on and off ramps (i.e., intersections G and H). These impacts were previously discussed in *Impacts 4.2-18 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 Southbound Off-Ramp* and *4.2-19 Unacceptable LOS at Intersection of Miller Creek Road and U.S. 101 Northbound Off-Ramp*. In order to mitigate these significant impacts, both intersections would need to be signalized. Also the intersection with the northbound ramps would need eastbound and northbound left turn pockets.

Cumulative traffic generated by all three scenarios would significantly impact the intersection of Miller Creek Road with Las Gallinas Avenue (i.e., intersection F) as described in *Impact 4.2-17 Unacceptable LOS at Intersection of Miller Creek Road and Las Gallinas Avenue*). This intersection would need to be signalized and a westbound left turn lane added to mitigate this impact.

Mitigation Measure 4.2-20(a) Signalize the Miller Creek Road and Las Gallinas intersection plus add a westbound left turn pocket on Miller Creek Road.

Mitigation Measure 4.2-20(b) Signalize the Miller Creek Road and U.S. 101 SB off-ramp intersection.

Mitigation Measure 4.2-20(c) Signalize the Miller Creek Road and U.S. 101 NB off ramp intersection plus add eastbound and northbound left turn pockets.

Mitigation Measure 4.2-20(d) Currently Lucas Valley Road is one lane in the each direction which provides 800 vehicles per hour of capacity in each direction. Under worst case conditions, traffic volumes are forecast to exceed this capacity and acceptable LOS by 270 vehicles per hour. In order to accommodate this excess capacity via roadway expansion, Lucas Valley Road would need to be expanded from one to two lanes in the both directions from Las Gallinas Avenue to Los Gamos. This would expand roadway capacity from 800 to 1600 vehicles per hour.

Significance After Mitigation Implementation of this Mitigation Measure 4.2-20(a) would make the impact to Miller Creek Road and Las Gallinas intersection less-than-significant. Implementation of this Mitigation Measure 4.2-20(b) would make the impact to Miller Creek Road and U.S. 101 SB off-ramp intersection less-than-significant. Implementation of Mitigation Measure 4.2-20(c) would make the impact to Miller Creek Road and U.S. 101 NB off ramp intersection less-than-significant under Scenarios 2 and 3 but would still create a significant impact under Scenario 1 during the PM peak. The intersections described in Mitigation Measures 4.2-20(a), 4.2-20(b), and 4.2-20(c) are covered by Marin County's Transportation Improvement Fee Ordinance which collects fees that would be used to mitigate impacts from developments that would significantly impact these intersections. However, development would only pay its fair share, which would not necessarily fully fund these improvements. Therefore, these would be significant unavoidable cumulative impacts.

Mitigation Measure 4.2-20(d) would reduce the impact to Lucas Valley Road between Las Gallinas Avenue and Los Gamos to a less-than-significant level. As this improvement is neither funded nor designed, implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-20(d) may be infeasible, this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring Marin County would be responsible for roadway improvements described in Mitigation Measures 4.2-20(a) and 4.2-20(d). Caltrans, in cooperation with Marin County, would be responsible to implement any improvements to U.S. 101 ramps described in Mitigation Measures 4.2-20(b) and 4.2-20(c).

Impact 4.2-21 San Rafael Rock Quarry

Development at the San Rafael Rock Quarry consistent with the Draft 2005 CWP Update would result in significant cumulative intersection impacts.

The main access route to this development site from U.S. 101 is Point San Pedro Road. In the City of San Rafael, Point San Pedro Road is named Third Street. In downtown San Rafael, Third Street traffic is split onto a pair of two one-way streets: westbound traffic continues on Third Street while eastbound traffic is diverted to Second Street. Because this is the primary access route to the San Rafael Rock Quarry, the Third Street / Second Street couplet would be sensitive to site development. Thus, the following screenline and intersections were selected to evaluate the localized impacts of the three scenarios:

- Third Street (in San Rafael) at Union Street (Screenline #13);
- Second Street at Grand Avenue (Intersection D); and
- Third Street at Grand Avenue (Intersection E).

The Marin Travel Model shows that project traffic would not significantly impact traffic operations on Third Street. During the PM peak eastbound (i.e., the busiest direction and period), Scenario 1, which allocates no housing development to the quarry, would generate 60 less vehicle trips per hour than Scenarios 2 and 3 that would allow for up to 350 housing units at the quarry.

All three scenarios would significantly impact the intersection of Second Street and Grand Avenue (intersection D) and Third Street and Grand Avenue (intersection E) as discussed in *Impacts 4.2-15 Unacceptable LOS at Intersection of Second Street and Grand Avenue* and *4.2-16 Unacceptable LOS at Intersection of Third Street and Grand Avenue*. A northbound right turn lane would need to be added to Grand Avenue and Second Street and a westbound through lane would need to be added to Third Street at Grand Avenue to mitigate these impacts.

Mitigation Measure 4.2-21(a) Add a right turn lane to the northbound Grand Avenue approach at the Second Street and Grand Avenue intersection. This improvement is included as part of a fully funded roadway improvement project listed in the *San Rafael General Plan 2020*.

Mitigation Measure 4.2-21(b) Add a westbound through lane on Third Street at the intersection of Third Street and Grand Avenue.

Significance After Mitigation Implementation of Mitigation Measure 4.2-21(a) would create LOS E conditions during the PM peak under all three scenarios at the Second Street and Grand Avenue intersection. Though this mitigation would improve traffic conditions, the intersection would still operate at an unacceptable level-of-service. Because no further improvements are planned this would be a significant unavoidable cumulative impact.

Implementation of Mitigation Measure 4.2-21(b) would improve the LOS at the intersection of Third Street and Grand Avenue to C and D during the AM peak but would only achieve LOS E during the PM peak. This improvement is neither funded nor designed, thus implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-20(b) may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring The City of San Rafael would be responsible for implementing these measures.

Impact 4.2-22 Kentfield

Development in the Kentfield area consistent with the Draft 2005 CWP Update would result in significant project and cumulative traffic impacts.

In the Kentfield area, the housing overlay designation sites are focused in the vicinity of the College of Marin. Sir Francis Drake Boulevard, the primary arterial serving this area, would be the most affected by traffic generated by additional housing development in this area. Two screenlines on Sir Francis Drake Boulevard were analyzed to gauge the localized impacts of varying levels of housing on the housing overlay designation sites in the Kentfield area:

- Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6); and
- Sir Francis Drake Boulevard from U.S. 101 to Eliseo Drive (Screenline #7).

Screenline #6 would experience cumulative impacts under all *Draft 2005 CWP Update* scenarios westbound during the PM Peak as described in *Impact 4.2-5 Unacceptable LOS on Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6).* Screenline #7 would experience significant project and cumulative impacts under all *Draft 2005 CWP Update* scenarios in both directions during both peaks as described in *Impact 4.2-6 Unacceptable LOS on Sir Francis Drake Boulevard from U.S. 101 to Eliseo Drive.* The following mitigation would be required.

Mitigation Measure 4.2-22(a) Expand Sir Francis Drake Boulevard between the Bon Air Road and Wolfe Grade in the westbound direction from two to three lanes. This would expand capacity from 2400 to 3600 vehicles per hour, providing an acceptable LOS A under worst-case conditions. Note that under worst-case conditions traffic only exceeds the significance threshold by 42 vehicles per hour.

Mitigation Measure 4.2-22(b) Widen Sir Francis Drake Boulevard from two to three lanes in each direction from U.S. 101 to Eliseo Drive in order to mitigate this impact via roadway expansion. This would increase roadway capacity from 2,400 to 3,600 vehicles per hour in each direction and provide LOS D operations, under the worst-case scenario. This would satisfy the LOS requirements for this roadway.

Significance After Mitigation Mitigation Measure 4.2-22(a) would reduce the impact to Sir Francis Drake Boulevard between the Bon Air Road and Wolfe Grade a less-than-significant level. As this improvement is neither funded nor designed, implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-22(a) may be infeasible, this would be a significant unavoidable cumulative impact.

Mitigation Measure 4.2-22(b) would reduce the impact to Sir Francis Drake Boulevard between U.S. 101 and Eliseo Drive to a less-than-significant level. As this improvement is neither funded nor designed, implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Furthermore, expanding Sir Francis Drake Boulevard from two to three lanes in each direction may be infeasible due to existing residential and commercial development. Therefore, as Mitigation Measure 4.2-22(b) may be infeasible, this would be a significant unavoidable project impact and a significant unavoidable cumulative impact.

Responsibility and Monitoring Marin County would be responsible to implement these improvements in Mitigation Measures 4.2-22(a) and 4.2-22(b).

Impact 4.2-23 Strawberry

Development in the Strawberry area consistent with the Draft 2005 CWP Update would result in significant project and cumulative traffic and intersection impacts.

Most of the housing overlay designation sites in the Strawberry area are located in two locations: the Redwood Highway frontage road bounded by State Route 131 (Tiburon Boulevard) and Seminary Road; and within the semi-circle formed by Seminary Drive and Strawberry Drive. Two intersections and one screenline that would most likely experience the largest increases in traffic due to development in this area were selected for analysis:

- State Route 131 (Tiburon Boulevard) from U.S. 101 to Strawberry Drive (Screenline #4);
- Redwood Highway Frontage Road at U.S. 101 NB on/off ramps (Intersection B); and
- Tiburon Boulevard (State Route 131) at Redwood Highway Frontage Road (Intersection C).

Under existing conditions, State Route 131 eastbound would operate with an unacceptable LOS E during the PM peak. Both project and cumulative impacts would occur eastbound during the AM peak hour. All other directions and periods would operate at an acceptable LOS under all scenarios (see *Impact 4.2-4 Unacceptable LOS on State Route 131 from U.S. 101 to Strawberry Drive*).

Cumulative traffic volumes associated with all three *Draft 2005 CWP Update* scenarios would significantly impact the intersection of Tiburon Boulevard with the Redwood Highway Frontage Road (i.e., Intersection C) as described in *Impact 4.2-14 Unacceptable LOS at Intersection of State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road*. This intersection is already operating at an unacceptable LOS F, thus development in this area would worsen an already failing intersection rather than cause an intersection to fail. Adding an eastbound through lane to Tiburon Boulevard and a northbound right turn lane to Redwood Highway Frontage Road would mitigate this impact.

Mitigation Measure 4.2-23(a) Expand State Route 131 from two to three lanes in the eastbound direction from U.S. 101 to Strawberry Drive. This would expand roadway capacity in the eastbound direction from 1,920 to 2,880 vehicles per hour providing and acceptable LOS C under worst-case conditions.

Mitigation Measure 4.2-23(b) Add an eastbound through lane on Tiburon Boulevard and a northbound right turn lane on the Redwood Highway Frontage Road.

Significance After Mitigation 4.2-23(a) Mitigation Measure 4.2-23(a) would reduce the traffic impact to State Route 131 (Tiburon Boulevard) from U.S. 101 to Strawberry Drive to a less-than-significant level. Funding for this mitigation measure is not currently available and, therefore, it is uncertain whether this improvement would be completed within the time frame of the *Draft 2005 CWP Update*. Therefore, as Mitigation Measure 4.2-23(a) may be infeasible, this would be a significant unavoidable project and cumulative impact.

Mitigation Measure 4.2-23(b) would reduce the traffic impact to Tiburon Boulevard (State Route 131) at Redwood Highway Frontage Road to less-than-significant during the AM peak but the intersection would still fail during the PM peak. As this improvement is neither funded nor designed, implementation of this project within the *Draft 2005 CWP Update* planning period is unlikely. Therefore, as Mitigation Measure 4.2-23(b) may be infeasible, this would be a significant unavoidable cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County, would be responsible to implement any improvements to State Route 131 (Tiburon Boulevard) in Mitigation Measure 4.2-

23(a) and 4.2-23(b). Marin County would be responsible for improvements to the Redwood Highway Frontage Road in Mitigation Measure 4.2-23(b).

Impact 4.2-24 Tam Valley / Almonte

Development in the Tam Valley / Almonte area consistent with the Draft 2005 CWP Update would result in significant project and cumulative traffic impact.

In the Tam Valley / Almonte area, the largest housing overlay designation sites are located along State Route 1 (Shoreline Highway) near the Tennessee Valley Bridge (Coyote Creek) and the intersection with Almonte Boulevard. Housing development in this area would have the greatest impact on State Route 1, the primary connection to U.S. 101. One screenline (Screenline 3), on State Route 1 between U.S. 101 and Almonte Boulevard was analyzed to assess the localized impacts of the three scenarios in this area.

State Route 1, under existing conditions in the peak direction, is the most congested of any screenline analyzed for this EIR. Northbound during the PM peak (i.e., the most congested period and direction), State Route 1 carries 53 percent more vehicles per hour than it was designed to accommodate. Under all scenarios, significant project impacts would occur southbound during the AM peak and in both directions during the PM peak. (See *Impact 4.2-3 Unacceptable LOS on State Route 1 from U.S. 101 to Almonte Boulevard*) Scenario 3, which allocates 42 percent less housing units to this area than scenario 1, would reduce project traffic by only 1 percent.

Mitigation Measure 4.2-24 Widen State Route 1 between U.S. 101 and Almonte Boulevard from one to two lanes in each direction, which would increase roadway capacity from 800 vehicles per hour to 1,600 vehicles per hour in each direction. This would improve conditions to LOS E, which would at least provide capacity that exceeds traffic demand, but would still not satisfy the LOS D criteria for this roadway. Though full mitigation would require three full traffic lanes in each direction, this improvement is unlikely due to significant environmental impacts and lack of community support. Currently there are no plans or funds for this improvement; therefore, it is unlikely it would be completed within the timeframe of the *Draft 2005 CWP Update*.

Significance After Mitigation Improvements noted in Mitigation Measure 4.2-24 would not reduce this impact to a less-than-significant level and implementation within the timeframe of this plan is uncertain. Therefore, this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring Caltrans, in cooperation with Marin County, would be responsible to implement improvements described in Mitigation Measure 4.2-24.

Impact 4.2-25 Marin City

Development in the Marin City area consistent with the Draft 2005 CWP Update would result in a less-than-significant impact.

Housing units in this area are allocated to housing overlay designation sites near the Marin City Gateway Shopping Center. The only access to this area is provided by Donohue Street from the Bridge Boulevard and U.S. 101 intersection. The intersection of Bridge Boulevard and U.S. 101 southbound ramps (intersection A) was selected for analysis. Development in this area would not significantly impact the intersection of Bridge Boulevard and U.S. 101 SB off-ramp.

Mitigation Measure 4.2-25 None required.

BICYCLE AND PEDESTRIAN IMPACTS AND MITIGATION MEASURES

Impact 4.2-26 Increased Demand for Bicycle and Pedestrian Facilities and Impacts on Safety and Access

Land uses and development consistent with Draft 2005 CWP Update would result in increased urban land uses and, consequently, demand for bicycle and pedestrian facilities. At the same time, additional automobile traffic would increase conflicts between bicycle, pedestrians and automobiles. Implementation of policies included in the Draft 2005 CWP Update would result in improvements in bicycle and pedestrian facilities that would accommodate increased bicycle and pedestrian demand and improve safety and access. Therefore, this would be a less-than-significant imapct.

Implementation of the *Draft 2005 CWP Update* would result in the development of additional housing units and nonresidential floor area. Some portion of the people traveling to and from that development would walk or bike. Thus, the demand for bicycle and pedestrian facilities would increase, particularly since some of the new development in the City-Centered corridor would occur near transit and important community facilities.

The *Draft 2005 CWP Update* contains numerous policies and programs that, if adopted and implemented, would improve bicycle and pedestrian facilities, and increase capacity, safety, and access. These policies are consistent with plans that have been previously adopted by the County, including the *Marin County Unincorporated Areas Bicycle and Pedestrian Master Plan*.

Policy **TR-2.1** would ensure that all areas of the county have adequate bicycle and pedestrian links. It would also ensure that streetscape improvements and standards are pedestrian and bicycle friendly. Policy **TR-2.2** would require new development to provide trails or paths for use by bicycles and / or on-street bicycle and pedestrian facilities. Policy **TR-2.3** would explore the possibility of creating bicycle and pedestrian trails that would connect the urbanized areas of the County to the State and federal parklands in the county. Policy **TR-2.4** would seek grants and other funding to construct new bicycle and pedestrian infrastructure. Policy **TR-1.6** would improve pedestrian, bicycle, and transit access to and within west Marin, and would not allow increases in roadway capacity. Policy **TR-1.2** would develop methods and adopt standards to assess the performance of pedestrian and bicycle facilities that the County would use to measure the success of facilities against the goals of the County *Transportation Vision*. Policy **TR-1.1** would encourage the use of alternative transportation including bicycling and walking.

Furthermore, Marin County is one of four communities throughout the United States designated as a Nonmotorized Transportation Pilot Program. The County will receive a total of $25 million over the next four years to build a bicycle and pedestrian network that will connect directly with transit stations, schools, residences, businesses, recreation areas, and other community activity centers.

Implementation of these policies along with the Nonmotrized Transportation Pilot Program, would ensure adequate capacity of pedestrian and bicycle facilities and improve safety, therefore, reducing potential project pedestrian and bicycle impacts related to increased demand and auto traffic to a less-than-significant level and the project would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.2-26 None required.

TRANSIT IMPACTS AND MITIGATION MEASURES

Impact 4.2-27 Increased Demand for Public Transit Services

Land uses and development consistent with Draft 2005 CWP Update would result in increased demand for transit services. However, implementation of policies included in the Draft 2005 CWP Update would result in improved transit services. Therefore, this would be a less-than-significant impact.

Implementation of the *Draft 2005 CWP Update* would result in additional housing units and nonresidential floor area. A portion of the people associated with the additional development would use public transit, thus increasing the number of transit users, particularly since much of the new development would occur within a half-mile of transit nodes and routes. This increased demand could significantly impact transit services by creating overcrowded conditions and decreasing on-time performance.

The *Draft 2005 CWP Update* contains numerous policies and programs that, if adopted and implemented, would improve transit service, and increase capacity, safety, and access. These policies are consistent with plans that have been previously adopted by the County, including the *Marin County Transit District Short Range Transit Plan (*Short Range Transit Plan), and the *Marin County Unincorporated Areas Bicycle and Pedestrian Master Plan.* Because the Short Range Transit Plan is effective until 2015, some policies and programs of the *Draft 2005 CWP Update* may extend beyond the scope of the Short Range Transit Plan.

Policy **TR-3.1** would encourage and support the expansion of local bus service to all areas of the county. Policy **TR-3.2** would promote rail service on the Northwestern Pacific Railroad right-of-way, a multi-use path that follows the rail corridor, expanded regional ferry service, and enhanced regional express bus services. Policy **TR-3.3** would support the development of intermodal transit hubs that expand alternative transportation use. Policy **TR-3.4** would fund paratransit service and integrate it with fixed-route service to efficiently meet the needs of transit-dependent persons. Policy **TR-3.5** would increase transit's catchment radius by encouraging the use of bicycles to access transit, by providing secure bike parking at transit centers and providing for the storage of bicycles on transit vehicles. Policy **TR-3.6** would require coordination with local, State, and federal agencies and local communities to provide alternatives to automobile travel to recreational areas in West Marin.

To the extent that Marin County has jurisdiction and involvement in decision making, implementation of these policies would increase transit service and, therefore, reduce potential transit impacts to a less-than-significant level. Furthermore, the project would make a less than cumulatively considerable contribution to a cumulative demand for public transit services impact.

Mitigation Measure 4.2-27 None required.

4.3 AIR QUALITY

4.3 AIR QUALITY

Air Quality – Environmental Setting

Existing air quality conditions are described in the *Air Quality Background Report*, April 2002, updated December 2005, which is included in **Appendix 1** to the Draft EIR. This background report is incorporated by reference, and summarized below.

Air quality is described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate ambient air quality standard. The standards represent the allowable pollutant concentrations designed to ensure that the public health and welfare are protected, while including a reasonable margin of safety to protect more sensitive individuals in the population.

REGIONAL AIR QUALITY

The ambient air quality in a given area depends on the quantities of pollutants emitted within the area, transport of pollutants to and from surrounding areas, local and regional meteorological conditions, and the surrounding topography of the air basin. Marin County is part of the nine-county San Francisco Bay Air Basin. The federal Clean Air Act, 42 USC 7401 et seq., governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act, Health and Safety Code sections 39000-44385. At the federal level, the United States Environmental Protection Agency (USEPA) administers the Clean Air Act (CAA). The California Clean Air Act is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District (BAAQMD) regulates air quality at the regional level, which includes the nine-county Bay Area.

AIR QUALITY STANDARDS

The federal and California Clean Air Acts have established ambient air quality standards for several pollutants. National ambient air quality standards are for *criteria pollutants*. Criteria pollutants include Carbon Monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), inhalable particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). California established ambient air quality standards as early as 1969 through the Mulford-Carrell Act. Pollutants regulated under the California Clean Air Act are similar to those regulated under the federal Clean Air Act. In many cases, California standards are more stringent than the national ambient air quality standards for criteria pollutants. State and federal ambient air quality standards are shown in **Exhibit 4.3-1**.

Exhibit 4.3-1
Federal and State Ambient Air Quality Standards

Pollutant	*Averaging Time*	*California Standard*	*Federal Primary Standard*	*Pollutant Health and Atmospheric Effects*	*Major Pollutant Sources*
Ozone (O_3)	1 hour	0.09 ppm	---	Irritation and possibly permanent lung damage.	Motor vehicles, including refining and gasoline delivery.
	8 hours	0.07 ppm	0.08 ppm		
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Deprives body of oxygen in the blood. Causes headaches and worsens respiratory problems.	Primarily gasoline-powered internal combustion engines.
	8 hours	9 ppm	9.0 ppm		
Nitrogen Dioxide (NO_2)	Annual Avg.	---	0.05 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum-refining, power plants, aircraft, ships, and railroads.
	1 hour	0.25 ppm	---		
Sulfur Dioxide (SO_2)	Annual Avg.	---	0.03 ppm	Irritates and may permanently injure respiratory tract and lungs. Can damage plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	---		
	24 hours	0.04 ppm	0.14 ppm		
Respirable Particulate Matter (PM_{10})	24 hours	50 ug/m3	150 ug/m^3	May irritate eyes and respiratory tract, is associated with decreased lung capacity, increased cancer and mortality rates. Produces haze and limits visibility.	Industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	Annual Arithmetic Mean	20 ug/m3	--		
Fine Particulate Matter ($PM_{2.5}$)	24 hours	---	35ug/m^3		
	Annual Arithmetic Mean	12 ug/m3	15 ug/m^3		
Lead (Pb)	Monthly	1.5 ug/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction (in severe cases).	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 ug/m^3		
Sulfates (SO_4)	24 hours	25 ug/m^3	---	Similar to sulfur dioxide.	Industrial processes refineries.
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 ug/m^3)	---	Very pungent odor similar to rotten eggs. Annoying and irritating – high concentrations fatal.	Sources include industrial processes, oil production, and geothermal wells.

Note: ppm = parts per million; ug/m3 = micrograms per cubic meter.

Source: California Air Resources Board, November, 2005.

Ozone is the primary constituent of urban smog. Ozone is considered a secondary pollutant since it is not emitted directly into the atmosphere. Rather, ozone is produced through photochemical reactions of precursor compounds, known as volatile organic compounds (VOC) and nitrogen oxides (NO_x). Because ozone precursors are transported and diffused by wind and have the capacity to form smog miles from their emission source, ozone is regarded as a regional air pollutant. Exposure to ozone smog can cause adverse health impacts.

Carbon monoxide (CO) is an odorless, colorless gas, which can be lethal in high concentrations. The primary source of carbon monoxide is motor vehicles and concentrations of this gas are greatest in areas near the intersections of roadways that carry high volumes of traffic. Residential wood combustion is also a substantial source of CO emissions that can lead to high ambient levels of CO on cold nights where wood burning stoves are popular.

Oxides of Nitrogen (NO_x) are produced through fuel combustion and contribute to the formation of ozone smog. NO_x is shorthand for a class of chemicals that includes nitrogen oxide, nitrogen dioxide (NO_2), dinitrogen pentoxide, peroxyacetylnitrate (PAN), and other compounds. PAN is highly toxic to plants, is a powerful eye irritant, and can persist for long periods. At higher concentrations, NO_2, the red-brown gas in smog, causes eye irritation, shortness of breath, and other temporary and long-term health effects. NO_x also can undergo transformation in the atmosphere into fine respirable particulates.

The use of high sulfur fuels in petroleum refining and electricity generation may result in emissions of sulfur dioxide (SO_2). The sulfur content of fuels is extensively regulated, and controls on stationary sources have brought almost all of California into compliance with federal and State standards.

Particulates that are ten microns in diameter or less are identified as PM_{10}. Likewise, $PM_{2.5}$ is composed of fine particulate that is 2.5 microns or smaller. If inhaled deeply, these particulates can cause adverse health effects. The greatest proportion of suspended particulates originates from combustion, road dust, construction activities, and farming. During the winter, wood smoke from fireplaces can be the most substantial source, contributing up to 40 percent of ambient respirable particulate matter.

Lead has been phased out as a gasoline additive in California, and annual federal and State ambient air quality standards for lead are met in all parts of the state.

TOXIC AIR CONTAMINANTS

Toxic air contaminants (TACs) are another group of pollutants of concern in the Bay Area; however no definitive safe levels of exposure to TACs can be established. Common sources of TACs include industrial processes (e.g., petroleum refining and chrome plating operations), commercial operations (e.g., gasoline stations and dry cleaners), and motor vehicle exhaust. Diesel exhaust particulate mater has been identified as a TAC of concern. Mobile sources such as trucks, buses, automobiles, trains, ships, and farm equipment are the largest source of diesel emissions.

SENSITIVE RECEPTORS AND STATIONARY POLLUTANT SOURCES

Some groups of people are more affected by air pollution than others. The State has identified the following people who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are

classified as *sensitive receptors*. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks.

Children may be more vulnerable to environmental contaminants than adults. The Children's Environmental Health Protection Act (State Senate Bill 25 to amend Sections 39606, 39660, and 40451 of, to add Section 39617.5 to, to add Part 3 (commencing with Section 900) to Division 1 of, and to add Article 4.5 [commencing with Section 39669.5] to Chapter 3.5 of Part 2 of Division 26 of, the Health and Safety Code, relating to environmental health protection) established specific requirements to determine if children are adequately protected from the harmful effects of air pollution. The Act requires CARB and the Office of Environmental Health Hazard Assessment (OEHHA) to review all health based California's Ambient Air Quality Standards to determine whether they adequately protect public health, including infants and children. Those found potentially inadequate undergo full review and possible revision. The Act also requires CARB to determine if the current air monitoring network established to measure air pollution in California adequately reflects the levels of air pollutants that infants and children are breathing. Additionally, the Act also requires that the State's list of Toxic Air Contaminants be reviewed to identify those that might cause infants and children to be especially susceptible to illness and to institute Air Toxic Control Measures (ATCM) necessary to reduce exposures. In 2005, CARB added a new eight-hour ozone standard in response to a review of the air quality standards required by this Act.

EXISTING LEVELS OF AIR POLLUTANTS

Efforts to combat air pollution began in the Bay Area in 1955 with the formation of the Bay Area Air Pollution Control District which is now known as the Bay Area Air Quality Management District (BAAQMD). State and federal ambient air quality standards cover a wide variety of pollutants. Only a few of these pollutants however, pose health issues in the Bay Area either due to the strength of the emission or the climate of the region. These are ground level ozone and particulate matter (PM_{10} and $PM_{2.5}$), which occasionally are measured at levels above health based standards. For many years, the BAAQMD has operated a multi-pollutant monitoring site in San Rafael that allows analysis of air quality trends. The number of days that air pollutant levels exceeded State or federal standards at San Rafael or the entire Bay Area is reported in **Exhibit 4.3-2**. With the exception of PM_{10}, the San Rafael station has not reported any exceedances of ambient air quality standards over the past five years. Measured exceedances of PM_{10} have occurred on zero to two sampling days per year. Since PM_{10} is measured every sixth day (in accordance with a national sampling schedule), the number of days per year that the standard is exceeded is estimated at up to 12 days.

Exhibit 4.3-2
Summary of Measured Air Quality Exceedances

		Monitoring	***Days Exceeding Standard***				
Pollutant	***Standard***	***Station***	***2000***	***2001***	***2002***	***2003***	***2004***
Ozone (0_3)	NAAQS 1-hr [a]	San Rafael	0	0	0	0	0
		Bay Area	3	1	2	1	0
	NAAQS 8-hr	San Rafael	0	0	0	0	0
		Bay Area	4	7	7	7	0
	CAAQS 1-hr	San Rafael	0	0	0	0	0
		Bay Area	12	15	16	19	7
Respirable Particulate Matter (PM_{10})	NAAQS 24-hr	San Rafael	0	0	0	0	0
		Bay Area	0	0	0	0	0
	CAAQS 24-hr	San Rafael	0	2	2	0	1
		Bay Area	7	10	6	6	7
Fine Particulate Matter ($PM_{2.5}$)	NAAQS 24-hr	San Rafael	0	---	---	---	---
		Bay Area	1	5	7	0	1
All Other (CO, N02, Lead, S02)	All Other	San Rafael	0	0	0	0	0
		Bay Area	0	0	0	0	0

a This standard was revoked in June 2005.

Source: BAAQMD, Bay Area Air Pollution Summaries 2000-2004.

Air pollutants of concern emitted in Marin County and the Bay Area include ozone, particulate matter (PM_{10}), and toxic air contaminants (TACs).

Currently, the Bay Area is classified as a federal and State nonattainment area for ozone. Ground level ozone, often referred to as smog, is not emitted directly, but is formed in the atmosphere through complex chemical reactions. While there have been no exceedances of federal or State ozone standards in Marin, the Bay Area as a whole has experienced unhealthy ozone levels on seven to 19 days annually. Ozone is not a pollutant that adversely affects Marin County, but emissions from motor vehicle use in the county contribute to high ozone levels in other parts of the Bay Area. Motor vehicles are the largest source of ozone precursors emissions (i.e., nitrogen oxides and reactive organic gases) in the Bay Area.

The county is classified as nonattainment for PM_{10} by CARB. There are many sources of PM_{10} emissions, including combustion, industrial processes, grading and construction, and motor vehicles. The greatest quantity of PM_{10} emissions associated with motor vehicle uses is generated by re-suspended road dust. Reductions in motor vehicle miles traveled are necessary to reduce PM_{10}

emissions, rather than changes to motor vehicle technology. Wood burning in open fireplaces and stoves is another significant source of PM_{10}.

There are no $PM_{2.5}$ monitoring data in Marin County. $PM_{2.5}$ is the very fine particulate fraction of PM_{10}. The Bay Area as a whole is considered *unclassified* in terms of attainment status for the federal standard and *nonattainment* for the State standard.

Carbon monoxide emissions from motor vehicles and stationary sources have been reduced greatly over the last 15 to 20 years, such that the entire Bay Area region has been brought into attainment for both federal and State standards. Carbon monoxide emissions from traffic along major roadway segments with high traffic volumes and poor level of service (LOS) were evaluated. This included county roadway segments operating at LOS of D, E, or F. The traffic-generated emissions of CO were predicted using the Caline4 line source dispersion model. The model requires inputs of geometry, traffic volumes, emission factors and meteorology. Existing traffic volumes for selected roadway segments were used. Emission factors used were calculated using the EMFAC2002 model, developed by the California Air Resources Board, with default assumptions for Marin County during winter that include a temperature of 45 degrees Fahrenheit. Slow speeds of five to 15 miles per hour were used to develop the emission factors. Meteorological conditions indicative of elevated CO levels in the Bay Area were used, which include a low wind speed of one meter per second, worst-case wind angle, and F stability. **Exhibit 4.3-3** shows modeled existing roadside carbon monoxide levels for four roadway segments.

Exhibit 4.3-3
Modeled Existing Roadside Carbon Monoxide Levels

Roadway Segment Description	***Modeled Level [a] (ppm)***	
	1-Hour	***8-hour***
U.S. 101 Puerto Suello Hill	7.4	4.9
1-580 near the Richmond-San Rafael Bridge	5.6	3.6
Sir Francis Drake Blvd. West of U.S. 101	6.8	4.5
State Route 1 near Almonte Blvd.	5.7	3.7
Tiburon Blvd. And Redwood	9.1	6.1
2nd St. and Grand Ave	8.4	5.6
National Ambient Air Quality Standard	35	9.0
California Ambient Air Quality Standard	20	9.0

a Includes background level of four ppm for one-hour and 2.5 ppm for eight-hour

Source: Illingworth & Rodkin

As shown in **Exhibit 4.3-3** existing carbon monoxide concentrations are well below the ambient air quality standards. Carbon monoxide concentrations are expected to decrease further in the future as newer and cleaner vehicles replace older vehicles on the roadway.

The health impacts associated with the exposure to toxic air contaminants are usually expressed in terms of increased risk of contracting cancer by individuals. In Marin County, truck traffic, construction equipment, and ferries are the primary sources of diesel particulate matter. According to

CARB, the overall inhalation cancer risk in the Marin County ranges from very low (less than 50 cases per million) in the western part of the county to a range of 100 to 250 excess cancer cases per million people. [1] Some localized areas in San Rafael show rates slightly greater than 250 cases per million. These risks are considerably lower than the risk in urban areas, which can exceed 1,000 excess cases per million people. The overall risk is predicted to decrease and the decrease could be substantial if CARB goals to achieve a 75 percent reduction in diesel risk are met.

Diesel particulate matter (DPM) emitted from trucks or other diesel fueled vehicles on freeways in Marin County is a toxic air contaminant that affects local air quality. Concentrations of existing diesel particulate matter emissions from trucks on Marin County freeways were modeled and reported in the *Air Quality Background Report*. [2] The modeled concentrations indicate existing risks ranging from 15 to 35 excess cancer cases per million people at a distance of 50 feet from the roadways. These levels of risk are expected to decrease in the future as newer more stringent regulations that target diesel exhaust emissions take effect. CARB's EMFAC2002 motor vehicle emission factor model, which is used to predict DPM emissions, documents this effect. [3]

Other air quality issues of concern in Marin County include nuisance impacts of odors and dust. Common sources of odors would include wastewater treatment plants, landfills, composting facilities, and agricultural activities. Similarly, nuisance dust may be generated by a variety of sources including construction, quarries, travel on unpaved roadways, and agriculture.

AIR QUALITY PLANNING

The BAAQMD along with the other regional agencies (i.e., Association of Bay Area Governments and the Metropolitan Transportation Commission) prepared the *2001 Ozone Attainment Plan* [4] to address the federal standard for ozone. Although the U.S. EPA revoked the 1-hour NAAQS for ozone in 2005, the *2001 Ozone Attainment Plan* is still a valid planning document and element of California's state implementation plan (SIP) for the national Clean Air Act. The on-road emissions budgets from the *2001 Ozone Attainment Plan* are used as surrogate budgets for transportation conformity analyses and findings until a new budget is established with an attainment or maintenance demonstration for the new 8-hour ozone standard. In addition, any commitments made in the *2001 Ozone Attainment Plan* continue to be enforceable commitments and must be implemented.

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1 See CARB website (March 27, 2006): http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm

2 Table 8 in the *Air Quality Background Report* provides a summary of diesel particulate matter cancer risk at distances from 50 to 1,000 feet from Marin County freeways.

3 California Air Resources Board. Emfac2001 version 2.08/Emfac2002 version 2.20 - Calculating emission inventories for vehicles in California, User's Guide.

4 *Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard*, Metropolitan Transportation Commission, Bay Area Air Quality Management District, and Association of Bay Area Governments, Adopted October 24, 2001.

The *Bay Area 2005 Ozone Strategy* is the most recently approved regional Clean Air Plan.[5] It was adopted in January 2006 to address the more stringent requirements of the California Clean Air Act with respect to ozone. This plan includes a comprehensive strategy to reduce emissions from stationary, area, and mobile sources. The plan's objective is to indicate how the region would attain the stricter State air quality standards, as mandated by the California Clean Air Act. The plan is designed to achieve a region-wide reduction of ozone precursor pollutants through the expeditious implementation of all feasible measures. Air quality plans addressing the California Clean Air Act are developed on a triennial basis, with the latest approved plan developed in 2000 (*Bay Area 2000 Clean Air Plan*[6]). This plan proposes implementation of transportation control measures (TCMs) and programs such as *Spare the Air*. Some of these measures or programs rely on local governments for implementation.

In 2003 the California Legislature enacted Senate Bill 656, to reduce public exposure to PM_{10} and $PM_{2.5}$. SB 656 legislation required BAAQMD to review a list of particulate matter control measures compiled by CARB and identify measures that are most appropriate to the region. BAAQMD reviewed this list and adopted a particulate matter implementation schedule on November 16, 2005. The BAAQMD staff report along with comments on the report focused mainly on wood smoke issues. Of the 103 measures compiled by CARB, BAAQMD proposed implementing four of the measures. Many of the measures were either similar to measures already adopted by BAAQMD or the benefit of the measure would not be significant. Ten measures that target wood burning were identified for further study. These include rulemaking that could prohibit installation of open fireplaces or wood burning stoves that do not meet current EPA standards. One measure could prohibit wood burning on certain nights. BAAQMD identified additional particulate matter reduction efforts that are being implemented immediately. These include efforts aimed at characterizing and controlling wood smoke. BAAQMD plans to enhance monitoring at the neighborhood level and focus more on controlling wood smoke. One measure implemented immediately lowered the forecasted air quality index threshold used to make Spare the Air Tonight alerts and step up enforcement when complaints regarding wood smoke are received. SB 656 requires CARB to prepare a report by 2009 that describes actions taken to fulfill the requirements of the legislation as well as recommendations for further actions to assist in achieving the State particulate matter standards.

A key element in air quality planning is to make reasonably accurate projections of future human activities that are related to air pollutant emissions. Most important is vehicle activity. The BAAQMD uses population projections made by the Association of Bay Area Governments and vehicle use trends made by the Metropolitan Transportation Commission to formulate future air pollutant emission inventories. The basis for these projections comes from cities and counties. In order to provide the best plan to reduce air pollution in the Bay Area, accurate projections from local governments are necessary. When individual projects are not consistent with these projections, they cumulatively reduce the effectiveness of air quality planning in the region.

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5 *Bay Area 2005 Ozone Strategy*, Metropolitan Transportation Commission, Bay Area Air Quality Management District, and Association of Bay Area Governments, January 4, 2006.

6 *Bay Area 2000 Clean Air Plan*, Bay Area Air Quality Management District, December 20, 2000.

BUFFER ZONES

The BAAQMD recommends that general plans include buffer zones to separate sensitive receptors from sources of air toxic contaminants and odors. In April 2005, CARB released the final version of the *Air Quality and Land Use Handbook*, [7] which is intended to encourage local land use agencies to consider the risks from air pollution prior to making decisions that approve the siting of new sensitive receptors (e.g., schools, homes or daycare centers) near sources of air pollution. Unlike industrial or stationary sources of air pollution, siting of new sensitive receptors does not require air quality permits, but could create air quality problems. The primary purpose of the handbook is to highlight the potential health impacts associated with proximity to common air pollution sources, so that those issues are considered in the planning process. CARB makes recommendations regarding the siting of new sensitive land uses near freeways, truck distribution centers, dry cleaners, gasoline dispensing stations, and other air pollution sources. These "advisory" recommendations, summarized in **Exhibit 4.3-4**, are based primarily on modeling information and may not be reflective entirely of conditions in Marin County. Siting of new sensitive land uses within these recommendation distances may be possible, but only after site-specific studies are conducted to identify the actual health risks. CARB acknowledges that land use agencies have to balance other siting considerations such as housing and transportation needs, economic development priorities and other quality of life issues.

Exhibit 4.3-4
CARB Recommended Setback Distances for Common Sources of Toxic Air Contaminants

Source Type	*Recommended Buffer Distance*
Freeways and busy arterial roadways	500 feet
Distribution Centers with 100 or more daily truck trips or 40 daily truck trips that use refrigeration units	1,000 feet
Dry cleaners (onsite dry cleaning)	300 feet for any dry cleaning operation. At least 500 feet for operations with two or more machines.
Gasoline stations	50 feet for typical gas stations. Up to 300 feet for large gas stations.

Source: Air Quality and Land Use Handbook: A Community Health Perspective, California Environmental Protection Agency and California Air Resource Board, April 2005.

GREENHOUSE GAS EMISSIONS

As a part of the Countywide Plan Update, Marin County prepared a report on greenhouse gas emissions. Existing greenhouse gas emissions are described in the *Greenhouse Gas Emissions Analysis Report*, June 2003. This report is included in **Appendix 1** to the Draft EIR, incorporated by reference and summarized below.

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[7] *Air Quality and Land Use Handbook: A Community Health Perspective*, California Environmental Protection Agency and the California air Resources Board, April 2005.

The greenhouse gases analyzed in this report included carbon dioxide, methane, nitrous oxide, and various hydrofluorcarbons.[8] The levels of the emissions are reported in equivalent carbon dioxide (eCO2) units. Converting all emissions to carbon dioxide units allows for comparison between greenhouse gases of varying strengths. For instance, methane is 21 times more powerful than carbon dioxide in its capacity to trap heat. Therefore, one ton of methane is equal to 21 tons of carbon dioxide.

Exhibit 4.3-5 shows the tons of greenhouse gas emissions in Marin County for 1990 and 2000.

Exhibit 4.3-5
Countywide Greenhouse Gas Emissions

Location	***1990***	***2000***
	Greenhouse Gas Emissions (tons)	
Unincorporated Area	617,562	639,741
Incorporated Area	2,237,162	2,473,825
Total	2,634,003	3,113,565

Source: Marin County Community Development Agency

Greenhouse gas emissions (eCO2) increased approximately 18 percent from 1990 to 2000, from 2.6 million tons to 3.1 million tons. In 2000, the unincorporated area of Marin County accounted for approximately 21 percent of greenhouse gas emissions in the county.

By percentage, the transportation sector is the largest contributor to green house gas emissions, followed by residential and commercial energy use.

8 The hydrofluorocarbons are HFC-23, HFC-125, HFC-134a, HFC-152a, CF_4, C_2F_6, and SF_6.

Air Quality – Significance Criteria

The Bay Area Air Quality Management District (BAAQMD) has developed guidelines and thresholds of significance for local plans. Inconsistency with the most recently adopted Clean Air Plan (CAP) is considered a significant impact. According to the BAAQMD, the following criteria must be satisfied for a local plan to be determined to be consistent with the CAP and not have a significant air quality impact: [9]

- The local plan must be consistent with the CAP population and Vehicle Miles Traveled (VMT) assumptions. This is demonstrated if the population growth over the planning period will not exceed the values included in the current CAP and the rate of increase in VMT is equal to or lower that the rate of increase in population;

- The local plan demonstrates reasonable efforts to implement the Transportation Control Measures (TCMs) included in the CAP that identify cities as implementing agencies; and

- For local plans to have a less than significant impact with respect to potential odors and / or toxic air contaminants, buffer zones must be established around existing and proposed land uses that would emit these air pollutants. Buffer zones to avoid odors and toxics impacts must be reflected in local plan policies, land use maps, and implementing ordinances.

Additionally, based on the findings of the Initial Study and the County's Appendix N *Criteria for Significance*, the project would have a significant air quality impact if it would:

> Create localized areas where concentrations of air pollutants or contaminants would exceed ambient air quality standards or present a significant risk resulting in exposure of sensitive receptors to substantial pollutant concentrations.

In regard to greenhouse gas emissions the project would have a significant impact if it would:

- Result in an increase in greenhouse gas emissions over existing levels.

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9 *BAAQMD CEQA Guidelines*, Bay Area Air Quality Management District, April 1996 (Revised December 1999).

Air Quality – Impacts and Mitigation Measures

Impact 4.3-1 Inconsistency with Clean Air Plan

The Draft 2005 CWP Update would not be consistent with the BAAQMD Thresholds of Significance since projected VMT in Marin County would increase at a faster rate than population. This would be a significant impact.

A key element in air quality planning is to make reasonably accurate projections of future human activities that are related to air pollutant emissions. When the *Bay Area 2005 Ozone Strategy* [10] was developed for the Bay Area it utilized the most recent projections developed by the Association of Bay Area Governments (ABAG) and vehicle activity projected by the Metropolitan Transportation Commission (MTC). These projections are based on the most recent projections using land use designators developed by cities and counties through the General Plan process. The *Bay Area 2005 Ozone Strategy* is the most recent and most comprehensive plan in terms of attaining and maintaining air quality standards for ozone. The *2001 Ozone Attainment Plan* is based on slightly older regional projections and does not address the more stringent requirements of the California Clean Air Act.

Implementation of clean air planning efforts described above would aid in efforts to reduce PM_{10} and $PM_{2.5}$ throughout the region. In addition, the BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM_{10} and $PM_{2.5}$ emissions (e.g., Spare the Air Program). SB 656 requires further action to reduce public exposure to PM_{10} and $PM_{2.5}$. Efforts identified by the BAAQMD in response to SB656 are primarily targeting reductions in wood smoke emissions and adoption of new rules to further reduce NOx and particulate matter from internal combustion engines and reduce particulate matter from commercial charbroiling activities. NOx emissions contribute to ammonium nitrate formation that resides in the atmosphere as particulate matter.

Population and vehicles miles traveled (VMT) projections are shown in **Exhibit 4.3-6**. The population of unincorporated Marin County would grow with development consistent with the *Draft 2005 CWP Update*. While population projections are available for unincorporated portions of Marin County, VMT projections are only available for the entire county. Population projections are based on full buildout of the *Draft 2005 CWP Update* assuming an average household size of 2.35 people. The *Draft 2005 CWP Update* projects 121,847 housing units countywide (see **Exhibit 3.0-14**). This number of housing units would equate to a countywide population of 286,340. [11] ABAG projections indicate a 2030 population of 283,100 people, so the *Draft 2005 CWP Update* would result in population that slightly exceeds ABAG projections. The increase in population from 2005 to 2030 would be 13.0 percent. MTC predicts that VMT associated with the ABAG population projections would increase by 11.6 percent over the existing conditions, which would not exceed the rate of population growth. [12] However, travel forecasts prepared by Marin County for the *Draft 2005 CWP*

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[10] *Bay Area 2005 Ozone Strategy*, Metropolitan Transportation Commission, Bay Area Air Quality Management District, and Association of Bay Area Governments, January 4, 2006.

[11] 121,847 housing units times an average of 2.35 persons per housing unit equals 286,340 people.

[12] The MTC projects average weekday daily VMT for Marin County in 2030 to be 7,405,400. Information accessed online at http://www.mtc.ca.gov/maps_and_data/datamart/stats/vmt.htm, May 2006.

Update indicate a VMT increase of approximately 26 percent [13] for the 2030 population forecasted by the *Draft 2005 CWP Update* and ABAG. [14] This increase in VMT would exceed the rate of population growth in Marin County.

Exhibit 4.3-6
Projected Populations and VMT Growth in Marin County

General Plan Alternative	Total Housing Units	Population	Percent Growth 2005 – 2030	Daily VMT	Percent Growth 2005-2030
Existing	105,690	253,341 [a]	--	7,003,560	
Draft 2005 CWP Update	121,847	286,340 [b]	13.0	Scenario 1 8,809,258 Scenario 2 8,827,123 Scenario 3 8,823,921	25.8 26.0 26.0
No Project (*1994 CWP*)	121,847	286,340	13.0	8,860,900	26,5

a Population estimate for January 1, 2006. State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2006, with 2000* Benchmark, Sacramento, California, May 2006.

b Future population based on County projection of 2.35 persons per household.

Sources: Marin Travel Model and Nichols•Berman.

The *Draft 2005 CWP Update* contains numerous policies and programs that, if adopted and implemented, would act to help reduce motor vehicle use. This would reduce the rate of vehicle miles traveled from trips in Marin County. In addition, the *Draft 2005 CWP Update* contains other policies that would reduce air pollution associated with energy usage, offsetting air pollution emitted from increased population and vehicle travel in Marin County.

The Atmosphere and Climate section of the Natural Systems & Agriculture Element describe goals, policies and programs with respect to air quality. These policies and programs are intended to reduce air pollution that affects air quality at all levels; i.e., locally, regionally and globally.

Policies and programs supporting Goal **AIR-1** would help improve local and regional air quality. These policies would require that all projects be evaluated in accordance with *BAAQMD CEQA guidelines* and regional agencies are notified for their input on air quality issues. This would allow for agency input into project mitigation measures designed to reduce air pollution and VMT.

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13 The 2030 VMT would vary slightly between the three *Draft 2005 CWP Update* scenarios.

14 The VMT increase based on the Marin Travel Model completed for the *Draft 2005 CWP Update* by the Marin County Department of Public Works.

Policies and programs supporting Goal **AIR-3** would implement Clean Air Plan transportation control measures (TCMs) to improve air quality. TCMs are intended to reduce vehicle trips and vehicle travel distances. The *Draft 2005 CWP Update* policies and programs that improve air quality from implementing TCMs are described in greater detail under *Impact 4.3-2 Inconsistency with Clean Air Plan Transportation Control Measures*.

The County would continue to participate in regional air quality programs such as *Spare the Air* and *Cities for Climate Protection*. Spare the Air is a program intended to reduce air pollution emissions, including those from VMT, on days when unhealthy air quality conditions are forecasted. Goals **AIR-4** and **AIR-5** would address greenhouse gas emissions and climate change. Programs supporting these goals would also improve regional air quality. Greenhouse gas emissions would be reduced from energy usage, transportation (including reduced VMT) and agriculture.

Other Elements of the *Draft 2005 CWP Update* include goals and policies that would indirectly improve air quality from future development and redevelopment by reducing VMT. The Built Environment Element contains numerous policies and implementing programs that would encourage development in urban areas served by transit. Policy **CD-1.1** would concentrate urban development in the City-Centered Corridor where infrastructure and facilities (including transit) can be provided most efficiently. Policy **CD-2.3** would establishes a housing overlay designation to encourage construction of housing units to meet the need for workforce housing, low-income housing and special needs housing near commercial and transit. Policy **CD-2.5** would locate housing near activity centers where jobs, services and transit are available. Policies **CD-2.6**, **DES-2.1**, and **HS-3.14** would concentrate and promote commercial and dense residential development in areas with high transit accessibility. Goal **CD-3** would facilitate low-vehicle use employment opportunities by allowing and encouraging the creation of studios and workspaces for artist and craftspeople including live-workspaces (Policy **CD-3.1**) and encouraging businesses and public agencies to offer telecommuting as a work alternative. Policy **DES-3.1** would promote infill by encouraging the development of vacant and underutilized parcels consistent with the neighborhood character and Policy **DES-3.2** would promote green spaces such as high-quality community plazas, gardens and neighborhood parks. Locating homes near jobs, services, recreation, and transit reduces VMT.

Policies supporting Goal **HS-3** would implement "smart" and sustainable development principles to meet the housing needs in the county. This would include a focus of providing workforce housing (Policies **HS-3.2**, **HS-3.3**, and **HS-3.4)**. The addition of workforce housing would reduce VMT associated with worker commute travel.

The Transportation section of the Built Environment Element includes numerous policies to expand pedestrian and bicycle facilities and access. Policies **TR-2.1** through **TR-2.4** would be supported by 14 programs that include incorporation of new facilities and supporting efforts to renovate and reopen train tunnels to accommodate bikes and pedestrians. Policy **TR-3.1** would support expansion of local bus service and Policy **TR-3.2** specifically would promote new rail service (i.e., SMART train) and a multi-use path that would follow that service. Program **TR-2.e** would put a high priority on obtaining funding to complete gaps in the North-South and East-West Bikeways.

The Energy and Green Building section of the Built Environment Element addresses energy conservation and green building standards. Although this would not reduce VMT, it would offset some of the air pollution generated by VMT through reduce emissions from electrical energy production and natural gas usage. Policy **EN-1.1** would integrate energy efficiency and conservation requirements in excess of State standards, while Policies **EN-1.2** and **EN-1.3** (and Policy **HS-2.5**) would encourage and promote energy efficiency and conservation. Policy **EN-1.4** would integrate energy efficiency and conservation into all County functions. Policies **EN-2.2** and **EN-2.3** would

promote the use of renewable energy (e.g., through installation of rooftop photovoltaics). Policies **EN-3.1** through Policy **EN-3.4** would integrate green building requirements into new development.

Many of the policies described above would support smart growth [15] and reduce VMT. However, VMT may still increase at a rate greater than population. The emissions of ozone precursor pollutants associated with the increased VMT could affect regional efforts to attain and maintain ambient air quality standards for ozone. Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative air quality impact.

Mitigation Measure 4.3-1 Implement Mitigation Measure 4.2-1 of *Impact 4.2-1 Increase in Vehicle Miles Traveled* to reduce VMT per person

Significance After Mitigation Even with Mitigation Measure 4.2-1 and the *Draft 2005 CWP Update* Policies, VMT may still exceed the rate of population growth, mostly because the predicted rate of VMT growth is so much higher than the rate of population growth. Therefore, this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the new policy and program as described in Mitigation Measure 4.2-1 as part of *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Marin County Department of Public Works would share responsibility for monitoring implementation.

Impact 4.3-2 Inconsistency with Clean Air Plan Transportation Control Measures

Draft 2005 CWP Update policies would not support all efforts to implement TCMs that are to be implemented by counties. This would be a significant impact.

Exhibit 4.3-7 lists the *Draft 2005 CWP Update* policies that are supportive of the Clean Air Plan Transportation Control Measures (TCMs). A description of each TCM is provided along with a listing of relevant *Draft 2005 CWP Update* policies and programs that would implement each measure.

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15 Smart growth is a term that is applied to development that reflects higher densities, mixed use, and a higher proportion of housing and employment growth in urban area, particularly near transit stations and along transit corridors, as well as in town centers. *Projections 2003*, Association of Bay Area Governments, page 40.

Exhibit 4.3-7
Transportation Control Measures(TCMs) Supported by the Draft 2005 CWP Update

Transportation Control Measure	***Description***	***Examples of Relevant Draft 2005 CWP Update Policies / Implementing Programs***
TCM #1 Support Voluntary Employer-Based Trip Reduction Programs	Provide assistance to regional and local ridesharing organizations; advocate legislation to maintain and expand incentives (e.g., tax deductions/credits)	Policy **AIR-3.1**, Program **AIR-3.a** Support Voluntary Employer-Based Trip Reduction by providing assistance to regional and local ridesharing organizations and advocating legislation to maintain and expand employer ridesharing incentives. Policy **AIR-4.1**, Program **AIR-4.b** Reduce Greenhouse Gas Emissions Resulting from Transportation. Increase clean-fuel use, promote transit oriented development and alternative modes of transportation, and reduce travel demand.
TCM #9 Improve Bicycle Access and Facilities	Encourage local jurisdictions to develop safe and convenient bicycle land and route networks, provide secure bike racks and storage, and require bicycle access and amenities as conditions of approval of development projects Explore innovative bicycle programs, such as "station bike" or bike sharing programs at transit stations, downtowns and activity centers	Policy **TR-2.1** would improve the bicycle and pedestrian network Policy **TR-2.2** would require new developments to provide new bicycle and pedestrian facilities, including new trails and pathways. Policy **TR-2.3** and Policy **TR-2.4** would seek funding opportunities to construct new pedestrian and bicycle facilities and connect to urban areas and parklands. Policy **TR-3.5** would support bicycle access to all transit systems and ensure that they provide bicycle storage.
TCM #10 Youth Transportation	Encourage walking and bicycling to school through the Safe Routes to Schools Programs	Policy **CD-2.5** would locate housing near jobs, transit, schools and shopping areas. Policy **TR-2.1** and **TR-2.2** are supported by Programs **TR-2j** and **TR-2k** that would support the Safe Routes to School program through funding or incorporation of new projects to ensure safe walking and bicycling routes to schools.

Transportation Control Measure	***Description***	***Examples of Relevant Draft 2005 CWP Update Policies / Implementing Programs***
TCM #12 Arterial Management Measures	Coordinate the timing of an additional signals and continue updating timing plans	Policy **AIR-3.1** and Program **AIR-3.d** would implement BAAQMD Clean Air Plan TCMs and Program **AIR-3.e** to improve arterial management Policy **TR-3.6** would include efforts to reduce weekend traffic congestion due to park and recreation visitors.
TCM #15 Local Clean Air Policies and Programs	Develop financial and other incentives and technical assistance to encourage innovative parking strategies such as reduced parking, parking fees, parking cash-out, shared parking and other parking programs Pursue legislative changes to remove barriers and provide incentives for smart growth Promote carsharing as a way to reduce parking requirements	Policy **AIR-3.1**, Program **AIR-3.b** would utilize clean vehicle technology by promoting new technologies and other incentives, such as allowing zero or partial zero emissions vehicles in carpool lanes and replacing fleet vehicles with clean vehicles. Program **TR-1.c** of Policies **TR-1.1** through **TR-1.7** would encourage the use of car sharing and provides incentives to employers, commuters, and recreational users to support this alternative. Policy **TR-4.3** would encourage transit operators to switch to zero or low-emission transit vehicles.
TCM #19 Improve Pedestrian Access and Facilities	Review and comment on general/specific plan policies to promote development patterns that encourage walking and circulation policies Emphasize pedestrian travel and encourage amending zoning ordinances to include pedestrian-friendly design standards	See Policies supporting TCM #9. Policy **CD-1.1** would concentrate urban development in City-Centered Corridor Policy **CD-2.3** would encourage construction of housing for the workforce, low-income or special-needs in the City Centered Corridor near transit employment opportunities and services. Policy **CD-2.5** would locate housing near jobs, transit, schools and shopping areas Policy **CD-2.6** and **DES-2.1** would focus intensive (commercial or high-density residential) developments at nodes served by transit and discourages strip development.

Transportation Control Measure	***Description***	***Examples of Relevant Draft 2005 CWP Update Policies / Implementing Programs***
TCM #19 cont. Improve Pedestrian Access and Facilities		Policy **CD-6.1** would seek city review of development proposed adjacent to urban areas Policy **DES-1.1** would address design issues that would encourage walking and bicycling Policy **HS-3.11** would provide incentives for housing development located within easy walking distance of transit stops Policy **HS-3.12** would designate transit oriented housing development locations Policy **HS-3.14** would promote mixed-use developments.
TCM #20 Promote Traffic Calming	Implement traffic calming projects such as: Pedestrian-exclusive streets Residential and neighborhood traffic calming measures Arterial and major route traffic calming measures Include traffic calming strategies in the transportation and land use elements of general and specific plans Encourage area-wide traffic calming plans and programs Include traffic strategies in capital improvement programs	Goal **DES-5** would design automobile use areas to comfortably accommodate travel by pedestrians and bicyclists. Policy **DES-5.1** would ensure that roadways, parking areas, and pedestrian and bike movement are functionally and aesthetically appropriate.

Source: Illingworth & Rodkin, Inc.

The proposed policies and programs generally support and reasonably implement the applicable Clean Air Plan TCMs. However, there is no policy that would directly address parking strategies to reduce vehicle travel (TCM #15). Furthermore, based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures*** some of the programs listed in **Exhibit 4.3-7** cannot be relied upon to reduce this impact. [16] Therefore, this would be a significant project impact.

Mitigation Measure 4.3-2(a) Add a new program to the Design Section of the Built Environment Element as follows:

> **DES-2.(new)** Require new office developments with more than 50 parking spaces to offer a *Parking "Cash-Out" Program*. [17]

Mitigation Measure 4.3-2(b) It would be necessary to identify a funding source, make a higher priority or implemented sooner Programs **AIR-3.a** (funding source, higher priority, implement sooner), **AIR-3.d** (higher priority), **AIR-3.e** (higher priority), **TR-2.g** (higher priority, implement sooner), **TR-2.k** (higher priority, implement sooner), and **TR-1.c** (funding sources, higher priority, implement sooner).

Significance After Mitigation Mitigation Measure 4.3-2 together with the *Draft 2005 CWP Update* policies and programs would reasonably implement TCM #15 of the most recent Clean Air Plan. This measure along with other policies and implementing programs would reasonably implement all of the TCMs listed in the Clean Air Plan that cities and counties are listed as implementing agencies. This impact would be reduced to a less-than-significant level.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised programs and the new program as a part of *Draft Marin Countywide Plan 2005*. The Marin County Community Development Agency would be responsible to monitor its implementation.

Impact 4.3-3 Buffer Zones for Potential Source of Odor/Toxics

Land use maps associated with the Draft 2005 CWP Update do not propose new sources of odors or toxic air contaminants. However, they show sensitive land uses near sources of odors and toxic air contaminants. This would be a significant impact.

According to the *BAAQMD CEQA Guidelines*, for a general plan to have a less-than-significant impact with respect to odors and/or toxic air contaminants buffer zones must be established around existing and proposed land uses that would emit these air pollutants. Buffer zones to avoid odors and toxics impacts must be reflected in local plan policies, land use maps, and implementing ordinances.

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[16] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[17] Such a program would require employers to have a program that either pays employees for not using their parking spaces or provides benefits, such as vouchers that can be used to purchase transit passes. Information on parking cash-out programs can be obtained from *http://www.arb.ca.gov/planning/tsaq/cashout/cashout.htm.*

The *Draft 2005 CWP Update* includes policies and programs to reduce exposure of existing and future sensitive receptors from existing and future sources of odors and air toxic contaminants. Policy **AIR-2.1** would consider potential air pollution and odor impacts from land uses that may emit pollution and / or odors when locating (a) air pollution point sources, and (b) residential and other pollution-sensitive land uses in the vicinity of air pollution point sources. Program **AIR-2.a** would require a separation between air pollution point sources and other land uses consistent with BAAQMD guidelines.

Policy **AIR-2.1** and Program **AIR-2.a** would only address point sources of air pollution and would not protect sensitive land uses such as residences from mobile source emissions. Trucks, buses and some smaller vehicles using freeways emit diesel particulate matter (DPM), which is a known toxic air contaminant. The only two roadways in Marin County that would have the potential to cause a significant health risk for sensitive land uses are U.S. 101 and Interstate 580. Other roadways in Marin County do not have high enough truck volumes to cause a significant health risk for residents of new housing. New freeways are not proposed in Marin, but new housing or other sensitive land uses may be located close enough to existing freeways to result in unhealthy exposures to DPM.

A screening analysis of future DPM exposure and associated health effects was conducted. The health impacts associated with the DPM exhaust are expressed in terms of increased risk of contracting cancer by individuals who reside for extended periods near the sources, such as freeways. This analysis involved the development of DPM emissions for traffic on U.S. 101 and 1-580 using the EMFAC2002 emission factor model with defaults for Marin County. The EMFAC2002 results were then adjusted to the traffic mix on U.S. 101 and 1-580 reported by Caltrans. [18] Emission factors were input to the Ca13qher dispersion model that is acceptable to the BAAQMD for this type of analysis.

Modeled concentrations were calculated for various distances from the edge of the freeway. The maximum individual cancer risks were computed using the BAAQMD recommended cancer risk factor of 3×10^{-4} cancer cases per $\mu g/m^3$ of diesel particulate matter, which are based on "best estimates" of plausible cancer potencies as determined by the California Office of Environmental Health Hazard Assessment. The future cancer risk posed by traffic on freeways in Marin County is expressed in terms of distance from the edge of the travel lanes. A risk of less than ten in one million is considered to be less than significant under current *BAAQMD CEQA Guidelines*. It should be noted, as discussed previously, that emission rates of DPM from traffic are predicted to decrease substantially in the future.

An analysis of existing DPM exposures indicates that significant health risks could occur at distances of up to 500 feet from U.S. 101 and Interstate 580. The actual distance would probably be less since the analysis employed screening meteorological conditions that usually result in higher concentrations. U.S. EPA and the California Air Resources Board (CARB) have required cleaner engine technologies and diesel fuel reformulation that are reducing the DPM emissions from these vehicles. The effect of these lower emissions rates reduces the area near freeways where significant DPM exposures would occur. For sensitive receptors, such as residential uses, a significant impact is considered a ten in one million chance of contracting cancer where the receptor is exposed to the source almost 24 hours per day for 70 years. **Exhibit 4.3-8** shows the distances where significant exposures to DPM could occur under *Draft 2005 CWP Update* buildout conditions. The procedure used to develop the cancer risk for exposure to DPM is described in the *Air Quality Background Report*.

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[18] Based on *2004 Average Annual Daily Truck Traffic on the California State Highway System – http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/*

Exhibit 4.3-8
Summary of Future Cancer Risk along Marin County Freeway Segments

Freeway Segment	***Cancer Risk at Receptor Distance from Freeway Edge (per million persons)***		
	50 ft.	***100 ft.***	***200 ft.***
U.S. 101 Southern Marin	4.9	3.8	2.7
U.S. 101 Central Marin	14.0	10.8	7.6
U.S. 101 Northern Marin	11.8	9.2	6.4
I-580 east of San Rafael	13.9	10.5	7.3

Source: Illingworth and Rodkin, Inc.

Significant cancer risks (i.e., risks ≥ten in one million) would not extend much beyond the right-of-way of U.S. 101 in southern Marin County, because there would be a relatively low volume of trucks using that freeway. The cancer risk in central and northern Marin County would equal or exceed ten cases in one million at a distance of about 100 to 150 feet from the roadway edge. Residential development planned under the *Draft 2005 CWP Update* could occur within the buffer distances reported above, which could result in significant health risks from DPM exhaust.

The *Draft 2005 CWP Update* defines four environmental corridors and focuses new housing in the City-Centered Corridor. This would put new sensitive receptors closer to sources of toxic air contaminants, primarily DPM from traffic. The Housing Overlay Designation (See **Map 3-2.a** and **Map 3-2b** in *Draft 2005 CWP Update*) indicate the potential for housing near U.S. 101 in three general areas: (1) housing could be located in the Las Gallinas Valley planning area close to U.S. 101 near Lucas Valley Road, (2) housing could be provided in the Richardson Bay planning area at Strawberry Village near U.S. 101, and (3) housing could be located near U.S. 101 in Marin City. Potential housing in the Strawberry Village area and Marin City would likely be exposed to risks that are acceptable (less than ten in one million). Without proper setbacks, new sensitive receptors located near the freeways of central and northern Marin County would be exposed to significant health risks from DPM emitted along U.S. 101.

The exposure of new sensitive receptors to unhealthy levels of DPM would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative impact. The following mitigation would be required to reduce project related and cumulative impacts.

Mitigation Measure 4.3-3(a) Revise Policy **AIR 2-1** of the Natural Systems & Agriculture Element as follows:

> **AIR-2.1** *Buffer Emission Sources and Sensitive Land Uses*. Consider potential air pollution and odor impacts from land uses that may emit pollution and/or odors when locating (a) air pollution ~~point~~ sources, and (b) residential and other pollution-sensitive land users in the vicinity of air pollution ~~point~~ sources (which may include freeways, manufacturing, extraction, hazardous materials storage, landfill food processing, wastewater treatment, and other similar uses).

Mitigation Measure 4.3-3(b) Revise Program **AIR-2.a** of the Natural Systems & Agriculture Element as follows:

> **AIR-2.a** *Require Separation Between* *Air Pollution* ~~*Point*~~ *Sources and Other Land Uses*. Only allow (a) emission ~~point~~ sources or (b) other uses in the vicinity of air pollution or odor ~~point~~ sources if the minimum screening distances between sources and receptors established in the BAAQMD CEQA Guidelines can be met, unless detailed project-specific studies demonstrate compatibility with adjacent uses despite separations that do not meet the screening distance requirements.

Mitigation Measure 4.3-3(c) Add a new program to the Natural Systems & Agriculture Element as follows:

> **AIR-2.(new)** *Health Risk Analysis for Sensitive Receptors*. Require that projects involving sensitive receptors proposed within 150 feet of freeways shall include an analysis of the potential health risks. Mitigation measures which comply with adopted standards of the BAAQMD for control of odor / toxics for sensitive receptors shall be identified to reduce these risks to acceptable levels.

Significance After Mitigation Adoption and implementation of Mitigation Measures 4.3-3(a), 4.3-3(b) and 4.3-3(c) would ensure appropriate buffers between sources of air pollution or odors and sensitive receptors are maintained. The project impact would be reduced to a less-than-significant and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the policies and programs described in Mitigation Measures 4.3-3(a), 4.3-(b), and 4.3-(c) as part of the *Draft 2005 CWP Update*. The Marin County Community Development Agency would be responsible for monitoring their implementation.

Impact 4.3-4 Carbon Monoxide Concentrations Along Roadways

Traffic increases under the Draft 2005 CWP Update would result in carbon monoxide concentrations that would be below ambient air quality standards at the most congested intersections. This would be a less-than-significant impact.

Carbon monoxide emissions from traffic would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Since the early 1990s, carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area. As a result, the region has been designated as attainment for the standard.

The worst study roadway links and intersections in the county, which include the highest traffic volumes and high levels of congestion, were modeled to assess roadside carbon monoxide concentrations. The traffic-generated emissions of CO were predicted using the Caline4 line source dispersion model, as described above (also see *Air Quality Background Report*). These intersections along with the modeled concentrations are shown in **Exhibit 4.3-9**.

Exhibit 4.3-9
Modeled Carbon Monoxide Levels

Roadway Segment Description	***Existing (2005) Modeled Level*** [a] ***(parts per million [ppm])***		***Future (2030) Modeled Level (parts per million [ppm])***	
	1-Hour	***8-hour***	***1-Hour***	***8-hour***
U.S. 101 n/o I-580	7.4	4.9	4.8	3.1
1-580 near the Richmond-San Rafael Bridge	5.6	3.6	4.3	2.8
Sir Francis Drake Blvd. West of U.S. 101	6.8	4.5	4.4	2.8
State Route 1 near Almonte Blvd.	5.7	3.7	4.3	2.8
Tiburon Blvd. and Redwood	9.1	6.1	4.9	3.1
2nd St. and Grand Ave	8.4	5.6	4.8	3.1
National Ambient Air Quality Standard	35	9.0		
California Ambient Air Quality Standard	20	9.0		

a. Includes background level of 4 ppm for 1-hour and 2.5 ppm for 8-hour.

Source: Illingworth and Rodkin, Inc. 2006.

Traffic generated by land uses and development consistent with the *Draft 2005 CWP Update* would increase carbon monoxide levels along roadways. Roadways and intersections affected by the greatest traffic changes were modeled. Although levels may increase slightly along these roadways, the overall concentrations would be well below health-based ambient air quality standards. Traffic associated with land uses and development consistent with the *Draft 2005 CWP Update* would not cause a significant air quality impact in terms of increase pollutant concentrations along roadways.

The county's worst intersections, in terms of roadside air pollutant concentrations, have levels that are currently below ambient air quality standards. The concentrations are anticipated to decrease substantially in the future with improvements to exhaust systems and reformulated fuels. As a result, the impact on local air quality resulting from implementation of the *Draft 2005 CWP Update* would be less-than-significant and would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.3-4 None required

Impact 4.3-5 Fugitive Dust Associated with Construction Projects
Construction associated with land uses and development consistent with the Draft 2005 CWP Update would result in emissions of dust and possibly toxic air contaminants. However, existing regulations and air quality policies and programs contained in the Draft 2005 CWP Update would reduce this to a less-than-significant impact.

Construction of individual projects would involve activities that result in air pollutant emissions. Construction activities such as demolition, grading, construction worker travel to and from project sites, delivery and hauling of construction supplies and debris to and from the project site, and fuel

combustion by on-site construction equipment would generate pollutant emissions. These construction activities would temporarily create emissions of dust, fumes, equipment exhaust, and other air contaminants. Dust emissions can lead to both nuisance and health impacts. PM_{10} is the pollutant of greatest concern that is emitted from construction, particularly during site preparation and grading. PM_{10} emissions from construction can vary daily, depending on various factors, such as the level of activity, type of construction activity taking place, the equipment being operated, weather conditions, and soil conditions. The BAAQMD has identified a set of feasible PM_{10} control measures for construction activities. According to the *BAAQMD CEQA Guidelines,* [19] if all of these control measures are implemented, then air pollutant emissions from construction activities would be considered a less than significant impact.

In addition, the BAAQMD and CARB have regulations that address the handling of hazardous air pollutants such as lead and asbestos. Lead and asbestos emissions could occur from demolition activities and asbestos emissions could occur from disturbance of soils with naturally occurring asbestos (found in parts of the county). BAAQMD rules and regulations address the both the handling and transport of these contaminants. An air toxic control measure adopted by CARB (California Code of Regulations Title 17, Section 93105) is enforced by the BAAQMD. The measure requires regulated operations engaged in road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas where naturally occurring asbestos is likely to be found, to employ the best available dust mitigation measures in order to reduce and control dust emissions. The BAAQMD shall be consulted prior to handling materials that contain hazardous contaminants such as lead or asbestos.

Policies **AIR-1.2** and **AIR-1.3** would require that projects meet air quality standards and impacts are mitigated. Specifically, Program **AIR-1.b** would require that new projects are evaluated in accordance with the *BAAQMD CEQA Guidelines* and **AIR-1.g** would require reasonable and feasible control measures for construction and agricultural activities, which include feasible PM_{10} control measures recommended by the BAAQMD. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Programs **AIR-1.b** and **AIR-1.g** would be implemented in a timely manner and could be relied upon to reduce this impact. [20]

The *Draft 2005 CWP Update* incorporates appropriate measures to control emissions from construction activity. These measures are listed in the *Air Quality Background Report* As a result, air quality impacts associated with construction projects would be less-than-significant and would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.3-5 None required

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19 *BAAQMD CEQA Guidelines,* Bay Area Air Quality Management District, April 1996 (Revised December 1999), page 14.

20 As described in **Figure 2-16** Atmosphere and Climate Program Implementation in the *Draft CWP Update*.

Impact 4.3-6 Increase in Greenhouse Gas Emissions

Land uses and development consistent with the Draft 2005 CWP Update would result in an increase in greenhouse gas emissions over existing levels. This would be a significant impact.

Human activities powered by fossil fuels such as coal, oil, and natural gas cause the waste product carbon dioxide (CO_2) to be released into the air. As discussed in the setting section the largest contributors to these emissions in Marin County are vehicular traffic and energy use in buildings. With land uses and development consistent with the *Draft 2005 CWP Update* there would be an increase in greenhouse gas emissions over existing levels. This is in part due to the projected increase in daily vehicle miles (VMT) traveled. As shown in **Exhibit 4.3-6**, daily VMT are expected to increase from an existing 7.0 million to approximately 8.8 million with the buildout of the *Draft 2005 CWP Update*.

Many different types of activities and programs can reduce Marin's carbon dioxide emissions. The most important ways to reduce emissions are through: [21]

- Changes in transportation; and
- Energy efficiency and conservation in both commercial and residential buildings.

The *Draft 2005 CWP Update* target for reducing greenhouse gas emissions countywide is 15 percent by 2015 and for County government sources 15 to 20 percent by 2015. To achieve these targets the *Draft 2005 CWP Update* contains numerous goals, policies and programs that, if adopted and implemented, would act to help minimize carbon dioxide and other greenhouse gas emissions. The Atmosphere and Climate section of the Natural Systems & Agriculture Element describes goals, policies and programs with respect to greenhouse gases. These policies and programs are intended to reduce greenhouse gas emissions countywide. Goal **AIR-4** would aim to prepare policies that promote efficient management and use of resources in order to minimize greenhouse gas emissions. Programs **AIR-4.a**, **AIR-4.b**, **AIR-4.c**, **AIR-4.d** and **AIR-4.e** would all be aimed at directly reducing greenhouse gas emissions resulting from energy use in buildings, from transportation, from waste disposal, from agriculture, and from government contributions.

As discussed in *Impact 4.3-1 Consistency with Clean Air Plan* numerous policies and programs in the *Draft 2005 CWP Update* would reduce the rate of vehicle miles traveled from trips in Marin County. For example, the Built Environment Element contains policies and implementing programs that would encourage development in urban areas served by transit. Policies supporting Goal **HS-3** would implement "smart" and sustainable development principles to meet the housing needs in the county. This would include a focus of providing workforce housing (e.g., Policies **HS-3.2**, **HS-3.3**, and **HS-3.4**). The addition of workforce housing would reduce VMT associated with worker commute travel. The Transportation section of the Built Environment Element includes numerous policies to expand pedestrian and bicycle facilities and access. Other policies and programs would promote energy efficiency and conservation in buildings. The Energy and Green Building section of the Built Environment Element addresses energy conservation and green building standards. Implementation of these policies and programs would reduce carbon dioxide and other greenhouse gases reduced emissions from electrical energy production and natural gas usage.

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[21] *Measuring Marin County's Ecological Footprint*, prepared for the County of Marin Community Development Agency by Justin Kitzes, M.S. and Steve Goldfinger, Ph.D., February 2006.

The *Marin County Greenhouse Gas Reduction Plan*[22] adopted by the Board of Supervisors in October 2006 set out policies to help achieve the County's greenhouse gas emissions targets. The target has been set to reduce greenhouse gas emissions 15 to 20 percent below 1990 levels by the year 2020 for internal government and 15 percent countywide. This target exceeds the State target for greenhouse gas emissions. The *Greenhouse Gas Reduction Plan* describes measures related to building, transportation, waste, and land use. Many of these actions and measures are supported by policies in the *Draft 2005 CWP Update* and some reflect activities that are already underway and could be expanded.

Exhibit 4.3-10 provides a list of various measures that would reduce greenhouse gas emissions in Marin County, some of which are included in the *Marin County Greenhouse Gas Reduction Plan*. The exhibit describes the various types of measure and a link to a specific program in the *Draft 2005 CWP Update*. The exhibit also provides an estimate of the yearly reduction in tons of CO_2 that could be achieved by individual measures.

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22 *Marin County Greenhouse Gas Reduction Plan*, Marin County Community Development Agency, October 2006.

Exhibit 4.3-10
Draft 2005 CWP Update Programs to Reduce Greenhouse Gas Emissions

Measure / Program	***Category***	***Draft 2005 CWP Update Programs***	***Emissions Reduction (tons of CO_2)***
Adopt strict residential or commercial energy code requirements	Buildings / Energy	**AIR-4.a**, **EN-1.a**, **EN-1.b**, **EN-1.c**, **EN-1.d**, **EN-3.a**, **EN-3.b**, **EN-3.f**, **EN-3.h**	-
Launch an "energy efficiency challenge" campaign for community residents	Buildings / Energy	**AIR-4.a**, **EN-1.e**	-
Install solar water heating at community swimming pool	Buildings / Energy	**AIR-4.a**, **EN-2.d**	-
Install energy-efficient cogeneration power production facilities	Buildings / Energy	**AIR-4.a**, **ED-2.d**, **EN-2.f**	-
Initiate a community biodiesel purchasing coop or fueling station	Transportation	**EN-2.d**	-
Utilize biodiesel in municipal fleet	Transportation	**AIR-3.b**, **AIR-3.c**, **TR-4.c**	-
Encourage local buses and taxis to convert to alternative fuels by subsidizing fuel conversion equipment costs	Transportation	**AIR-3.b**, **AIR-3.c**, **TR-4.c**	-
Install energy-efficient exit sign lighting	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	-
Improve water pumping energy efficiency	Buildings / Energy	**AIR-4.a**	
Install energy-efficient traffic lights	Buildings / Energy		-
Provide high school students with complementary bus tickets	Transportation	**TR-3.c**	-
Remove or replace woodstoves and fireplaces with EPA rated woodstoves	Buildings / Energy	**AIR-4.a**	-

Measure / Program	***Category***	***Draft 2005 CWP Update Programs***	***Emissions Reduction (tons of CO_2)***
Alternative Program: Carbon credits	Carbon Credits		-
Plant trees For Energy Savings	Land Use	**AIR-4.k**, **BIO-4.I**	-
Institute growth boundaries, ordinances or programs to limit suburban sprawl	Land Use	**AIR-4.l**, **AIR-4.m**, **OS-2.b**, **OS-2.c**, **OS-2.g**, **OS-2.h**, **CD-1.a**, **CD-1.b**	-
Enforce electric vehicle recharging facilities in new large parking facilities	Transportation		-
Produce electricity from agricultural waste	Waste / Recycling	**AIR-4.d**	633
Install new light rail systems	Transportation	**AIR-4.b**	82,000
Implement bus rapid transit or shuttle programs to SF	Transportation	**AIR-4.b**	29,800
Implement environmentally preferable purchasing program recycled paper, etc (energy efficient appliances are ignored here)	Waste / Recycling	**AIR-4.e**, **EC-1.i**, **EC-1.j**	36
Establish/expand recycling programs in municipal facilities	Waste / Recycling	**AIR-4.c**, **AIR-4.e**	48
Encourage telecommuting by community by offering services online or on the phone at reduced rates compared to in-person visits	Transportation	**AIR-4.b**, **TR-1.a**	3
Provide free bicycle loans for municipal staff use	Transportation	**AIR-4.b**	0
Implement green or reflective roofing	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.d**, **EN-2.f**	34
Limit idling of local transit buses and school buses	Transportation		21
Promote participation in a Green Business Program	Buildings / Energy	**EC-1.a**, **EC-1.k**	16

Measure / Program	***Category***	***Draft 2005 CWP Update Programs***	***Emissions Reduction (tons of CO_2)***
Perform energy-efficient lighting retrofits	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	22
Install energy-efficient street lights (e.g., high pressure sodium, LEDS)	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	182
Implement a form of community choice aggregation	Buildings / Energy	**EN-2.g**	294,165
Expand local or regional bus service in range and/or frequency	Transportation	**AIR-4.b**, **TR-3.a**	10,000
Offer a halogen torchiere lamp exchange to community members	Buildings / Energy	**AIR-4.a**	5
Offer an LED Christmas light trade-in to community members	Buildings / Energy	**AIR-4.a**	18
Purchase "green electricity" from solar, geothermal, wind, hydroelectric sources through green tags	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	4,260
Purchase "green electricity" from solar, geothermal, wind, hydroelectric sources through green tags	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	2,840
Purchase "green electricity" from solar, geothermal, wind, hydroelectric sources through green tags	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	1,420
Establish system for reuse or recycling of construction and demolition materials	Waste / Recycling	**EN-3.c**, **PFS-4.b**	30,000
Install solar panels on municipal facilities	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	736
Implement solid waste reduction program through creation of reuse facilities / programs	Waste / Recycling	**AIR-4.c**, **PFS-4.c**, **PFS-4.d**	33,000

Measure / Program	***Category***	***Draft 2005 CWP Update Programs***	***Emissions Reduction (tons of CO_2)***
Encourage community car-sharing (run a program as municipality/ support for-profits that give car-sharing services, e.g., Zipcar)	Transportation	**AIR-4.b**, **TR-1.c**	11,880
Install an anaerobic digester at the wastewater treatment facility	Waste / Recycling	**PFS-4.h**	3,200
Increase gas tax	Transportation		32,000
Promotion/informative campaign on 'How to Get Around'	Transportation	**AIR-4.b**, **TR-2.a**	319
Community energy efficiency rebate program	Buildings / Energy	**AIR-4.a**, **EN-1.e**, **EN-2.e**	830
Expand community bicycle infrastructure (e.g., dedicated bicycle lanes, additional bicycle parking spaces)	Transportation	**TR-2.b**, **TR-2.c**, **TR-2.d**, **TR-2.e**, **TR-2.g**, **TR-2.h**, **TR-2.I**, **TR-2.l**	400
Encourage car-pooling, telecommuting and the use of mass-transit by community members by billboard promotions	Transportation	**AIR-4.b**, **TR-1.a**, **TR-1.c**	159
Decrease average daily time street lights are on	Buildings / Energy		14
Encourage car-pooling or van-pooling by municipal employees	Transportation	**AIR-4.b**, **AIR-4.e**, **TR-1.c**	1,192
Establish/expand recycling programs in the community	Waste / Recycling	**AIR-4.c**, **PFS-4.d**	119,300
Perform heating, cooling and ventilation system retrofits (e.g., chillers, boilers, fans, pumps, belts, fuel-switching from electric to gas heating)	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**	48
Offer incentives for PV installations in the community	Buildings / Energy	**AIR-4.a**, **EN-2.e**	8,411

Measure / Program	***Category***	***Draft 2005 CWP Update Programs***	***Emissions Reduction (tons of CO_2)***
Produce electricity from recovered methane in local landfills	Waste / Recycling	**AIR-4.c**	5,300
Institute a lights-out-at-night policy	Buildings / Energy	**AIR-4.e**	28
Encourage telecommuting by municipal employees	Transportation	**AIR-4.b**, **TR-1.a**	48
Implement Tidal Power Project	Buildings / Energy	**AIR-4.a**, **EN-2.d**	446,408
Develop park and ride facilities	Transportation	**AIR-4.b**	16,400
Improve traffic signal synchronization / decrease stop rate and time	Transportation	**TR-2.k**	16,000
Offer prioritized parking for hybrid Cars	Transportation	**AIR-4.b**	4,615
Allow bikes on trains/busses	Transportation	**AIR-4.b**	191
Install occupancy sensors	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**	28
Expand the “safe routes to school” program	Transportation	**TR-2.b**, **TR-2.j**, **TR-2.k**	239
Foster downtown neighborhood development	Land Use	**CD-2.a**, **CD-2.b**, **CD-2.c**, **CD-2.e**, **CD-2.f**, **CD-2.g**, **CD-2.h**, **CD-3.a**	775
Install ENERGY STAR monitors	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	5
Install ENERGY STAR printers	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	3
Install ENERGY STAR copiers	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	2
Install ENERGY STAR water coolers	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	1
Implement a police on bicycles program	Transportation	**AIR-4.b**, **AIR-4.e**	15

Measure / Program	***Category***	***Draft 2005 CWP Update Programs***	***Emissions Reduction (tons of CO_2)***
Utilize fuel-efficient vehicles (e.g., scooters) for parking enforcement	Transportation	**AIR-4.b**, **AIR-4.e**, **TR-4.c**	31
Install energy-efficient vending machines	Buildings / Energy	**AIR-4.a**, **AIR-4.e**, **EN-1.j**, **EN-2.f**	11
Purchase fuel efficient (e.g., hybrid) and / or smaller fleet vehicles	Transportation	**AIR-4.b**, **AIR-3.c**, **AIR-3.c**, **AIR-4.e**, **TR-4.c**	173
		Total Projected CO_2 Reduction	***1,157,265***

Source: Marin Community Development Agency and International Council for Local Environmental Initiatives.

However, because of uncertainties pertaining to the timely and effective implementation of the proposed Countywide greenhouse gas reduction measures beyond the control of Marin County government this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative greenhouse gas emissions impact.

Mitigation Measure 4.3-6 In order to reduce project related and cumulative impacts the following mitigation would be required:

Mitigation Measure 4.3-6(a) Revise Program **AIR-4.f** of the Natural Systems & Agriculture Element as follows:

> **AIR-4.f** *Establish a Climate Change Planning Process*. Approve and begin implementation of the *Marin County Greenhouse Gas Reduction Plan*. Integrate *Marin County Greenhouse Gas Reduction Plan* ~~climate change planning and program implementation~~ into long range and current planning functions and other related agencies. Establish and maintain a process to implement, measure, evaluate, and modify implementing programs, using the Cities for Climate Protection Campaign as a model.

Mitigation Measure 4.3-6(b) Implement proposed State programs to reduce greenhouse gas emissions including the Renewable Portfolio Standards, California Fuel Efficiency (CAFÉ) standards and a carbon cap and trade programs.

Significance After Mitigation Implementation of the County's *Greenhouse Gas Reduction Plan*, the goals, policies, and programs of the *Draft 2005 CWP Update* and Mitigation Measures 4.3-6(a) and 4.3-3(b) and 4.3-3(c) should reduce the rate of increase in greenhouse gas emissions. It is uncertain whether greenhouse gas emissions would be reduced countywide to below existing levels within the timeframe of the Countywide Plan. This, therefore, would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the program described in Mitigation Measure 4.3-6(a) as part of the *Marin Countywide Plan 2005*. Implementation would be the responsibility of both Marin County and the Marin County incorporated

cities and towns. The Marin County Community Development Agency would be responsible for monitoring implementation. For mitigation measure 4.3-6(b), the California State Air Resources Board would be responsible for implementation and monitoring.

4.4 NOISE

4.4 NOISE

Noise – Environmental Setting

Existing noise conditions are described in the *Noise Technical Background Report*, April 2002, updated October 2005, which is included in **Appendix 1** to the Draft EIR. The background report is incorporated by reference and summarized below.

The noise environment in Marin County is dominated by transportation. Highway and roadway traffic affect the greatest number of people, followed by aircraft over-flights, localized stationary sources (e.g., San Rafael Rock Quarry and other smaller quarries), dog kennels, and other commercial facilities. The highest noise levels in the county are generated along U.S. 101. Noise levels are quietest in the more remote areas of West Marin. The following sections describe the existing noise environment of the county, with particular emphasis placed on locations where noise levels could be expected to increase in the future (i.e., along the major highways and thoroughfares in the county).

BACKGROUND INFORMATION ON NOISE

Noise is defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (i.e., frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its decibel level. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in **Exhibit 4.4-1**.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA.* All sound levels discussed in this report utilize the A-weighting scale. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in **Exhibit 4.4-2**. Because sound levels can vary markedly over a short period, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound / noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

Exhibit 4.4-1
Definitions of Acoustical Terms

Term	*Definitions*
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA $L_{eq[h]}$.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 PM to 10:00 PM and after addition of 10 decibels to sound levels in the night between 10:00 PM and 7:00 AM.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 PM and 7:00 AM.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Illingworth & Rodkin

Exhibit 4.4-2
Typical Noise Levels in the Environment

Common Outdoor Noise Source	***Noise Level (dBA)***	***Common Indoor Noise Source***
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing

Source: Illingworth & Rodkin

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within approximately plus or minus one dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within approximately plus or minus one to two dBA.

Since the sensitivity to noise increases during the evening and at night because excessive noise interferes with the ability to sleep, 24-hour descriptors were developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level, (CNEL)* is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (i.e., 7:00 PM - 10:00 PM) noise levels and a 10 dB addition to nocturnal (10:00 PM - 7:00 AM) noise levels. The *Day / Night Average Sound Level,* L_{dn}, is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

TRAFFIC NOISE

Exhibit 4.4-3 shows the ten locations in the county where long-term noise measurements were conducted in 2005. [1] **Exhibit 4.4-4** describes the site locations and presents the measured 24-hour average noise level (L_{dn}) at each location. These locations consisted of sites along highways, freeways, primary arterials, and major local streets; the principal sources of noise in the county. Noise levels at these locations are representative of noise levels along these thoroughfares and provide a baseline against which the noise generated under the *Draft 2005 CWP Update* can be assessed.

In general, the highest noise levels were measured either in the late morning hours (i.e., 7 AM to 11 AM) or the early evening hours (4 PM to 6 PM); during typical commute times. Based on a comparison of noise level data collected in 1987 with the data collected from revisiting the sites in 2001 and 2005, noise levels have not increased substantially throughout Marin County. Hourly noise pattern trends have also remained similar over the past 18 years. However, beginning in 2001, noise levels appear to increase earlier in the morning than in 1987. This could be due to more early morning traffic and / or a shift in commute trends.

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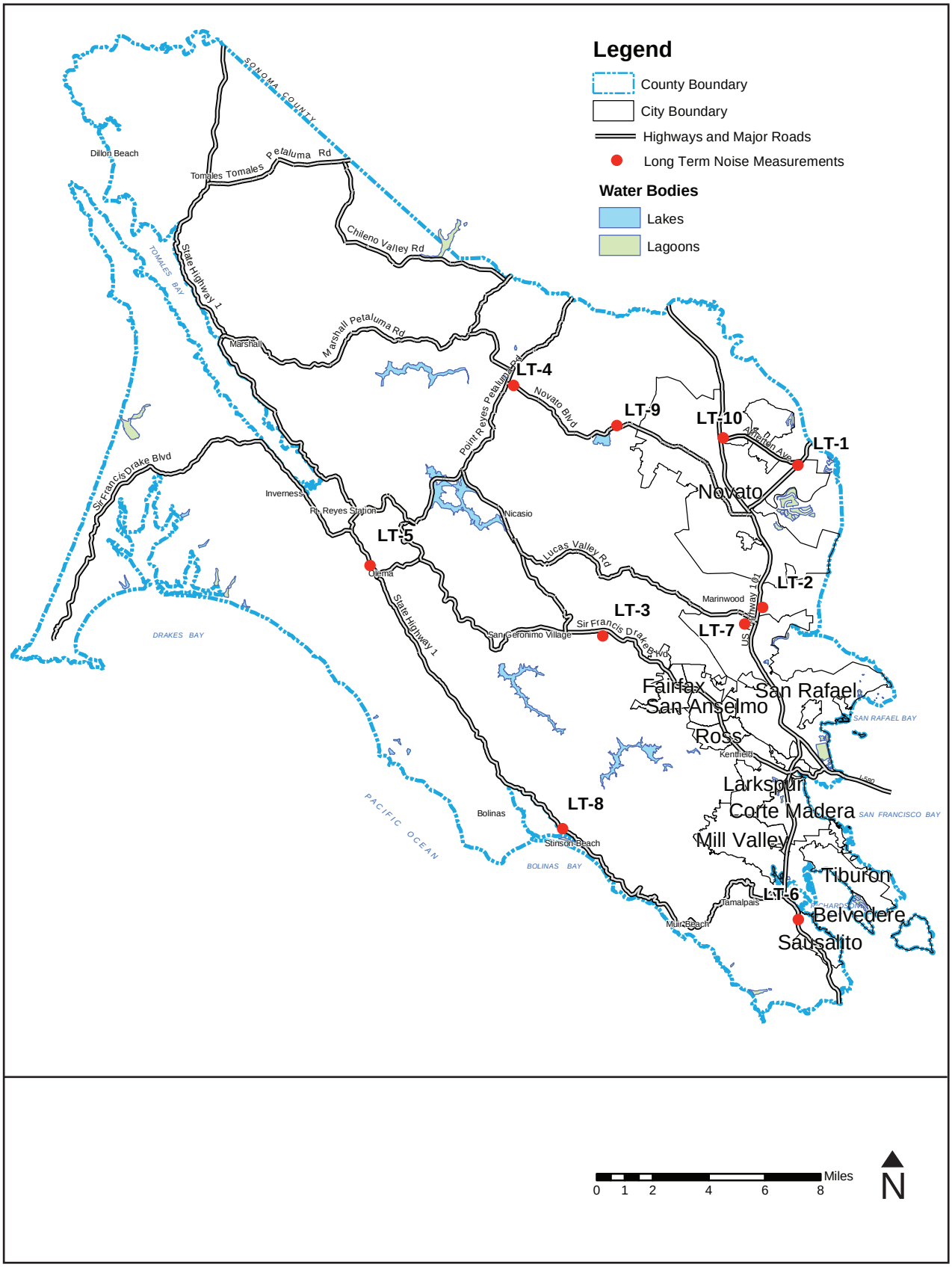
1 The ten measurement locations were the same locations measured in 2001 and five of the locations (LT-1, LT-3 through LT-5) were at the approximate locations measured at in 1987. LT-2 was in the vicinity of the 1987 location but in order to locate the noise meter in a secure location it had to be placed closer to U.S. 101

Exhibit 4.4-3
Locations of Long-Term Noise Measurements



Source: County of Marin Community Development Agency and and Illingworth & Rodkin, Inc., 2006.

Exhibit 4.4-4
Measured Noise Levels, 2005

Site Locations	***Present Land Use***	***Noise Source***	***Ldn (2005)***
LT-1: State Route 37 (Atherton Road) 60 feet to center of near lane	Industrial, Commercial	State Route 37	73
LT-2: U.S. 101 (at St. Vincent's Road) 720 feet from center of U.S. 101	Agricultural, Residential, Institutional	U.S. 101	63
LT-3: Sir Francis Drake Boulevard near Woodacre, 45 feet from center of road	Residential, Commercial	Sir Francis Drake Boulevard	73
LT-4: Petaluma Point Reyes Road, south of Novato Boulevard, 36 feet from center of road	Agricultural, Commercial	Point Reyes / Petaluma Road	68
LT-5: State Route 1 south of Point Reyes Station, 36 feet from center of road	Residential, Commercial	State Route 1	62
LT-6: Shopping center parking lot off U.S. 101 in South Marin County, 165 feet from center of U.S. 101	Commercial	U.S. 101	76
LT-7: Lucas Valley Road, 45 feet from center of road	Residential, Commercial	Lucas Valley Road	72
LT-8: State Route 1 north of Stinson Beach, 48 feet from center of road	Residential, Commercial	State Route 1	61
LT-9: Novato Boulevard near Stafford Lake, 51 feet from center of road	Recreational, Residential	Novato Boulevard	65
LT-10: U.S. 101 (at Atherton Avenue exit), 327 feet from center of U.S. 101	Residential, Commercial, Recreational	U.S. 101 Frontage Road	69

Source: Illingworth & Rodkin.

AIRCRAFT NOISE

Marin County has two airfields: Gnoss Field County Airport north of Novato and the Smith Ranch Airport in San Rafael. Activity levels at Gnoss Field have not changed substantially since 1987. The noise contours for Gnoss Field were most recently updated in 1991. **Exhibit 4.4-5** shows the best available information regarding the existing noise exposure.

San Rafael Airport is restricted by conditional use permit to a maximum of 100-based aircraft. Noise exposure contours associated with this population of aircraft has not varied since 1987. In fact, recent noise measurements confirmed the location of the 60 L_{dn} contour around the airport. [2] **Exhibit 4.4-6** shows the location of the existing contours at San Rafael Airport.

The Richardson Bay Heliport provides a helicopter-landing pad and seaplane rides. Activity at the Richardson Bay Heliport has not changed substantially since 1987 and activity levels continue at about 25 commercial takeoffs and landings per week. The noise exposure contours for the Richardson Bay Heliport are shown on **Exhibit 4.4-7**. The 60 L_{dn} contour does not impact any existing noise sensitive residential development.

Commercial aircraft overflight noise has become an issue of concern in Marin County. The California Division of Aeronautics is in charge of enforcing airport noise regulations for all airports within the State of California. Airports are not to expose residences to a community noise equivalent level (CNEL) of greater than 65 dB. The 65 dB CNEL noise contour for Oakland International and San Francisco International Airports are not near Marin County. Nonetheless, aircraft overflight noise has been the subject of increased public awareness. Recently Marin County has undertaken efforts to dialogue with the Federal Aviation Administration to examine this problem. Because of these efforts, it has been determined that there are flight paths over Marin County from both Oakland International Airport and San Francisco International Airport. Additionally, at the request of the County, San Francisco International Airport has conducted noise measurements at locations in Tiburon, Bolinas and Point Reyes to quantify aircraft overflight noise levels. These studies have shown that noise generated by individual jets reaches maximum overflight noise levels of 45 to 70 dBA at these locations. The aircraft-generated CNEL ranged from 27 to 39 dB in Point Reyes / Bolinas and from 19 to 44 dB in Tiburon. While these are not high noise levels, in the quieter areas of the county remote from traffic noise, the sound of aircraft overflights does stand out.

The noise generated by commercial aircraft in Marin County does not exceed any human health standards or land use compatibility guidelines. In Marin County, noise generated by commercial aircraft overflights may not pose a threat to wildlife, although this issue has not been thoroughly evaluated. Noise from commercial aircraft would be below levels identified to cause any effect on domestic animals or wildlife. [3]

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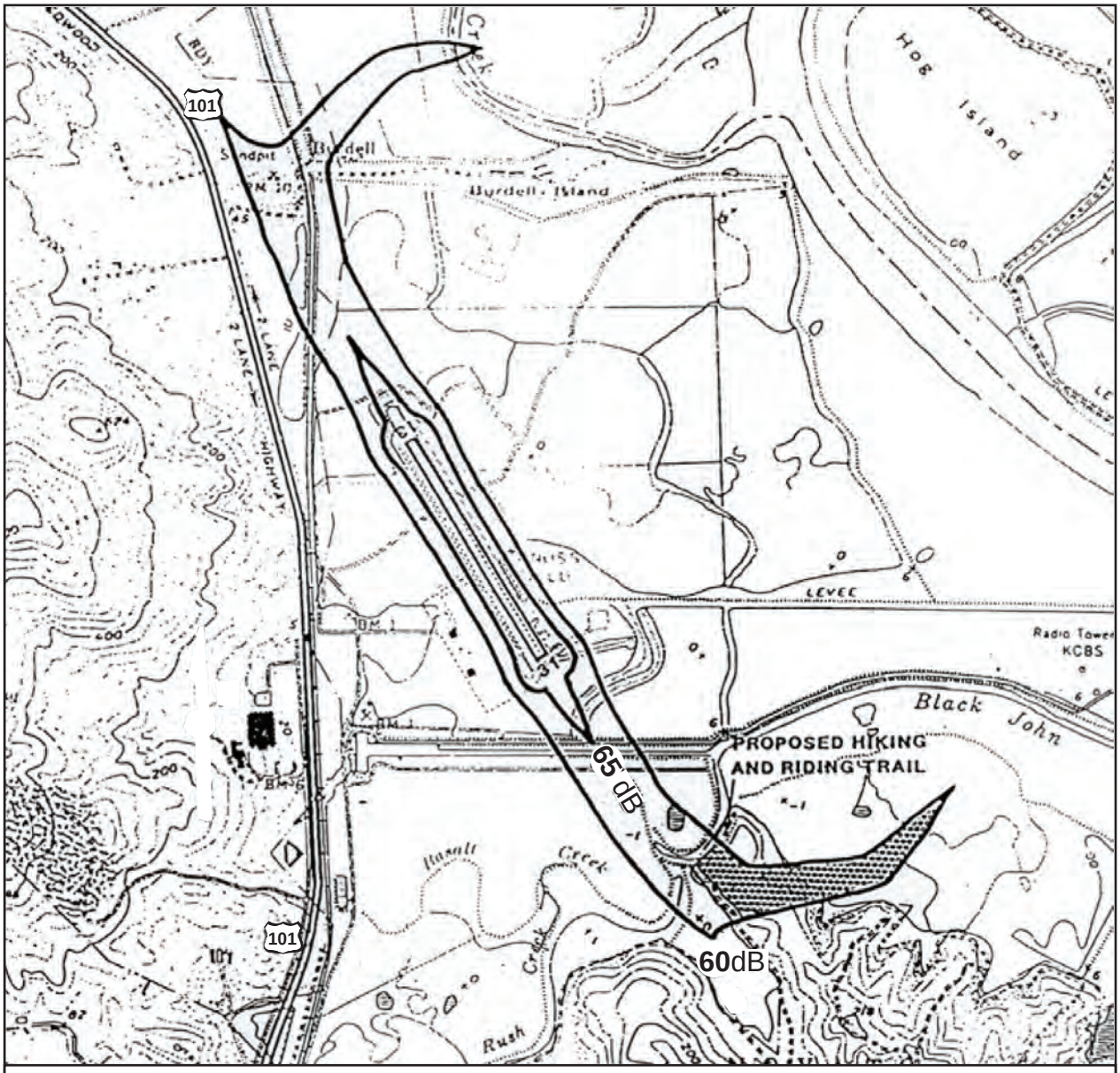
[2] *San Rafael Airport Aircraft Noise Monitoring*, prepared for H&H Management by Illingworth & Rodkin, Inc., August 2002.

[3] *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife – A Literature Synthesis*, U.S. Department of the Interior, June 1988.

Exhibit 4.4-5
Existing Noise Contours for the Gnoss Field Airport



Legend

Noise Contour Boundary (dB)

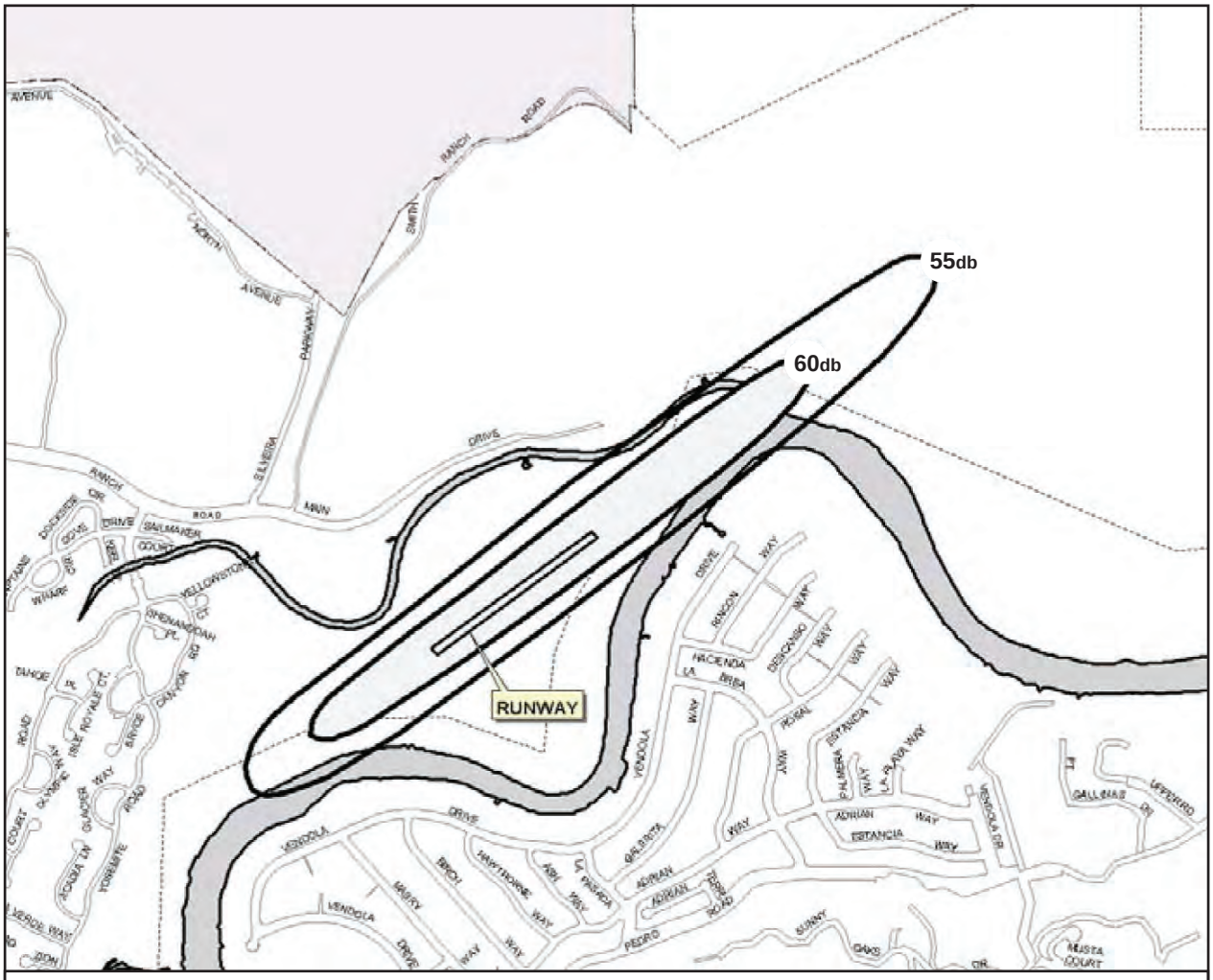
Potential Residential Development

N

No Scale

Source: Brown-Buntin Associates and Cortright & Seibold, confirmed 2005.

Exhibit 4.4-6
Existing Noise Contours for the San Rafael Airport



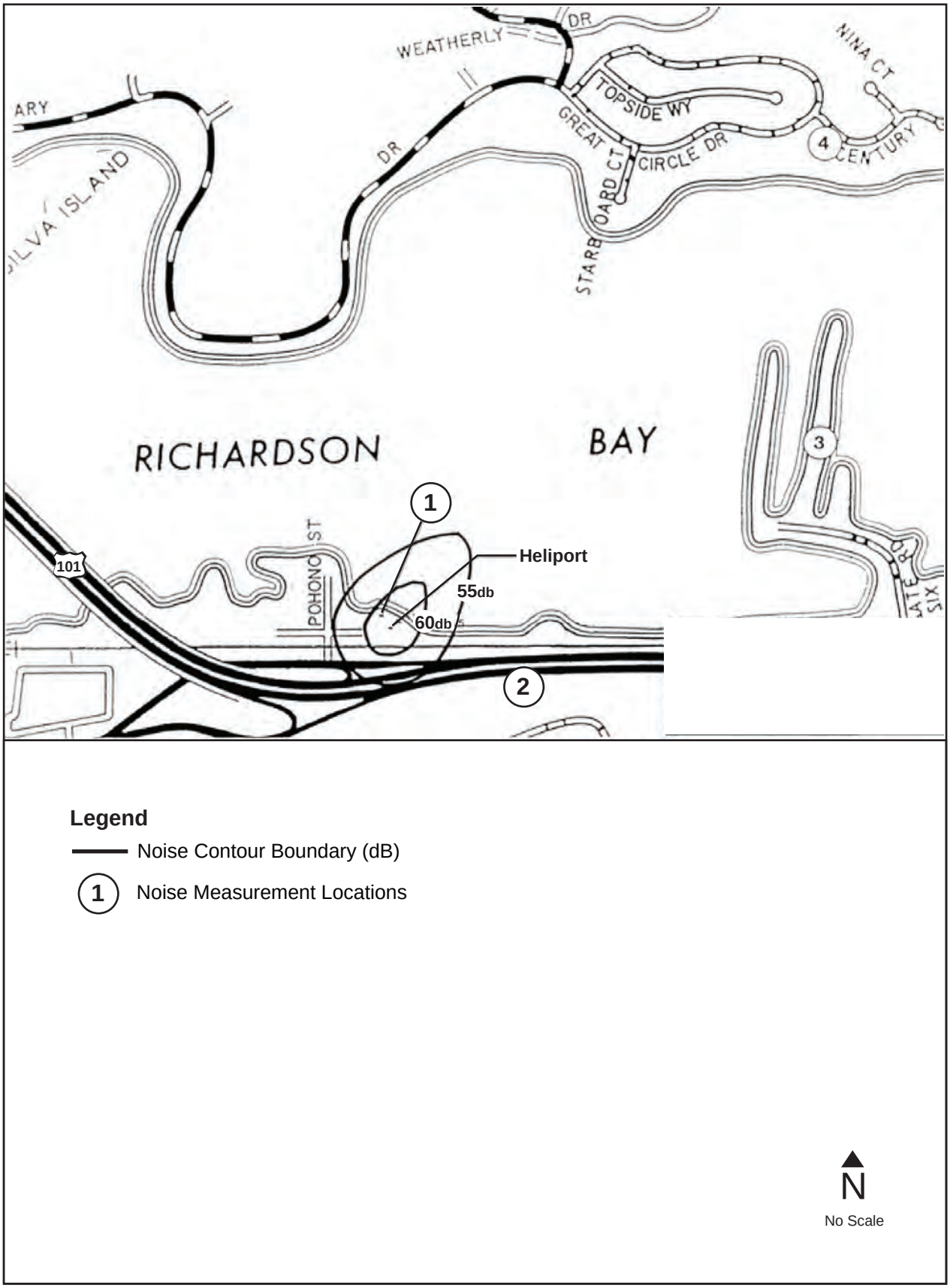
Legend

Noise Contour Boundary (dB)
(Contours reflect 2003 conditions)

N
No Scale

Source: City of San Rafael, 2003.

Exhibit 4.4-7
Existing Noise Contours for the Richardson Bay Heliport



Source: Illingworth & Rodkin, confirmed 2005.

STATIONARY SOURCES

The San Rafael Rock Quarry is an example of a significant stationary noise source in Marin County. The quarry has recently been the subject of complaints from the neighbors living in the vicinity. Noise measurements have indicated that the day / night average noise level at the closest residential development is about 49 dBA. This level is substantially below that generally recommended as compatible with residential development. However, this is an example of how even relatively low noise levels can generate adverse community response. In addition to the noise generated at the quarry site itself, the trucks to and from the quarry generate a significant amount of noise along San Pedro Road. The L_{dn} outside the closest residences to San Pedro Road reaches 70 dBA. Truck volumes routinely reach 58 to 65 trucks per hour during quarry operating hours. Major truck activity to and from the quarry is confined to the hours of 6:00 AM to 3:00 PM.

Noise – Significance Criteria

The noise analysis uses criteria from the *State CEQA Guidelines* and professional practices. According to these criteria, the project would have a significant noise impact if it would:

- Result in the exposure of persons to or generation of noise levels in excess of standards established in the Noise Element of the *Draft 2005 CWP Update*;

- Result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

- Expose people residing or working in the project area to excessive noise levels for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport;

- Expose people residing or working in the project area to excessive noise levels for a project within the vicinity of a private airstrip;

- Cause a substantial permanent or temporary increase in ambient noise.

A project would be deemed to cause a substantial permanent increase in noise if:

The Ldn at an existing residential area increases by more than five decibels (5 dBA) where existing noise levels would remain below an Ldn of 60 dBA; or

The Ldn at an existing residential area increases by more than three decibels (3 dBA) and the Ldn exceeds 60 dBA; A project impact would be deemed a "significant short-term noise impact" if:

- The average noise level outdoors generated by construction activities is estimated to be 60 dB or greater or if maximum instantaneous noise levels would exceed 80 dBA.

For noise sources characterized by loud and relatively sporadic events where the 24-hour average day / night noise level may not adequately describe the noise, noise levels will be considered significant if maximum noise levels due to the events would result in sleep disturbance (i.e., a maximum level of 50 dBA in bedrooms) or activity interference (i.e., 65 dBA in other habitable rooms) in residential hospitals, nursing homes, etc. Examples of these types of noises would be aircraft overflights and rail transportation.

Noise – Impacts and Mitigation Measures

Impact 4.4-1 Increased Traffic Noise

Land uses and development consistent with the Draft 2005 CWP Update would increase transportation activity in the county. Vehicles would be added to the existing roadway system. Although small noise level increases would occur, including at existing receptors, this would be a less-than-significant impact.

Traffic noise modeling was performed for the County roadway system using the traffic volumes projected by the County's traffic model. The calculations indicate that traffic volume increases under the *Draft 2005 CWP Update* would not significantly alter the noise environment along any of the county primary arterials or state highways. This conclusion applies to each of the three *Draft 2005 CWP Update* scenarios, which assume varying degrees of development on the St. Vincent's / Silveira properties and in the Housing Overlay Designation. **Map 3-12** (Existing and Proposed Noise Contours) in the *Draft 2005 CWP Update* shows the projected future noise contours for the major roadways in Marin County. [4] By the year 2030, traffic noise levels are projected to increase by less than one dBA L_{dn} along all roadways in the county except along State Route 37, and Interstate 580 between Sir Francis Drake Boulevard and Bellam Boulevard where noise levels could increase by up to two dBA L_{dn}. The noise significance criteria identified in this section and Program **NO-1.c** identifies an increase of three dBA L_{dn} to be significant. A two decibel change in noise level is generally not detectable and would not be considered a significant noise impact. The noise environment at existing residences in the county adjacent to roads would, therefore, not be significantly different in 2030 than they are today.

Implementation of individual projects consistent with the *Draft 2005 CWP Update* in quiet areas could cause localized increases in traffic noise. Policy **NO-1.2** sets forth a policy ensuring that transportation activities do not generate noise beyond acceptable levels, including in open space, wilderness, wildlife habitat, and wetland areas. Program **NO-1.c** would continue to require all development to mitigate its noise impacts where the project would cause a substantial increase in noise levels as defined in the *Draft 2005 CWP Update*.

Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Program **NO-1.c** would be ongoing with existing budget and therefore could be relied upon to reduce this impact. [5] [6] Therefore, increased traffic noise would be a less-than-significant project impact and would make a less than cumulatively considerable contribution to cumulative impacts.

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4 This map is available at the Marin County Community Development Agency Planning Division at a smaller scale to evaluate the noise exposure at specific parcels.

5 As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

6 As described in **Figure 3-45** Noise Program Implementation in the *Draft 2005 CWP Update*.

Mitigation Measure 4.4-1 None required.

Impact 4.4-2 Increased Noise from Airports and Heliports
Noise sensitive land uses would not be exposed to increased noise levels from airport and heliport operations. This would be a less-than-significant impact.

The *Draft 2005 CWP Update* does not propose any changes to the location or level of activity, or land uses, within the planning area around Gnoss Field. [7] The Airport Land Use Plan for the Marin County Airport (Gnoss Field) was adopted by Marin County in 1991. [8] The Airport Land Use Plan assumed the development of a crosswind runway by the year 2000. The crosswind runway has not been constructed. [9] Marin County now proposes extending the existing 3,300-foot long runway at Gnoss Field an additional 1,100 feet. The proposed improvement would make it safer for small jets to land at Gnoss Field, but would not expand the number of airplanes that are based there. The County has begun coordination with the U.S. Federal Aviation Administration on this runway expansion. A schedule for this project is not available at this time. [10] Program **NO-1.f** would require review for development proposals within the two-mile referral area of Gnoss Field for consistency with the noise criteria set forth in the *CWP* and the adopted Airport Land Use Plan.

The San Rafael Airport is restricted by a Conditional Use Permit to a maximum of 100-based aircraft. Noise exposure contours associated with this population of aircraft have not changed since 1987. No changes in the aviation use of the airport are expected in the future. [11] Recent measurements have confirmed the location of the 60 L_{dn} contour around the airport. [12] The Richardson Bay Heliport similarly has not experienced significant changes in activity levels nor are there any proposals to change the level of activity in the timeframe of the *Draft 2005 CWP Update*.

Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Program **NO-1.f** would be ongoing with existing budget and therefore could be relied upon to reduce this impact. [13] Therefore, increased noise from airports and heliports would be a less-than-significant impact and no mitigation would be required.

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7 Policy **PA-1.1** does state that commercial uses on lands surrounding Gnoss Filed shall be limited to those which are airport-related or compatible with the airport. This would not represent a significant change in land uses.

8 *Airport Land Use Plan Marin County Airport Gnoss Field*, Cortright & Seibold, Adopted by Marin County Land Use Commission, June 10, 1991.

9 Although the runway remains in the Airport Land Use Plan there are no foreseeable plans to construct the runway. Nichols•Berman communication with Jeff Rawles, Marin County Public Works Department, October 2006.

10 Nichols•Berman communication with Jeff Rawles, Marin County Public Works Department, May 2006.

11 *San Rafael General Plan 2020 Draft Environmental Impact Report*, City of San Rafael Community Development Department, February 2004, page IV.4-9.

12 *San Rafael Airport Aircraft Noise Monitoring* prepared for H&H Management by Illingworth & Rodkin, Inc., August 2002.

13 As described in **Figure 3-45** Noise Program Implementation in the *Draft 2005 CWP Update*.

Mitigation Measure 4.4-2 None required.

Impact 4.4-3 Stationary Noise Sources

The Draft 2005 CWP Update does not envision the development of any new industrial sources or other significant stationary noise sources in the county. This would be a less-than-significant impact.

The *Draft 2005 CWP Update* does not envision any new significant stationary noise sources in Marin County. Several projects included in the cumulative analysis and described in ***Chapter 6.0 Other CEQA Mandated Sections*** are examples of existing and planned stationary noise sources in Marin County. These include the San Rafael Rock Quarry Project, the Marin Municipal Water District Desalination Project, and the Redwood Landfill Project.

Existing noise sources in the county are part of the baseline conditions. They are not assessed with respect to policies and programs designed to regulate noise from new stationary sources. There are, however, from time to time, applications for various types of development, such as retail uses with loading docks, or commercial or light / industrial activities, that have noise sources associated with them.

Program **NO-1.a** would include noise standards for siting land uses (see **Figure 3-43** [Benchmarks for Allowable Noise Exposure from Stationary Noise Sources]). These benchmarks would act as noise performance standards for new applications. Enforcement of these benchmark noise levels through CEQA and County discretionary review would ensure that new stationary noise sources do not cause a significant noise impact upon existing sensitive land uses in the county.

Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Program **NO-1.a** would be ongoing with existing budget and therefore could be relied upon to reduce this impact.[14] Therefore, increased noise from stationary noise sources would be a less-than-significant project impact and would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.4-3 None required

Impact 4.4-4 Future Noise Sensitive Development

The Draft 2005 Marin CWP Update proposes a Housing Overlay Designation that would concentrate residential development along U.S. 101 and other major roadways where the development could potentially be exposed to noise levels greater than those considered normally acceptable. However, this would be a less-than-significant impact as a result of policies contained in the Draft 2005 CWP Update regarding the location of noise sensitive development in noisy areas.

A major objective of Section 3.10 Noise of the Built Environment Element in the *Draft 2005 CWP Update* would be to utilize information within the section to insure noise-compatible land use planning. The noise contours and other information related to community noise shall be used as a guide for establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise. The intent of such planning would be to maintain those areas deemed acceptable in

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[14] As described in **Figure 3-45** Noise Program Implementation in the *Draft 2005 CWP Update*.

terms of noise exposure by using zoning or other land-use controls in areas with excessive noise exposure to limit uses to those which are noise compatible and to restrict other less compatible uses.

One of the criteria for the establishment of the Housing Overlay Designation is that housing shall be located within one-half mile of a transit node or transit route with daily, regular scheduled service (Policy **CD-2.3**). As a result, housing units in the Housing Overlay Designation would be located along major roadways including Lucas Valley Road, San Pedro Road, U.S. 101, Sir Francis Drake Boulevard, Pt. San Pedro Road, Bridgeway Boulevard, and Miller Avenue. Housing would occur at four specific sites: the Marinwood Shopping Center, Strawberry Shopping Center, Marin City Shopping Center, and the Fairfax / Oak Manor Shopping Center. The existing shopping center sites plus other parcels assigned to the Housing Overlay Designation would likely be exposed to vehicular traffic noise exceeding the exterior noise level considered "normally acceptable" for residential development shown in **Figure 3-41** (Acceptable Noise Levels) of the *Draft 2005 CWP Update* and further stipulated in Program **NO-1.d**. For example, based on projected future noise contours for the major roadways prepared for the *Draft 2005 CWP Update* (see **Map 3-12** [Existing and Proposed Noise Contours] in the *Draft 2005 CWP Update*) the 65 L_{dn} contour would be located 650 feet and the 60 L_{dn} contour would be located 1,400 feet from the centerline of U.S. 101. [15]

Program **NO-1.d** would amend the Development Code to require maximum noise levels for all new residential units: 60 dBA L_{dn} for exterior and 45 dBA L_{dn} for interior. The intent of this program would be to provide residential uses with acceptable outdoor noise levels in outdoor activity areas (i.e., private rear yards of single-family homes and shared outdoor space in multi-family development).

The 60 dBA L_{dn} exterior noise level is also a benchmark, established in the State Building Code for attached housing, when additional studies are required during project design to confirm that interior noise levels would not exceed 45 dBA L_{dn}. The benchmark is set at 60 dBA L_{dn} because standard residential construction with windows partially open for ventilation provides about 15 dBA of noise reduction when going from outside of the building to inside the building.

Residential development that is incorporated into a mixed-use project, particularly when there is mixed-retail/residential, is often exposed to stationary intermittent noises resulting from loading docks, truck deliveries, heating, ventilating and air-conditioning equipment, and other stationary noise sources. Program **NO-1.a** would establish benchmarks for allowable noise exposure from stationary noise sources.

A higher density, mixed-use development is somewhat unusual in unincorporated areas within a county. Some discretion would need to be employed when evaluating such proposals with respect to noise and land use compatibility guidelines that are applicable countywide and generally directed toward low density development in rural areas where the outdoor area is an important ancillary space. At these mixed-use higher density projects the outdoor noise guidelines would be used as the trigger to determine when sound insulation studies would be required during building design to achieve acceptable interior noise levels. Achieving acceptable noise levels on small private decks and patios which would adjoin or overlook busy streets and constructed within mixed-use developments is not the intent of the noise section of the Build Environment Element. On the other hand, site planning that

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[15] Noise levels at specific sites would vary depending on a number of factors including local topographical shielding which may reduce the distance to a specific noise contour. For example the measurement preformed at St. Vincent's Road near U.S. 101 measured 63 L_{dn} at 720 feet from the centerline of U.S. 101 (see **Exhibit 4.4-4**).

would result in common outdoor activity areas that are shielded by the high density buildings would be an important consideration in the development of mixed-use higher density residential projects.

As discussed in ***Chapter 3.0 Description of the Proposed Project***, the *Draft 2005 CWP Update* includes four options for development at the St. Vincent's / Silveira properties. Options 1 through 4 would permit a range of residential units from 221 to 501 housing units. For each of the four options non-residential uses may be permitted in lieu of some housing units subject to certain conditions. Future land use planning for the St. Vincent's / Silveira properties would need to take traffic noise from U.S. 101 into account. A preliminary buffer distance of at least 1,400 feet from the U.S. 101 centerline would be appropriate to meet County guidelines for outdoor and indoor noise exposure at new residences. A site specific noise study during project level environmental review may identify local topographical shielding effects which would reduce the required buffer distance.

Policy **NO-1.1** would limit noise from new development by directing the siting, design, and insulation of new development to ensure that acceptable noise levels are not exceeded. Program **NO-1.a** would establish acceptable noise levels for transportation noise sources and stationary noise sources. These benchmarks would be used as a guide for determining the appropriate type of new development in relation to its ambient noise environment and to establish areas where noise mitigation would be necessary in order to achieve compatible noise environments. The proposed noise exposure standards are not a noise ordinance and are not to be used to achieve the same objectives as a noise ordinance. The standards are not to be used for regulating existing noise sources or enforcement concerning noise problems. Program **NO-1.b** would use the Development Code to require all residential and other noise sensitive uses proposed near noise sources to provide acoustical analyses to determine ambient noise levels and commit to measures necessary to comply with the acceptable noise level standards. Also, it would require all applications for new noise-generating activities to demonstrate that noise levels measured at the nearest receptors would not exceed acceptable noise levels. Program **NO-1.d** would amend the development code to require that the acceptable exterior and interior noise level standards are met. Development proposals within the two-mile referral area of Gnoss Field shall be reviewed pursuant to Program **NO-1.f** for consistency with the noise criteria set forth in the county wide plan and the adopted airport land use plan.

The policies and programs discussed above would result in noise mitigation requirements for individual projects. These policies and programs would result in noise-sensitive developments that would be compatible with the noise environments where they are located. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Programs **NO-1.a**, **NO-1.b**, **NO-1.d**, and **NO-1.f** would be ongoing or implemented in a timely manner and could be relied upon to reduce this impact.[16] Therefore, development of noise sensitive land uses would be a less-than-significant project impact and would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.4-4 None required.

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[16] As described in **Figure 3-45** Noise Program Implementation in the *Draft 2005 CWP Update*.

Impact 4.4-5 Construction Noise

Construction of new development would temporarily elevate noise levels at adjacent noise sensitive land uses. This would be a significant impact.

Residences and businesses located adjacent to proposed development would be affected by construction noise. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (i.e., early morning, evening, or nighttime hours), when construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods. Major noise generating construction activities would include removal of existing pavement and structures, site grading and excavation, framing, paving and landscaping. In some cases, residences or other sensitive uses may be directly adjacent or in close proximity to construction activities.

The highest construction noise levels would be generated during grading and excavation, with lower noise levels occurring during building construction. Large pieces of earth-moving equipment, such as graders, scrapers, and bulldozers, generate maximum noise levels of 85 to 90 dBA at a distance of 50 feet. Typical hourly average construction-generated noise levels are about 80 to 85 dBA measured at a distance of 50 feet from the site during busy construction periods. These noise levels drop off at a rate of about six dBA per doubling of distance between the noise source and receptor. Intervening structures or terrain would result in lower noise levels. During active construction periods, hourly average noise levels could exceed 60 dBA Leq at distances of 500 to 900 feet.

Policy **NO-1.3** would require measures to minimize noise exposure to neighboring properties, open space, and wildlife habitat from construction-related activities. Program **NO-1.i** proposes adoption of a noise ordinance, which would regulate allowable hours of operation for construction-related activities.[17] Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Program **NO-1.i** would be implemented in a timely manner and could be relied upon to reduce this impact.[18] However, this program, as proposed, does not specify the types of construction methods necessary to reduce construction noise to clearly demonstrate that noise levels would be reduced to a less-than-significant level. Therefore, noise from construction activities would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative noise impact.

Mitigation Measure 4.4-5 Revise Program **NO-1.i** *(Regulate Noise Sources)* of the *Draft 2005 CWP Update* as follows:

> **NO-1.i**; *Regulate Noise Sources*. ~~Adopt a noise ordinance that sets~~ Sections 6.70.030(5) and 6.70.040 of the Marin County Code establish allowable hours of operation for construction-related activities. As a condition of permit approval for projects generating significant construction noise impacts during the construction phase, construction management for any project shall develop a construction noise reduction plan and designate a disturbance coordinator at the construction site to implement the provisions of the plan.

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[17] In August 2005, the Marin County Board of Supervisors adopted an ordinance adding sections 6.70.030(5) and 6.70.040 to the Marin County Code related to construction activities and related noise.

[18] As described in **Figure 3-45** Noise Program Implementation in the *Draft 2005 CWP Update*.

Significance After Mitigation Adoption and implementation of the revised program in Mitigation Measure 4.4-5 would mitigate this impact but noise levels could continue to exceed 60 dBA L_{eq} or 80 dBA L_{max} at sensitive receivers. Construction noise would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised program as described in Mitigation Measure 4.4-5 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency would be responsible for monitoring its implementation.

4.5 HYDROLOGY, WATER QUALITY, AND FLOOD HAZARDS

4.5 HYDROLOGY, WATER QUALITY, AND FLOOD HAZARDS

Hydrology, Water Quality, and Flood Hazards – Environmental Setting

Existing hydrology, water quality, and flood hazards conditions are described in the *Hydrology and Water Quality Background Report*, August 2000, updated November 2005 and the *Flooding Background Report*, March 2002, updated November 2005. These background reports are included in **Appendix 1** to the Draft EIR, incorporated by reference, and summarized below.

The *Marin County Watershed Management Plan* (MCWMP) is another document that provides background on historic and existing conditions of the watersheds in Marin County. [1] Additionally, the North Bay Watershed Stewardship Plan is currently being prepared by the North Bay Watershed Association. [2] This document would address areas of the county that drain into San Francisco Bay. The MCWMP addresses common watershed issues including water quality impairment and degraded stream systems from erosion exacerbated by human development and agricultural uses. The document also covers special status species issues, both plant and animal, with emphasis on andronomous fish issues. In addition, the document cites objectives and recommendations for watershed protection and restoration and includes a chapter dedicated to trends monitoring. Effective monitoring of watershed conditions can provide insight into practices that improve watershed health while providing key information to inform future policy decisions.

HYDROLOGIC SETTING

Marin County encompasses approximately 606 square miles of land, open water, tidal habitats, streams, lakes, and ponds extending from the Pacific coast to the San Francisco, San Pablo, San Rafael, and Richardson Bays. Marin County is comprised of erosional and depositional provinces (i.e., a region where an erosional or depositional process is dominant) that are affected by hydraulic forces, gravitational forces, and human activity. Zones of lower elevation are typically depositional provinces and are part of the coastal province, bay plain, and alluvial valley depositional provinces. [3] [4] Zones of upper elevations are erosional provinces dominated by erosional processes on uplands and ridgetop terrain. Hydraulic and gravitational forces transport sediment from the erosional provinces downslope to the depositional provinces. Human activity often alters vegetation communities and

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1 *Marin County Watershed Management Plan Administrative Draft*, Marin County Community Development Agency, April 2004.

2 Founded in 2000, the North Bay Watershed Association is composed of regulated local and regional public agencies that manage and implement projects affecting water resources in Marin and Sonoma Counties.

3 *Sediment Source and Deposition Sites and Erosional and Depositional Provinces- Marin and Sonoma Counties, California*, USGS Pamphlet to accompany Miscellaneous Field Studies Map, 1974.

4 Alluvial refers to sediment of various grades from silts to boulders, which are transported and then deposited by flowing water.

natural processes in the upper and lower elevation zones, worsening the effects of the normal geomorphic processes of erosion and flooding.

Common landforms along the Pacific coast include hillslopes, which transition to coastal plains terminating in the ocean or local estuarine waterbody. Other features include coastal mountains and hills that become steep cliffs, which are bordered by shallow beaches or plunge directly into the Pacific Ocean. Reinforced shoreline zones (e.g., rocked embankments), muted tidal and freshwater marsh, filled and diked baylands, or steep bluffs characterize inland areas along the San Francisco, San Pablo, Richardson, and San Rafael Bays. Alluvial fan deposits are features typically associated with alluvial valley depositional provinces, which can occur in either the inland or coastal regions.[5] Most development in Marin County occurs within the bay plain and alluvial valley depositional provinces.

The Pacific Ocean bounds the western portion of Marin County. Four large embayments occur along the Marin County Pacific coastline. The largest is Tomales Bay, located at the northwestern corner. The outlet of Tomales Bay adjoins the southern portion of Bodega Bay, south of the Marin-Sonoma County border. Drake's Bay and Estero are part of the Point Reyes National Seashore. Bolinas Bay and Lagoon are just south of Point Reyes National Seashore. Numerous streams drain the coastal hills and mountains either to one of the listed embayments or directly into the Pacific Ocean.

Small coves and tidal inlets are common along both the Pacific Coast and the western, unincorporated portion of the Tiburon peninsula where steep cliffs drop into San Francisco Bay. At slightly higher elevations, both valley slopes and the thickness of underlying colluvium increases.[6] The foothills erosional province comprises the zone above the bay plain and alluvial valley depositional provinces where most urban development has occurred within the county.

Slope instabilities, including debris flows, landslides, and gullying are more prevalent in the steeper foothills province. Landslides typically occur in response to intense rainstorms coupled with saturated soil conditions in the steeper hillslope areas. Aside from human influence (e.g., road construction and related drainage manipulation), the likelihood of mass failure is a function of the local and regional landscape evolution. Incision of creeks and drainageways, which can develop in response to particular

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5 Alluvial fan deposits occur where steeper valleys open to relatively flat plains and deposition by flowing water deposits sediment of various grades in the shape of a fan.

6 Colluvium consists of rock and sediment that has eroded from hillslopes due to weathering from rainfall and flowing water and then deposited at the base of a slope.

land uses and / or geologic scale tectonic uplift, can also trigger creekbank failures and larger scale slump failures. [7]

Numerous small, primarily first and second order stream channels, drain the uplands of Marin County. [8] These channels converge to form larger, higher-order channels further downstream. **Map 2-3** (Wetlands / Streams) and **Map 2-7** (Major Watersheds) of the *Draft 2005 CWP Update* illustrate the watersheds and larger Marin County drainageways. Although both maps show *perennial*, *intermittent*, and *ephemeral* stream channels in the legend, they do not show ephemeral streams. [9] The majority of the Inland Rural Corridor and the Coastal Corridor land areas drain to the west into embayments and the Pacific Ocean. The City Centered Corridor drains to the east into San Pablo, Richardson, San Rafael, and San Francisco Bays. Watersheds of relatively larger area are located in northern and western Marin County. Watersheds of relatively smaller areas are located along San Francisco Bay and southern Marin, including the Marin Headlands, which drains to the Pacific Ocean. The principal eastern watersheds that drain into San Francisco, San Pablo, and Richardson Bays include the Arroyo Corte Madera del Presidio, Coyote Creek, Corte Madera Creek, San Rafael Creek, Las Gallinas Creek, Miller Creek, Novato Creek, and San Antonio Creek watersheds. The principal Pacific Ocean watersheds include the Estero Americano, Stemple Creek, Walker Creek, Laguintas Creek, Olema Creek, Pine Gulch Creek, and Redwood Creek watersheds.

Eight reservoirs are located within Marin County. Marin Municipal Water District (MMWD) operates seven of the reservoirs while the North Marin Municipal Water District (NMMWD) operates the remaining reservoir. Much of the land area around the reservoirs is protected open space to ensure water quality.

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7 The term "drainageway" as used herein denotes both natural (e.g. earthen) and reinforced channels such as rock or concrete-lined channels, and pipes and culverts, as well as hybrid stabilized channels. Each of these types of drainageways can be subject to material stresses imparted by stormwater discharge. For earthen channels, including poorly-defined swales and partially stabilized channels (e.g. incorporating rocked banks), channel scour and/or incision can occur in response to unmitigated, increased stormwater runoff from impervious surfaces associated with development. The nature and extent of potential scouring, which is imparted by higher magnitude discharges on channel and bank materials, depends on the characteristics of the flow (e.g. incoming sediment load, extent of entrained debris, etc.) as well as the composition of the bed and banks. In a bedrock channel, little or no incision of bank erosion is likely to occur, whereas in an earthen or partially stabilized channel, significant erosion could occur. Channel scour can also occur due to concentrated point discharges such as those that occur at the unprotected or poorly protected culvert outlets. In artificial, or reinforced channels, the hydraulic forces imparted on these structural conveyances by increased peak flows can accelerate structural failure, which in turn can subject the underlying earthen substrate to substantially elevated erosional forces. This form of channel scour can occur in weathered concrete-lined or grouted channel segments and wooden flumes, as well as culverts.

8 Stream Ordering is a system to distinguish between stream segments within a basin that reflects their relative position within a watershed. 1st order streams are the headwater reaches highest up in a drainage system. They are typically very narrow and ephemeral (i.e., there is only stream flow for a short period in direct response to rainfall) in nature. When two 1st order streams converge the resulting stream segment is termed a 2nd order stream. As one moves downstream through a watershed, stream order and stream width increases and stream flow lasts longer into the summer. Intermittent streams flow during the wet season, continue to flow after the period of precipitation, and cease surface flow during at least part of the dry season. During drought years, intermittent streams may not have any flow. Perennial streams have some flow during the entire year (except for infrequent or extended periods of drought), although surface water flow may be temporarily discontinuous in some reaches of the channel such as between pools.

9 As mentioned in the previous footnote, ephemeral streams only respond to direct rainfall. Because ephemeral streams only respond to direct rainfall, they are typically high in the watershed with narrow channel widths. Therefore, at the scale of **Map 2-3** (Wetlands / Streams) and **Map-2.7** (Major Watersheds), ephemeral channels are too small to appear on the graphics, and are thus, not represented on the maps.

Except near alluvial fans that occur at the drainageway outlets, soils throughout Marin County are typically shallow and formed over bedrock. Ridgelines often contain visibly exposed bedrock. Exposed bedrock also exists in areas throughout the foothills. Throughout much of the county, soils contain moderate to high percentages of clay, which produces slow to moderately-slow hydraulic conductivities (i.e., the ability to infiltrate stormwater), and high rates of runoff. The associated risks of erosion due to surface runoff processes are typically high.[10] Unstable hillslopes are common throughout the county and often lead to the formation of shallow or deep-seated landslides.

Mean annual rainfall in the county ranges from 18 inches at Point San Pedro to 50 inches or more along the ridgeline of Mt Tamalpais. Mean annual rainfall for the county is based on USGS rainfall data for the period 1906-1956.[11] This is the best available long-term compilation of regional rainfall data for the county. Orographic (i.e., mountainous) influences associated with Mt. Tamalpais are responsible for the elevated rainfall totals in this central southern portion of the county. Most of the area rainfall occurs during the wet winter season, which typically extends from November through March. Significant runoff events occur in response to prolonged rainfall of two to three days duration, punctuated by short periods of intense nested rainfall.

FLOODING

Damage-inducing flooding occurs infrequently in the county, primarily in the lower lying alluvial valleys and bay plains of the City Centered Corridor. From 1950 to 1970, major floods occurred in 1952, 1955, 1958, 1967 and 1970. Significant flooding occurred in portions of Corte Madera, Larkspur, Greenbrae, Ross, San Anselmo, San Rafael, and Novato in January 1982, January and December 1983, February 1986, January 1997, February 1998, and January 2006. In addition, severe floods in the County can occasionally cause channel instability in area streams.

Two forms of flooding occur in Marin County: *tidal flooding* and *watershed flooding*. Tidal flooding develops when high tides exceed either the top of bank elevation of tidal sloughs and channels, or the crests of bay levees. Watershed flooding occurs in response to severe runoff-inducing rainfall over the tributary watershed of one of the region's stream channels.

Rainstorms of three to four days duration, including nested periods of high intensity rainfall that occur over much of the tributary watershed typically generate major watershed floods. Such rainstorms occur primarily during the wet winter season. When watershed flooding occurs in conjunction with high bay tides, the extent and / or depth of overbank flooding or levee overtopping can increase due to an upward adjustment in the floodwater surface due to an increase in the surface elevation of bay water.

As stated above, damaging watershed and / or tidal flooding has occurred at several locations within Marin County since 1980. In the storm of January 2-5, 1982, watershed flooding on Corte Madera Creek produced floodplain inundation depths of one to three feet through the Towns of San Anselmo, and Ross and the unincorporated areas of Kentfield, and Greenbrae. The same storm produced damaging flooding in portions of the City of Novato along Novato Creek, Warner Creek and Arroyo

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[10] *Soil Survey of Marin County California*, U.S. Department. of Agriculture, 1985.

[11] *Mean Annual Precipitation Depth Duration Frequency Data for the San Francisco Bay Region, California*, S.E. Rantz, U.S. Geological Survey Open-File report, 1971.

Avichi. The community of Santa Venetia, which functions as an independent watershed due to its leveed segregation from Las Gallinas Creek, experienced flooding as watershed runoff and entrained, (i.e. transported by flowing water) hillslope debris obstructed inlet channels and pump station inlets. Nuisance flooding also occurred in San Rafael on the southern tributaries to San Rafael Creek, in the Bret Harte / Picnic Valley and Irwin Street neighborhoods, and on the eastern tributary (i.e., Sisters Creek) to Black Canyon Creek near Dominican College. Along the Pacific Ocean Recreational Corridor, the 1982 storm generated numerous catastrophic landslides and related flooding as land debris obstructed or completely filled drainageways. In general, the watershed flooding in this portion of Marin County area produced minimal damage because of its low population density.

The Valentine's Day storm of February 1986 caused overbank flooding along the Corps of Engineers flood control channel on Corte Madera Creek. The depth of floodplain inundation of one to two feet was less than that experienced during the January 1982 flood. The City of Novato avoided flood damage during this storm. The 1985 expansion of Stafford Lake, which stores and regulates outflows from the upper Novato Creek Watershed, provided additional reservoir capacity sufficient to contain floodwater.

Extreme high tides with recurrence intervals exceeding 100-years occurred in January and December 1983. The communities of Santa Venetia, Corte Madera (i.e., along Lucky Drive), and historically susceptible low-lying areas of eastern San Rafael experienced levee overtopping and resulting tidal flooding. Tidally induced flooding occurred again in the Lucky Drive area of Corte Madera in 1997 and 1998. Both Tamalpais Valley (i.e., Coyote Creek) and Santa Venetia survived the January 1997 and February 1998 El Niño floods and high tides, without serious flood damage. However, this was due to a lack of coincidence between watershed flood peaks and high bay tides, rather than substantial improvements in flood control facilities. [12]

A series of intense storms swept in off the Pacific Ocean saturating the county at the end of December 2005 and beginning of January 2006. The storms caused many of the county's rivers to overtop their banks and flood surrounding areas. Coincident high tides, which helped breach super-saturated levees along San Francisco Bay in the Novato area, worsened flooding in some areas. Intense rainfall also triggered numerous landslides throughout the county. A large landslide in Novato caused damage to homes. Corte Madera Creek through San Anselmo and Ross spilled onto its historic floodplain causing millions of dollars in damage as businesses and homes were flooded. Flooding occurred throughout the Point Reyes National Seashore in West Marin, with Lagunitas Creek flooding many residences in the area. [13]

Sea Level Rise

Global climate change and the resultant rise in sea level may exacerbate tidal flooding in the future. As the earth continues to warm due to increased greenhouse gases released by human and agricultural activity, water stored in polar ice caps will continue to melt and contribute to a rise in sea level. These predicted increases in both global sea level rise and San Francisco and San Pablo Bay tide elevations

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[12] Clearwater Hydrology communication with John Wooley, P.E., Marin County Flood Control and Water Conservation District, September 2001.

[13] For complete coverage of the flooding, including press releases, disaster relief information and PDF files showing individual parcels damaged by flooding within the City-Centered Corridor please visit: http://www.co.marin.ca.us/depts/ES/Disaster06/index.cfm

will increase the risk of flooding in the low-lying communities of Tamalpais Valley (i.e., Coyote Creek) and Santa Venetia during infrequent, extreme tides, and / or high tides with coincident, severe watershed flooding. The risk of coastal flooding in Bolinas, Stinson Beach, and other coastal communities due to extreme tides, storm swells, and storm-generated runup could also increase due to the gradual increase in sea level. Sea level rise could exacerbate the overtopping of seawalls, roadways, and other coastal erosion works, as well as undermine jetties and breakwater barriers.

FEMA Flood Mapping

The National Flood Insurance Act of 1968 and the Flood Disaster Prevention Act of 1973 established the National Flood Insurance Program (NFIP). The Federal Emergency Management Agency (FEMA) administers the NFIP. The NFIP provides insurance coverage to property owners within flood hazard areas. Flood Insurance Rate Maps (FIRMs) delineate both the 100-year and 500-year flood hazard event areas. In some instances, FEMA develops floodway boundaries, defined as the portion of the watercourse and the adjacent land areas that must be reserved in order to discharge the base flood [14] without cumulatively increasing the water surface elevation more than a designated height, typically one foot. [15] Development is typically not allowed in a floodway.

In order to qualify for the NFIP, candidate municipalities and unincorporated county areas must adopt local floodplain development policies and enforce flood control measures for new construction and redevelopment projects within their jurisdictions. A key element for coverage is that municipalities must require that development within a flood hazard area have lowest floor elevations elevated above the base flood elevation (BFE). FEMA prepares Flood Insurance Studies (FIS) and associated FIRM maps to assist communities in local land use planning and flood control decision-making. Marin County entered into the NFIP in 1982, the date the original FIRM maps were published for the incorporated area. Portions of the FIRM map coverage for Eastern Marin were updated in 1997.

Map 2-12 (Flooding) in the *Draft 2005 CWP Update* delineates the 100-year and 500-year flood hazard zones mapped by FEMA. [16] These flood boundaries were determined by applying standard methodologies for the analysis of watershed peak flow rates, tidal magnitudes and frequencies, and floodwater surface profiles. **Map 2-12** (Flooding) illustrates dam inundation areas for major reservoirs in the county. These inundation areas represent the path and extent of floodwaters that would progress downstream in the unlikely event of a dam failure. Dam failures could occur in response to a catastrophic rainfall and flooding event or as the result of a severe seismic event.

WATER QUALITY

The quality of stormwater runoff in Marin County affects the biotic health of both Marin County's drainageways and the receiving waters of the Pacific Ocean and the San Francisco, San Pablo,

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[14] *Base flood* is the flooding event with a once percent chance of occurring in a given year, also called the 100-year flood, and is often referred to as an elevation. When referred to as an elevation it is termed the base flood elevation (BFE).

[15] Code of Federal Regulations, Title 44, Volume 1, Chapter 1, Part 9 Floodplain Management and Protection of Wetlands, Section 9.4 Definitions. October 1, 2006

[16] The County GIS flood layer does not include the 1997 update for an area around Miller Creek, east of Highway 101 at the St. Vincent / Silveira properties. No electronic version of the map update was created, only paper copies exist. The 1997 FEMA FIRMs have reduced the extent of the 100-year floodplain at the St. Vincent / Silveira properties.

Richardson, and San Rafael Bays. Stormwater quality also influences the extent and quality of water-oriented recreational uses.

Stormwater contamination originates primarily as nonpoint source runoff from roadways, parking lots, and other impervious surfaces used by automobiles. Pesticides, herbicides, and fertilizer residues applied to maintain residential and commercial landscaping contaminate surface runoff and groundwater inflows. Improperly maintained septic systems can also impair water quality. Contaminated surface flows from impervious surfaces are routed downslope to roadside storm drain inlets and eventually discharge to drainageways, en route to receiving waters. Urban stormwater in the San Francisco Bay Area typically includes the following pollutants: fine sediments, heavy metals, trace organics (e.g. pesticides and PCBs), nutrients, and oil and grease.

Water quality varies throughout the county depending on the type of land uses, their potential to generate nonpoint source pollutants, and their proximity to drainageways and receiving waters. Accordingly, opportunities and constraints for water quality abatement (e.g., stormwater filtering and retention) vary throughout the county. For example, areas with permeable soils and sufficient distance (i.e., minimum three feet) between the ground surface and the seasonal high water table provide for infiltration and filtering potential. Onsite methods used to reduce runoff volumes and treat stormwater are commonly referred to as Start-at-the-Source or Low Impact Development (LID) techniques.

Addressing legal mandates from the U.S Environmental Protection Agency (USEPA) and the State's Porter-Cologne Act, the San Francisco Bay Regional Water Quality Control Board (RWQCB) developed and adopted the first *Water Quality Control Plan for the San Francisco Bay Basin* (*Basin Plan*) in 1968. The RWQCB adopted the current Basin Plan in 1995 (*1995 Basin Plan) after* several revisions and an extensive public hearing process. [17] The *1995 Basin Plan* describes beneficial uses that the RWQCB will protect and water quality objectives required to achieve these beneficial uses.

Beneficial uses are categorized for the principal streams, lakes / reservoirs and embayments within Marin County, including those identified in the Central, San Pablo, and Marin Coastal Basins. Appendix X of the *1995 Basin Plan* lists the *existing* (E) beneficial uses for these waterways. Regional Board staff indicated that *potential* (P) and *limited* (L) beneficial uses were not investigated fully in the *1995 Basin Plan* due to inadequate resources and funding priorities. Thus, the absence of the "P" designation in Appendix X does not necessarily mean that there is no potential for enhancing or restoring a particular beneficial use. [18]

Historically, actual water quality data collection for Marin County streams and its Pacific Ocean embayments has been limited to project-specific purposes, typically in conjunction with regulatory activities by federal and State agencies (e.g., Regional Water Quality Control Boards [RWQCB], United States Geological Survey [USGS], Corps of Engineers, US Fish and Wildlife Service [USFWS] or California Department of Fish and Game [CDFG]). Water quality in the supply reservoirs of the Marin Municipal Water District (MMWD) and the North Marin Municipal Water District (NMMWD) is regularly sampled and tested for dissolved oxygen (DO), temperature, and turbidity. In addition, the RWQCB, USGS, California Department of Water Resources (CDWR), and the non-profit San Francisco Estuary Institute (SFEI) maintain water quality monitoring programs for the Central San Francisco, San Pablo, Richardson and San Rafael Bays.

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[17] The *1995 Basin Plan* can be found at http://www.waterboards.ca.gov/rwqcb2/basinplan.htm

[18] Clearwater Hydrology communication with Farhad Ghodrati, RWQCB staff, 2001.

The Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), prohibits the discharge of pollutants into waters of the United States unless the discharge complies with a National Pollutant Discharge Elimination System (NPDES) permit.[19] Section 402(p) of the 1987 amendments established a framework for regulating municipal, industrial and construction stormwater discharges under the NPDES program.

In California, the State Water Resources Control Board (SWRCB) and the nine RWQCBs issue NPDES permits. Communities with populations over 100,000, high-risk industries identified by the United States Environmental Protection Agency (USEPA), and construction projects of five acres or more must obtain an NPDES permit. On December 8, 1999, USEPA established additional regulations, known as Phase II NPDES, requiring permits for storm water discharges from Small Municipal Separate Storm Sewer Systems and from construction sites disturbing between one and five acres of land. The Phase II requirements were developed for regulating water quality affected by smaller municipalities and construction projects not covered by the Phase I NPDES permitting requirements.

MCSTOPPP

The Marin County Stormwater Pollution Prevention Program (MCSTOPPP) is a joint entity of cities, towns, and unincorporated areas constituted to prevent stormwater pollution, protect and enhance water quality in creeks and wetlands, preserve beneficial uses of local waterways, and comply with State and federal regulation governing water quality. MCSTOPP is composed of unincorporated Marin County, the Cities of Belvedere, Larkspur, Mill Valley, Novato, San Rafael, and Sausalito and the Towns of Corte Madera, Fairfax, Ross, San Anselmo, and Tiburon. The County's local stormwater program is responsible for implementing MCSTOPPP. The local stormwater program is administered by the Department of Public Works / County Flood Control Division staff in cooperation with the Community Development Agency, Environmental Health Services, and Parks and Open Space.[20]

MCSTOPPP participates in benthic invertebrate monitoring (as an indicator of stream health) in the watersheds of east Marin County and participates in periodic monitoring of water quality to help establish total maximum daily loads (TMDL, see below). MCSTOPPP is also a valuable resource for the community. The entity can point interested parties, including residents and developers, to documents such as the *Start-at-the-Source-Design Guidance Manual* to help improve Marin County water quality, stream channel stability, and aquatic habitats. While MCSTOPPP participates in some water quality monitoring and community outreach, the entity does not enforce implementation of its policies. However, the County and cities are members of MCSTOPPP that utilizes BMPs within the program and implements the requirements for nonpoint source pollutant control and NPDES Phase II permit requirements. County permits for construction projects also require as conditions of approval that erosion control measures are identified on the engineering plans and implemented based on the Association of Bay Area Governments (ABAG) *Manual of Standards for Erosion & Sediment Control Measures*.[21]

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[19] Clean Water Act, 1972 as amended in 1987.

[20] Inter-office memorandum, Liz Lewis, Marin County Department of Public Works, December 22, 2006.

[21] *Manual of Standards for Erosion & Sediment Control Measures*, Association of Bay Area Governments, Second Edition May 1995.

MCSTOPPP played a key role in helping to improve the county's water quality through the development of a Stormwater Management Program (SWMP). This was done in order to comply with the General Permit under Phase II NPDES regulations for the discharge by a Small Municipal Separate Storm Sewer System. The result of the SWMP is a countywide action plan. The current plan is *Action Plan 2010*.[22] Appendix A of *Action Plan 2010* lists performance standards that each MCSTOPPP participant must meet to comply with Phase II NPDES permit regulations. Since May 20, 2004, MCSTOPPP has SWRCB General Permit coverage for stormwater discharges from Small Municipal Separate Storm Sewer Systems under Water Quality Order No. 2003-00005-DWQ (Phase II General Permit).

Section 303(d) of the federal Clean Water Act requires states to develop lists of impaired water bodies and the constituents for which the water body is impaired. The states must then develop a total maximum daily load (TMDL) for the constituent or determine another method to regulate a listed pollutant appropriately. USEPA must approve the impairment lists and TMDLs determined by states. The TMDL program examines water quality problems, identifies pollutant sources, and establishes methods to provide solutions. A TMDL defines the quantity of pollutant a water body can tolerate while still meeting water quality standards. Development of TMDLs accounts for all potential sources of a pollutant (e.g. wastewater treatment discharge and urban and agricultural runoff). **Exhibit 4.5-1** lists the bodies of water within Marin County that are impaired under Section 303(d) of the Clean Water Act of 1972.

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[22] *Stormwater Management Plan Action Plan 2010*, Marin County Stormwater Pollution Prevention Program, Marin County Department of Public Works, May 2005.

Exhibit 4.5-1
Marin County Waterbodies Listed as Impaired under Section 303(d) of the Clean Water Act of 1972

Waterbody	***Impairment Constituent***
Arroyo Corte Madera Del Presidio	Diazinon
Corte Madera Creek	Diazinon
Gallinas Creek	Diazinon
Lagunitas Creek	Nutrients, Pathogens and Sedimentation / Siltation
Miller Creek	Diazinon
Novato Creek	Diazinon
Rodeo Creek	Diazinon
Richardson Bay	Chlordane, DDT, Dieldrin, Dioxin compounds, Exotic species, Furan compounds, High coliform count, Mercury, PCBs, PCBs (dioxin-like)
San Antonio Creek	Diazinon
San Pablo Bay	Chlordane, DDT, Diazinon, Dieldrin, Dioxin compounds, Exotic species, Furan compounds, Mercury, Nickel, PCBs, PCBs (dioxin-like), Selenium
San Rafael Creek	Diazinon
Tomales Bay	Mercury, Nutrients, Pathogens, Sedimentation / Siltation
Walker Creek	Mercury, Nutrients, Sedimentation / Siltation

Source: State Water Resources Control Board Resolution No. 2003 – 009 Approval of the 2002 Federal Clean Water Act Section 303(d) list of Water Quality Limited Segments.

Establishing a pollutant's TMDL can be a lengthy process that involves both the public and State and federal agencies. The RWQCB, in conjunction with the SWRCB, has delayed establishment of certain TMDLs due to lack of funding, politics, and the reprioritization of agency responsibilities. [23]

The only established TMDL for San Francisco Bay Urban Creeks is for the pollutant diazinon. While the RWQCB established a TMDL for mercury, the SWRCB and USEPA determined the standard was insufficient as it did not set clear standards to reduce mercury to acceptable levels in San Francisco Bay. The RWQCB is currently amending the mercury TMDL and expects to establish a TMDL for polychlorinated biphenyls (PCBs) in 2006. In addition, the RWQCB plans to develop 30 TMDL projects to address more than 160 listings of impaired waterbodies for various pollutants.

[23] The TMDL Project Schedule and Status Report for the RWQCB can be found on the agency's main TMDL web page at: http://www.waterboards.ca.gov/sanfranciscobay/tmdlmain.htm

REGIONAL GROUNDWATER

In general, regional groundwater conditions in Marin County are not well documented. According to the U.S. Geological Survey (USGS) and the California Department of Water Resources (DWR), no regional studies of groundwater availability or quality have been conducted in Marin County.

The *1995 Basin Plan* cites four significant groundwater basins: Ross Valley, Novato Valley, Petaluma Valley, and the Sebastapol-Merced Formation, which includes the town of Dillon Beach, located at the northern edge of Tomales Bay. While the plan also cites the San Rafael basin, it provides no characteristics of the basin. The Petaluma Valley Basin is situated primarily in Sonoma County but includes a small portion of northern Marin County. The *1995 Basin Plan* does not discuss the Lagunitas Valley. However, based on yield data from the North Marin Water District (NMWD) wells in Lagunitas Valley, the safe yield is likely greater than the quantity cited for the Ross Valley Basin.

Groundwater recharge to the County's principal aquifers occurs when infiltrated rainfall ultimately reaches the water table within the alluvium that comprises the aquifers. In groundwater recharge areas, there is a downward component to the groundwater flow and the water table usually lies at greater depth. In groundwater discharge areas, the groundwater flow has a significant upward flow component and the water table is relatively shallow (e.g., spring outlets, stream channels, and coastal or bay transitions).

Typically, areas of significant groundwater recharge include the portions of alluvial valleys not subjected to intensive urban or suburban development, and the fractured bedrock that accepts infiltrated rainfall on the surrounding hillslopes. Within the alluvial materials in these stream valleys, the hydraulic conductivity of sediments may vary by orders of magnitude due to the spatial and temporal variations in the nature of the deposited sediments. For example, coarse sediments (e.g., sands and gravels) deposited by fluvial processes can be interspersed with finer sediments (e.g., silts and clays) that are deposited over adjoining floodplains. Since the alignment and profile of natural channels change over time, alternating layers of these riverine and floodplain deposits can occur along portions of the valley floor that are no longer occupied by streams or their current floodplains. Therefore, some locations of an alluvial valley will more readily transmit rainfall to the underlying water table. In general, significant zones of groundwater recharge within the county are coincident with the areas delineated as significant groundwater basins (i.e., the alluvial valleys of Ross, Novato, and Lagunitas).

In addition to the regional hydrologic setting, the *Draft 2005 CWP Update* addresses some specific land use designation options and sites. The following section addresses these specific *Draft 2005 CWP Update* components and their relevant hydrologic setting information.

CITY-CENTERED CORRIDOR HOUSING SITES

Section 4.1 Land Use, Population, and Housing describes the existing site-specific conditions of the Housing Overlay Designation plus the St. Vincent's / Silveira properties and the San Rafael Rock Quarry. For many of the designated sites in the Housing Overlay Designation (see **Exhibit 3.0-6** in the Draft EIR or **Maps 3-2a** and **3-2b** [Housing Overlay Designation] in the *Draft 2005 CWP Update*) the amount of impervious surface is already maximized and the additional housing units would come from the construction of upper story units. Most of the Housing Overlay parcels are located outside of the 100-year FEMA mapped floodplain. However, there are parcels located within the 100-year floodplain in the Santa Venetia area. In addition, portions of Housing Overlay parcels along Miller Creek extend into the 100-year floodplain. This is also true for some parcels along Sir Francis Drake

Boulevard and in southern Marin near Richardson Bay. In order to prevent flooding, it is important to avoid development in portions of these parcels within the 100-year floodplain. Six areas within unincorporated Marin County were selected for site-specific analysis of environmental impacts from proposed concentrated residential development. The following discussion describes the local hydrologic setting of the four specific sites in the Housing Overlay Designation plus the St. Vincent's / Silveira properties and the San Rafael Rock Quarry.

St. Vincent's / Silveira Properties

The proposed Baylands Corridor covers varying portions of the site under the three Baylands Corridor Options included in the *Draft 2005 CWP Update* (see **Exhibit 3.0-3** in the Draft EIR or **Maps 2-5a** and **2-5b** [Baylands Corridor Options 1-3] in the *Draft 2005 CWP Update*). Surrounding land uses include the Las Gallinas Valley Sanitary District wastewater treatment facilities. The properties include many significant natural features such as oak woodland, tidelands, diked baylands, seasonal wetlands, the Miller Creek corridor, overbank channels, and swales from the ridges in the northwestern portion of the site. Most of the non-channelized segment of Miller Creek at the site maintains building setbacks of greater than 200 feet. The properties overlie the Novato Valley groundwater basin. However, due to the proximity to San Pablo Bay, the groundwater table is shallow, eliminating groundwater recharge and routing stormwater runoff directly to the bay.

The two properties drain to San Pablo Bay via a series of swales, drainage ditches, and Miller Creek. **Exhibit 4.5-2** shows the jurisdictional features of these properties. During high tides at the aforementioned properties, tidal backwater influences the lower reach of Miller Creek. The creek is a major drainageway emanating from the mountains surrounding Lucas Valley. A setback of 100 feet would be required from the top of both banks along Miller Creek for any proposed development to maintain a stream conservation area (SCA) along the creek corridor. The Miller Creek corridor is vegetated with a narrow band of riparian vegetation. The vegetative canopy is not continuous, exposing short reaches of the creek as it traverses these properties to the bay. Average annual rainfall in the vicinity is 25 inches.

The overbank channels to the north and south of Miller Creek provide additional drainage paths for conveying floodwaters during flooding events. Any modification of these channels would need to be assessed to ensure that flooding is not exacerbated. FEMA designates much of the St. Vincent's / Silveira properties as located within the 100-year floodplain. The 100-year floodplain results from a combination of Miller Creek watershed flooding and San Pablo Bay tidal flooding

Exhibit 4.5-1 lists both Miller Creek and the San Pablo Bay as impaired water bodies under Section 303(d) of the CWA of 1972. Miller Creek is listed for impairment by the pesticide diazinon. An amendment to the *1995 Basin Plan* (signed into law November 16, 2005) established a TMDL for diazinon in urban creeks throughout the San Francisco Bay Basin. The TMDL dictates that the diazinon concentration in urban creeks shall not exceed a one-hour average of 100 ng / L. [24] To meet this TMDL, applicable agencies must devise pollution prevention strategies and public education programs. Issuance of NPDES permits for urban runoff management agencies and similar entities responsible for controlling urban runoff (e.g., industrial facilities, universities, and military installations) should require the use of Best Management Practices to reduce the amount of pesticides in urban runoff. Agencies such as MCSTOPPP also play a vital role in implementing and advancing pollution prevention strategies for meeting the diazinon TMDL.

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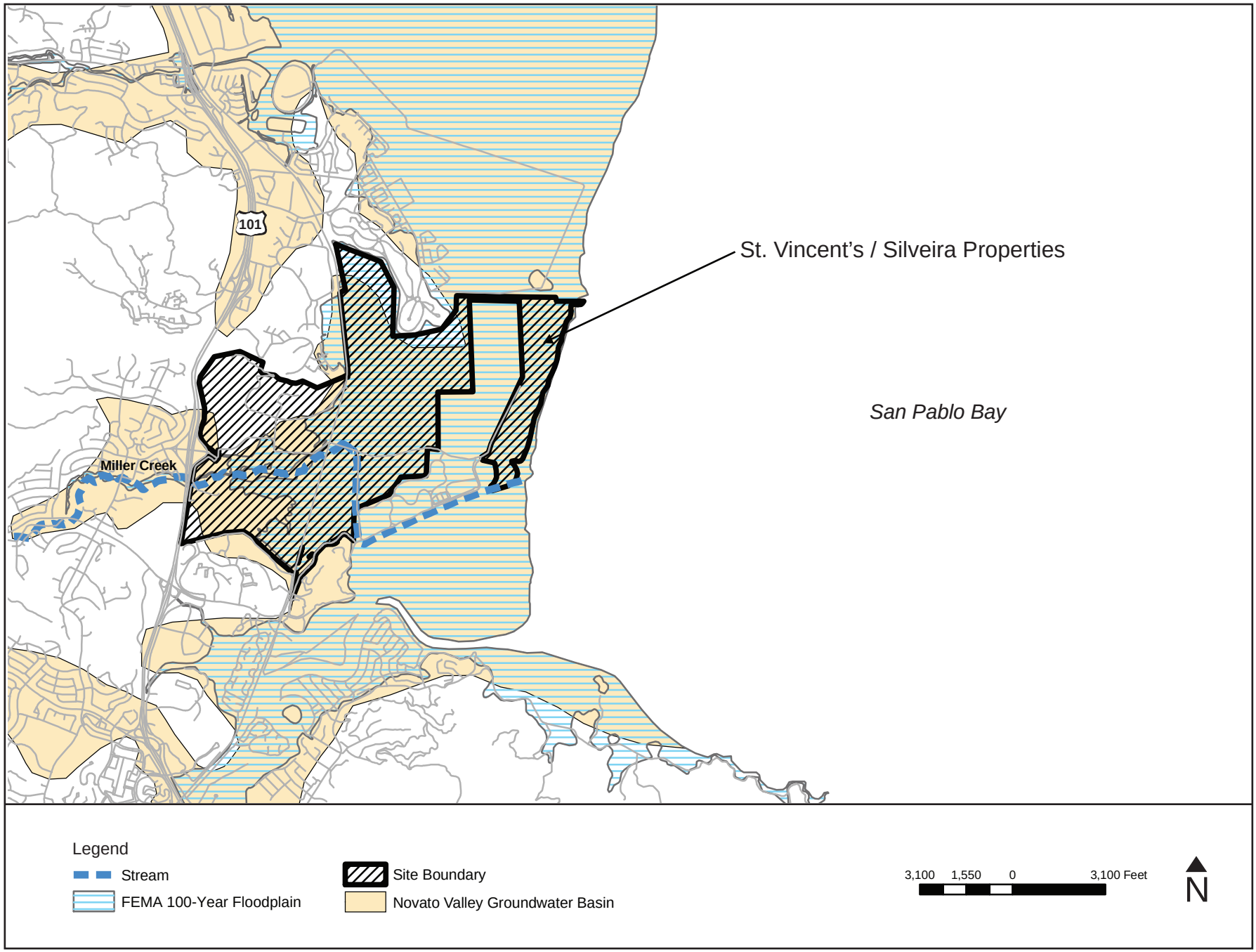
[24] ng / L = nanogram per liter (1 nanogram = 0.000000001 gram) or parts per trillion.

Exhibit 4.5-2
St. Vincent's / Silveira Properties - Hydrologic Setting



Source: Clearwater Hydrology and Marin County Community Development Agency, July 2006.

San Pablo Bay is impaired for diazinon since many urbanized creeks drain to the bay. Achieving the diazinon TMDL in urban creeks will reduce / eliminate impairment of San Pablo Bay waters by the pesticide. During tidal fluctuation, San Pablo Bay waters enter the low reach of Miller Creek on the St. Vincent's / Silveira properties. Tidal waters may carry constituents into Miller Creek for which San Pablo Bay is impaired. In addition to diazinon, San Pablo Bay is listed on the 303(d) list as impaired for chlordane, DDT, diazinon, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, nickel, PCBs, PCBs (dioxin-like), and selenium. As mentioned above, the SFRWQCB is currently amending the mercury TMDL for re-submittal to the SWRCB.

Marinwood Shopping Center

The Marinwood Shopping Center property extends north from the northern bank of Miller Creek to Miller Creek Road. The property overlies the Novato Valley groundwater basin. However, groundwater recharge is minimal because impervious surface covers most of the site.

The Marinwood Shopping Center drains to an outfall in Miller Creek. The creek riparian corridor is mature its closed canopy shades the channel at this location. Average annual rainfall in the shopping center vicinity is 29 inches. **Exhibit 4.5-3** illustrates the Miller Creek 100-year floodplain near the property. The mapped floodplain does not extend onto the Marinwood Shopping Center property, as the ground surface at the shopping center is above that of the 100-year floodplain. As mentioned above, Miller Creek is listed as an impaired water body for the pesticide diazinon.

San Rafael Rock Quarry

The waters of the San Rafael and San Pablo Bays bound the rock quarry on two sides. Tidal marsh and McNear's Beach Park border the quarry to the north and buffer the operation from Point San Pedro Road and nearby suburban development. The Baylands Corridor includes low-lying sections of the western portion of the site and areas at the bay margin (see **Exhibit 3.0-3**).

The San Rafael Rock Quarry is essentially an open pit mine where rock extraction resulted in the excavation of a hilltop over time. The bottom of the pit is over 230 feet below sea level.[25] The quarry area drains to a pond at the bottom of the quarry. During the summer, water is pumped from the bottom of the quarry to another onsite pond, where it is then used as process water. The area to the north of the main quarry bowl was mined and has been used to stockpile materials. Some areas have remained undisturbed, other disturbed areas have been revegetated, and some areas remain relatively unvegetated. This portion of the site drains to the tidal marsh. There is still a portion of land to the west of the open pit that is forested and may support limited wildlife uses. This area drains down to the brickyard and either flows into the tidal marsh or directly into the bay. Annual average rainfall in the vicinity is 19 inches.

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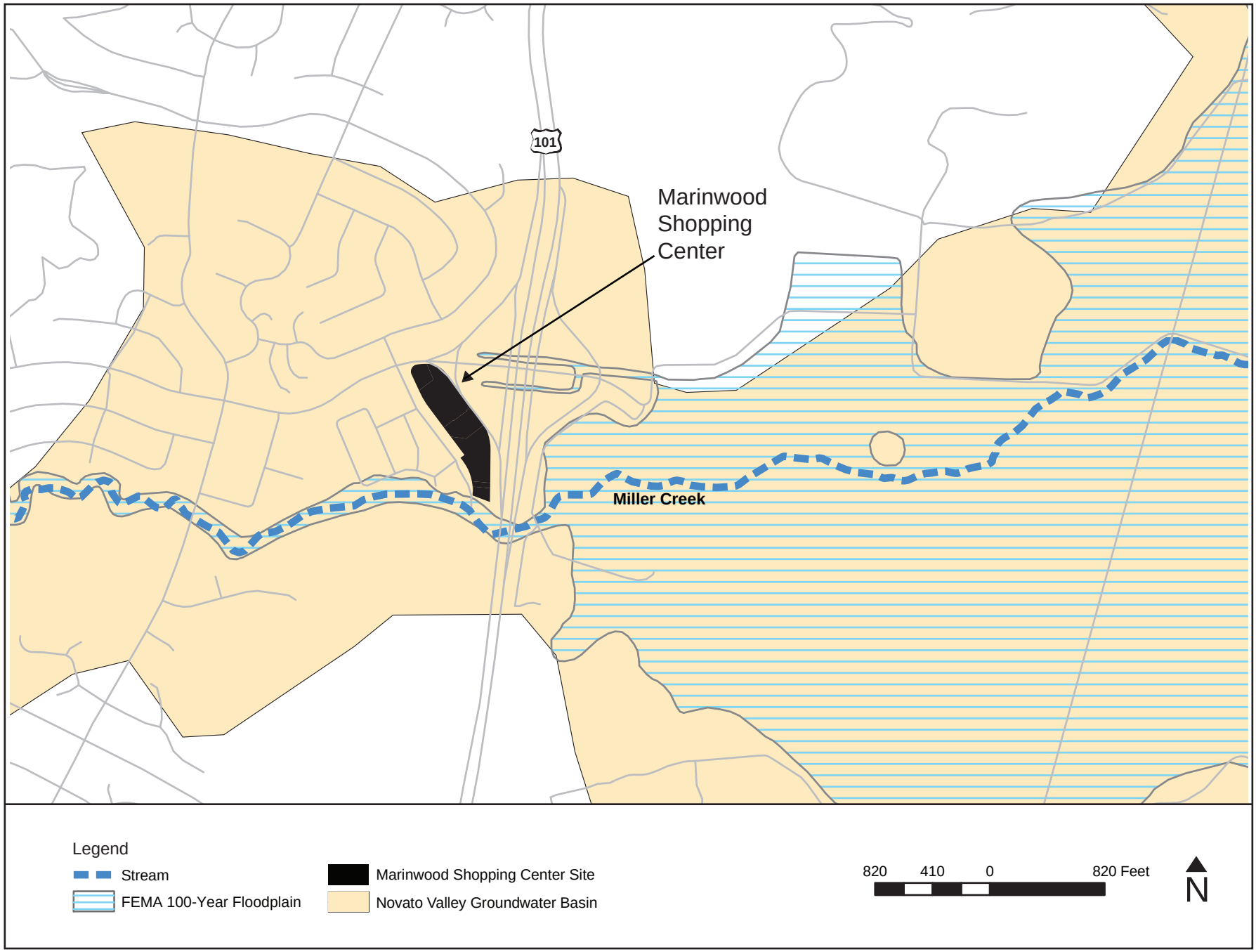
[25] Clearwater Hydrology communication with Eric Steger, Senior Civil Engineer, Marin County Department of Public Works, March 13, 2006.

Exhibit 4.5-3
Marinwood Shopping Center - Hydrologic Setting



Source: Clearwater Hydrology and Marin County Community Development Agency, July 2006.

Exhibit 4.5-4 depicts tidal marsh and portions of the lands fronting San Rafael and San Pablo Bays as within the 100-year FEMA designated floodplain. Accordingly, on-site flooding would be the result of an extreme high tide and associated wave runup.

The site drains to waters listed in **Exhibit 4.5-1** as impaired. Please refer to the St. Vincent's / Silveira properties discussion for the constituents for which San Pablo Bay is impaired.

Strawberry Shopping Center

Impervious surfaces cover nearly all of this property. Stormwater is collected in storm drains and routed to an outlet in the tidal marsh west of U.S. 101 and north of Hamilton Drive.[26] The tidal marsh connects to Shelter Bay through a culvert under Hamilton Drive. Shelter Bay is a small embayment connected to Richardson Bay. As shown in **Exhibit 4.5-5**, FEMA does not delineate any portion of the shopping center within the 100-year floodplain. As shown in **Exhibit 4.5-1**, Richardson Bay is an impaired water body for the following constituents: chlordane, DDT, dieldrin, dioxin compounds, exotic species, furan compounds, high coliform count, mercury, PCBs and PCBs (dioxin-like). Average annual rainfall in the vicinity is 28 inches.

Marin City Shopping Center

The shopping center covers approximately 21.2 acres, including 19 acres of shopping center (i.e., buildings and associated parking) and a 2.2-acre marsh to the north. Impervious surface covers nearly all of the shopping center grounds. Richardson Bay borders the property to the northeast. Average annual rainfall in the vicinity is 30 inches.

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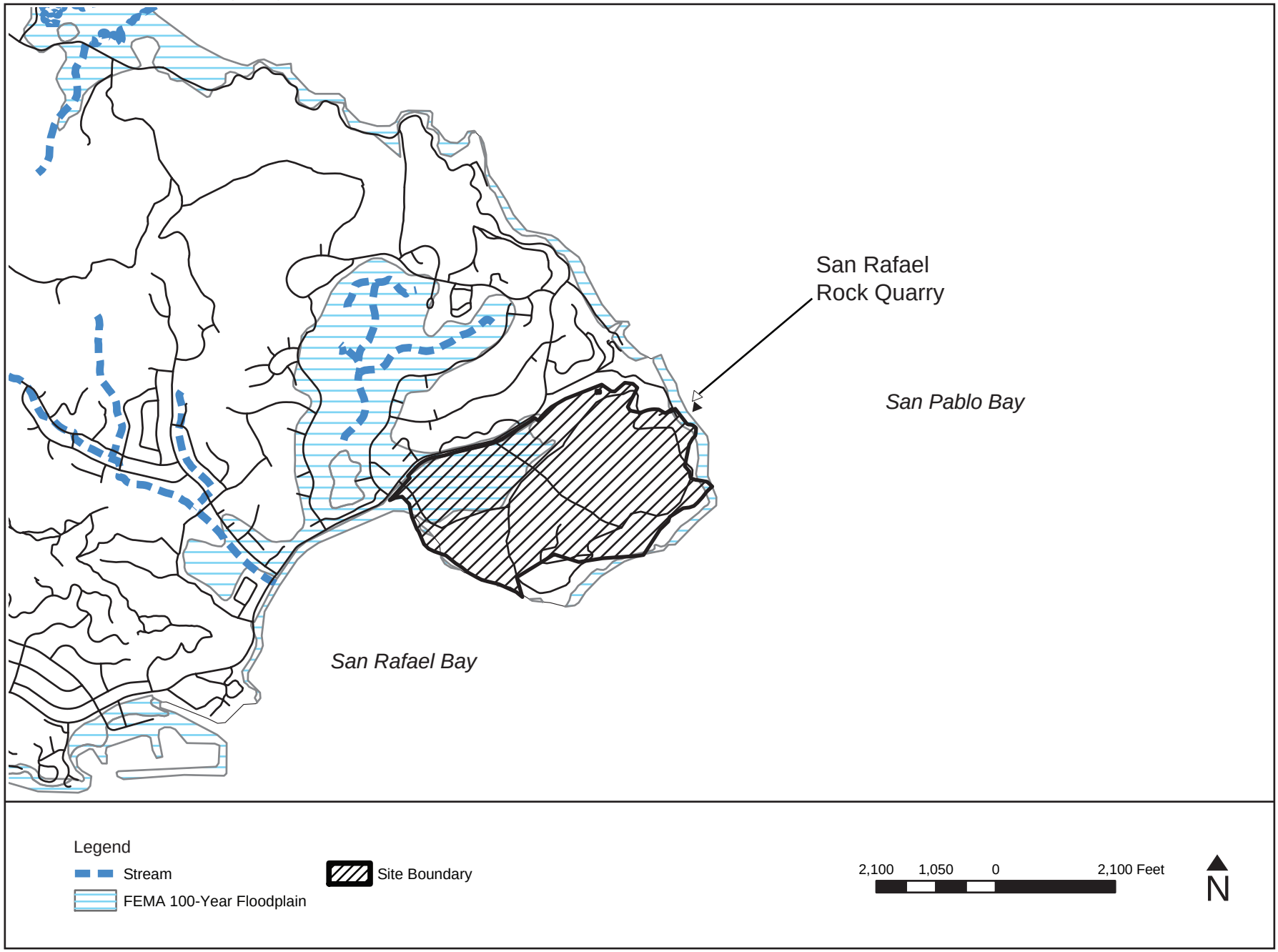
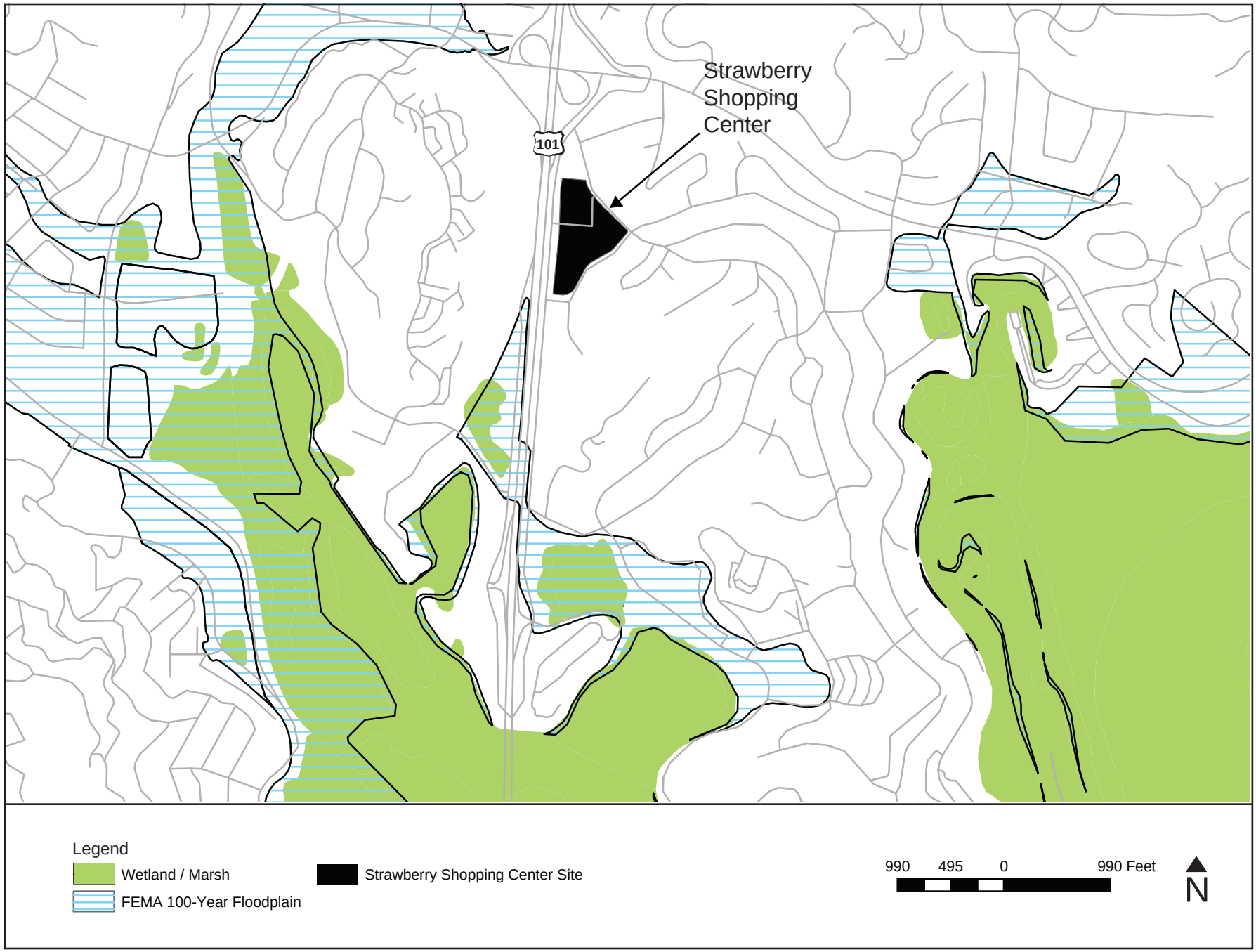
[26] Clearwater Hydrology communication with Eric Steger, Senior Civil Engineer, Marin County Department of Public Works, March 13, 2006.

Exhibit 4.5-4
San Rafael Rock Quarry - Hydrologic Setting



Source: Clearwater Hydrology and Marin County Community Development Agency, July 2006.

Exhibit 4.5-5
Strawberry Shopping Center - Hydrologic Setting



Source: Clearwater Hydrology and Marin County Community Development Agency, July 2006.

As shown in **Exhibit 4.5-6,** the Marin City Shopping Center drains to a marsh that is a remaining natural feature.[27] The marsh was an extension of Richardson Bay before the placement of fill for U.S. 101 and nearby development. There are three storm drain outlets into the marsh. One of the outlets consists of two pipes. The double outlet has remnant hinges above both pipes, with no tide gates attached, which are signs of past tide gates. Another outlet has a non-functioning tide gate still connected to the headwall and the third outlet has no sign of a tide gate. The marsh connects to Richardson Bay under U.S. 101 via a culvert. The inlet of the marsh outlet pipe has a sluice gate that maybe closed to prevent tidal flushing. The culvert discharges into Richardson Bay near the end of Gate 6 ½ Road in Sausalito. The EIR hydrologist found no tide gate on the culvert outlet during a March 2006 inspection. The open water / mud flat portion of the marsh is fringed by salt marsh vegetation including cord grass, pickleweed and salt grass, confirming the saline nature of the marsh. The site drains to waters listed in **Exhibit 4.5-1** as impaired. Refer to the Strawberry Shopping Center discussion for the constituents for which Richardson Bay is impaired.

Fairfax / Oak Manor

Impervious surfaces (i.e., buildings and associated parking) cover nearly all this site. The high percentage of impervious surface area allows for minimal groundwater recharge at the site. Surrounding land uses are suburban with a mix of apartments, low- to medium-density residential, and some undeveloped land in the surrounding hills. Average annual rainfall in the vicinity is 38 inches.

The Oak Manor strip center drains to storm drains that direct runoff to Fairfax Creek. Fairfax Creek runs parallel to Sir Francis Drake Boulevard on the west side of the road. **Exhibit 4.5-7** illustrates the 100-year floodplain of the creek near the site. None of the Oak Manor lands are within the delineated FEMA floodplain. Fairfax Creek is an urban creek of San Francisco Bay and is therefore listed as an impaired water body for diazinon as shown in **Exhibit 4.5-1**. Refer to the St. Vincent's / Silveira properties section above for additional information related to this issue.

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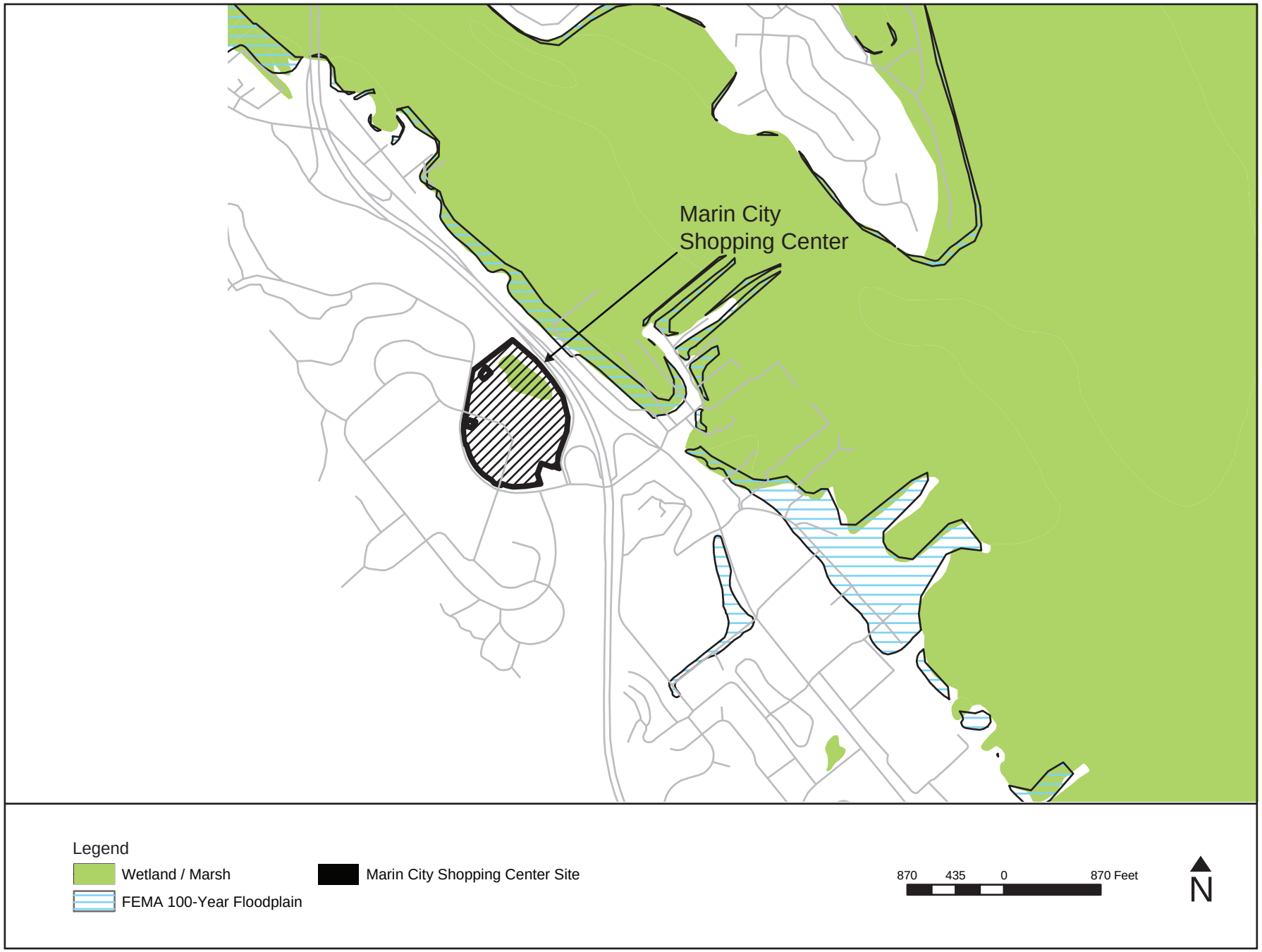
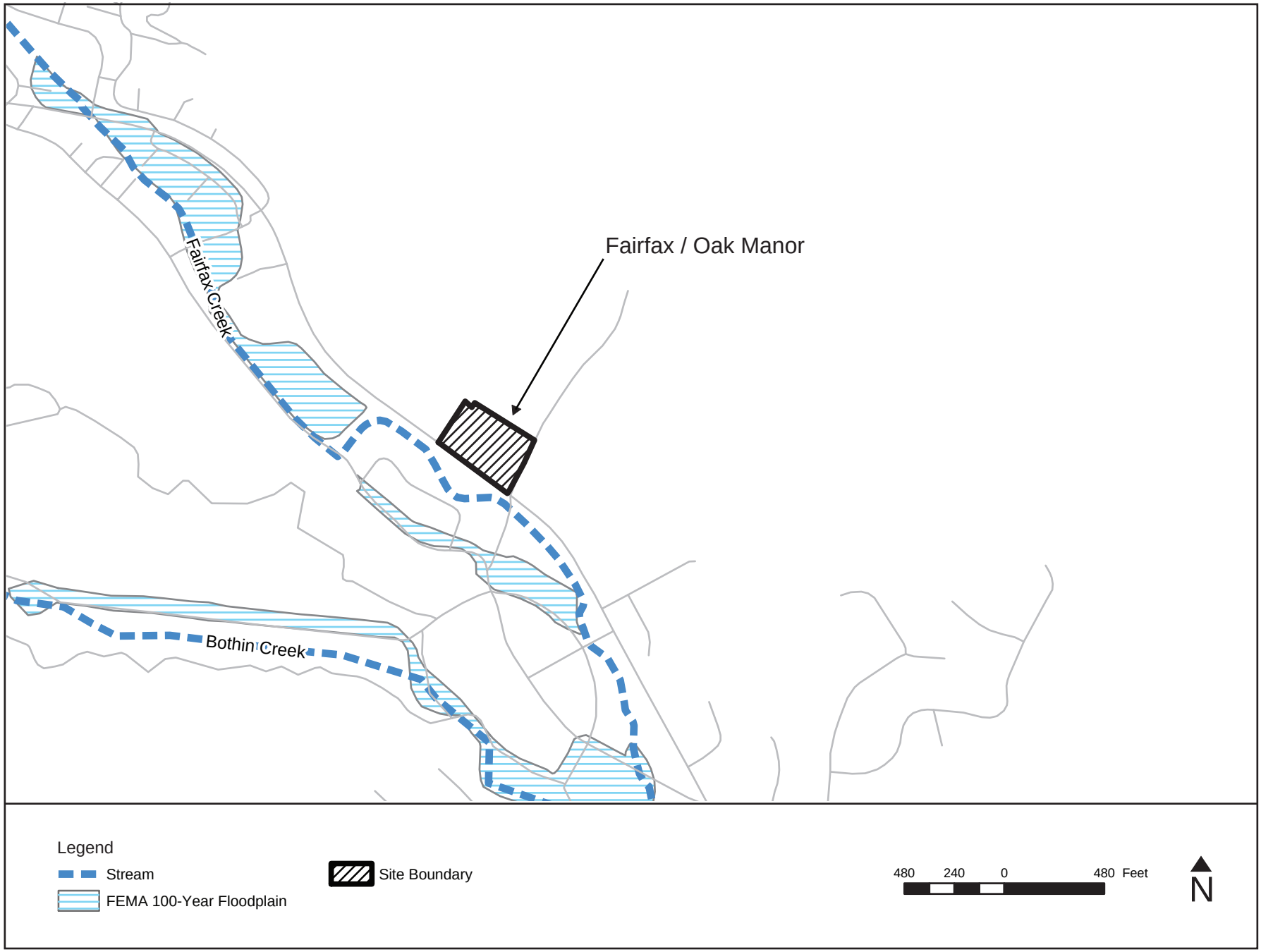
[27] Clearwater Hydrology communication with Kevin McGowan, Senior Civil Engineer, Marin County Department of Public Works, March 13, 2006.

Exhibit 4.5-6
Marin City Shopping Center - Hydrologic Setting



Source: Clearwater Hydrology and Marin County Community Development Agency, July 2006.

Exhibit 4.5-7
Fairfax / Oak Manor - Hydrologic Setting



Source: Clearwater Hydrology and Marin County Community Development Agency, July 2006.

Hydrology, Water Quality, and Flood Hazards – Significance Criteria

The hydrology, water quality, and flood hazards analyses uses criteria from the *State CEQA Guidelines.* The Initial Study determined that the proposed project could have significant hydrology, water quality, flood hazards, or drainage systems impacts. The project would have a significant impact if it would:

Water Quality

- Violate any water quality standards or waste discharge requirements; or
- Otherwise substantially degrade water quality.

Groundwater

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

Drainage

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Flooding

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map (FIRM) or other flood hazard delineation map with lowest floor elevations below the BFE;

- Place a structure within a floodway that would have a cumulative increase on the BFE of a designated amount, typically one foot as set by the NFIP. [28]

- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

- Be at risk of inundation by seiche, tsunami, or mudflow. (Potential impacts of inundation by seiche, tsunami, or mudflow are discussed in ***Section 4.7 Geology***).

Hydrology, Water Quality, and Flood Hazards – Impacts and Mitigation Measures

Impact 4.5-1 Water Quality Standards

Land uses and development consistent with the Draft 2005 CWP Update would introduce additional pollutants to downstream waters. Such pollutants would result in adverse changes to the water quality of Marin County's natural and artificial drainageways and ultimately to Richardson, San Francisco, and San Pablo Bays. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* may result in violations of water quality standards as defined by the San Francisco Regional Water Quality Control Board (RWQCB) in the *1995 Basin Plan*. **Exhibit 4.5-1** describes the pollutants for which Marin County water bodies are currently impaired.

Development, operation, and maintenance of residential, commercial, industrial, and public land uses could result in the use of materials and substances that would impair water quality. Such development would also create additional impervious surfaces (e.g., rooftops, sidewalks, driveways, streets, parking lots, etc,) which do not allow stormwater to infiltrate into the ground. These surfaces decrease the land area available for filtration of stormwater by natural vegetation and organisms living in the soil. Water, typically as rainfall, moves over impervious surfaces and carries away natural (e.g., sediment) and human-generated (e.g., oil, pesticides, etc.) pollutants that are deposited into streams, rivers, wetlands, and eventually coastal waters. Runoff from these land uses is one component of water pollution known as *nonpoint source pollution* (i.e., having many diffuse sources).

Nonpoint source pollution is typically composed of sediment, organic compounds, nutrients, trace metals, bacteria and viruses, and oil and grease compounds. Sediment sources include roads and parking lots, as well as destabilized landscape areas, stream banks, unprotected slopes and denuded or disturbed areas. [29] Organic compounds are derived from sources such as automotive fluids, pesticides, and herbicides. Nutrients include nitrogen, phosphorus, and other organic compounds from sources such as organic litter, fertilizers, food waste, sewage, and sediment. Sources of trace metals include motor vehicles, roofing and construction materials, and chemicals. Pet waste and solid waste disposal areas contribute bacteria and viruses. Sources of oil and grease compounds include motor vehicles, food service establishments, and fueling stations.

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[28] Floodway definition. Code of Federal Regulations, Title 44, Volume 1, Chapter 1, Part 9 Floodplain Management and Protection of Wetlands, Section 9.4 Definitions, October 1, 2006.

[29] Water quality impacts related to soil erosion and downstream sedimentation are further discussed in *Impact 4.5-2 Water Quality – Soil Erosion and Downstream Sedimentation Related to Construction*.

Marin County Code addresses nonpoint source pollution under Title 24, Development Standards. Section 24.04.625, Erosion and Sediment Control, ensures that BMPs are incorporated into project construction, and when required by the Marin County Community Development Agency, a SWPPP be prepared to address interim (i.e., during construction) and post construction erosion control measures. Section 24.04.627, Surface Runoff Pollution Control Plans, addresses nonpoint source pollution by presenting permanent BMPs that implement *Start-at-the-Source* techniques aimed at improving water quality through the construction of infiltration trenches and grassed swales.

As described in ***Section 4.8 Agriculture***, agricultural production is an economically important land use activity in Marin County. Some agricultural practices and associated land uses have historically impaired water quality and, on occasion, contributed to the violation of water quality standards in Marin County. These practices and land use activities include hay farming, grazing, and dairies.

Such agricultural land uses consistent with the *Draft 2005 CWP Update* could be a source of soil erosion and sedimentation of downstream waterways, especially when such land use activities occur on steep slopes. These land use activities could also be a source of nutrients from excess concentrations of chemicals used in agricultural operations (e.g., fertilizers) containing nitrogen and phosphorous in agricultural runoff.

Stormwater runoff from agricultural uses such as dairy operations and other areas of concentrated animal management activities could transmit pathogens from livestock feces to humans.[30] These pathogens include E. coli (i.e., fecal coliform), cryptosporidium, and giardia. Pathogens are a concern in West Marin, especially during the rainy season, due to more intense agricultural land uses relative to other areas of the county. For example, in the Tomales Bay Watershed, streams flowing through agricultural lands drain into Tomales Bay and often carry pathogens from animal waste in stormwater runoff. During the rainy season, elevated levels of fecal coliform may contaminate shellfish beds and impair water quality. The California Department of Health Services prohibits commercial shellfish harvesting during rainfall periods to limit health risks to shellfish consumers.

In addition to nonpoint source pollution, water quality may be degraded by improperly maintained septic systems. Pathogenic organisms associated with human fecal matter may become present in county waters when the septic treatment process is not completed due to a faulty system.

Septic systems are utilized on properties throughout the county (See **Map 2-8** [Parcels with Buildings and Septic Systems] in *Draft 2005 CWP Update*). Septic use is typical in the rural areas of West Marin and low-density residential areas such as the northern side of the Tiburon Peninsula.

The County utilizes a permitting procedure for the design of new septic systems that requires review of engineering plans. Standard septic systems[31] go through the County permitting process for wastewater treatment and disposal. Standard septic system design is based on accepted design

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30 *Tomales Bay Pathogens TMDL Staff Report*, San Francisco Bay Regional Water Quality Control Board, July 8, 2006 available online at http://www.swrcb.ca.gov/rwqcb2/TMDL/tomalesbaypathogenstmdl.htm

31 A sewage disposal system which includes a septic tank (with or without the use of sump chamber and pump) by which method subsurface effluent is disposed of through leach lines

principals that are assumed to ensure proper function of the system for extended periods. [32] Because the systems are expected to operate properly with proper owner maintenance there is no County inspection process after the initial inspection. Older septic systems within the county are standard septic systems. Alternative septic systems [33] also go through the County permitting process, however, since these are based on newer technologies, ongoing inspections are required to ensure proper operation.

Even recently, permitted systems could discharge wastewater containing nutrients, bacteria, and pathogens due to improper maintenance. Development setbacks and the preservation of riparian vegetation can minimize the adverse effects of these discharges, but proper maintenance is the only method to ensure that septic systems do not contaminate water quality. The County maintains the *Septic Matters* website (www.septicmatters.org) to disseminate information to community members about septic systems and maintains a database to help improve the management of septic systems throughout the county. Improperly maintained septic systems are believed to have contributed to the contamination of Tomales Bay, which is impaired for pathogens as described in **Exhibit 4.5-1**. [34]

To help improve conditions in Tomales Bay, the East Shore Wastewater Improvement Project has been implemented. The project is currently at the environmental impact report (EIR) stage. [35] The project is twofold. Sanitary wastewater facility improvements have been proposed for the Phase I Service Area located in the downtown area of Marshall. Faulty septic systems in this portion of the East Shore area of Tomales Bay pose the greatest threat to bay water quality from failing systems. A plan has been developed to relocate leach fields away from the shoreline of the bay to locations further inland. Construction of the project is expected to take place in Fall 2007. Future improvements may occur to nearby properties.

The second objective of the project is the establishment of a local program for ongoing oversight of all wastewater systems along the East Shore of Tomales Bay. One result of the project is a partnership between the East Shore community homeowners of Tomales Bay and Marin County. The local program for monitoring of the wastewater systems along the East Shore may serve as a model for developing a countywide septic monitoring program.

Natural drainage features and biological processes provide some protection from polluted runoff and improperly maintained septic systems. Tidal marshes, seasonal wetlands, and riparian corridors filter runoff and allow stormwater storage and infiltration. Riparian vegetation often traps sediment generated by upslope erosion thereby reducing the amount of sediment reaching a channel and ultimately, the degree to which the water body is impaired for this pollutant. Constructed drainage features can also promote stormwater filtration and infiltration. Vegetated drainage swales provide

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[32] Clearwater Hydrology communication with Philip Smith, Marin County Environmental Health Services, December 2006.

[33] Any individual sewage disposal system which may or may not include a standard septic tank for treatment, or does not include standard leaching trenches for effluent disposal, which has been demonstrated to function in such a manner as to protect water quality and preclude health hazards and nuisance conditions.

[34] *Pathogens in Tomales Bay Watershed: Total Maximum Daily Load (TMDL) - Staff Report.* California Regional Water Quality Control Board, San Francisco Bay Region, July 8, 2005.

[35] *East Shore Wastewater Improvement Project, Draft Environmental Impact Report*, Leonard Charles and Associates, November 2006.

plant material and soil particles for pollutants to adsorb to for further breakdown by biological processes. Depending on soil type and the depth of the underlying water table, infiltration of stormwater within drainage swales is also a possibility.

Water quality would be affected in streams receiving polluted runoff from development proposed under the *Draft 2005 CWP Update*. Pollutant loading typically increases in the downstream direction as urbanization becomes denser near the valley floor. The local receiving waters (e.g., San Francisco Bay and Pacific Ocean) would be affected substantially more when separate urbanized watersheds outlet to the same receiving waterbody. **Map 2-7** (Major Watersheds) of the *Draft 2005 CWP Update* depicts the major watersheds of Marin County.

For example, Richardson Bay (a small extension of San Francisco Bay) receives runoff from the Mill Valley, Sausalito, and Belvedere watersheds that are named after the cities they drain. **Exhibits 3.0-14**, **3.0-15**, **3.0-17**, and **3.0-18** describe and show the amount of development within the Richardson Bay Planning Area, which encompasses these three watersheds. Of these three watersheds, the Mill Valley Watershed would incur the greatest amount of development (i.e., approximately 1,000 housing units) with implementation of the *Draft 2005 CWP Update*. [36] Water quality could be affected in all streams receiving runoff from areas of new development.

The Miller Creek Watershed would receive approximately 960 housing units with implementation of the *Draft 2005 CWP Update*. Miller Creek outlets into San Francisco Bay just north of the Gallinas Creek watershed outlet. Adverse changes to the water quality of San Francisco Bay near these creek outlets would be similar to those described for Richardson Bay.

The setting section describes a number of agencies and programs that regulate water quality in Marin County. Adverse changes to water quality from stormwater discharges of the pollutants described above would be reduced by implementation of County and municipal National Pollutant Discharge Elimination System (NPDES) Phase I and II permit requirements. Such permits are required for large and small municipalities, industrial sites, and construction projects to regulate the quality of stormwater discharges. The NPDES program requires the preparation of Stormwater Management Programs (SWMP) or Stormwater Pollution Prevention Plans (SWPPP) in order to manage / minimize stormwater discharge and meet water quality standards.

The *Draft 2005 CWP Update* proposes changes to the Land Use Plan as well as programmatic approaches to improve water quality. These include redirecting some residential and commercial development away from West Marin and designating areas that serve important water quality functions, such as Baylands Corridor and Stream Conservation Areas.

Section 4.1 Land Use, Population, and Housing describes proposed changes to the land use plan. Implementation of Policy **CD-1.3** and Program **CD-1.c** would calculate potential residential density and commercial Floor Area Ratio (FAR) at the low end of the applicable range on sites with sensitive habitat, including SCAs or within Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems. As a result, approximately 1,694 housing units would be reallocated primarily from West Marin (see **Exhibits 3.0-6** and **3.0-7**) to the Housing Bank for development in the City-Centered Corridor. [37] Housing units removed from West Marin would be

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[36] All unit numbers presented throughout this section were provided by the Marin County GIS Department.

[37] The Housing Bank is discussed in ***Section 3.3 Description of the Draft 2005 CWP Update***.

constructed in areas that have existing sewer service. As a result, additional water quality impacts to sensitive water resources in West Marin from potentially faulty septic systems would be avoided.

The *Draft 2005 CWP Update* would protect baylands and large adjacent upland areas, which buffer tidelands and provide significant habitat connectivity, by designating such land as Baylands Corridor (see **Exhibit 3.0-3**). Aside from providing added protection to remaining baylands habitat, the designation and associated policies of the Baylands Corridor would protect lands that serve an important water quality function for the county. As previously described, wetlands and tidal marshes filter contaminated runoff from roads that pollute stormwater with petrochemicals, heavy metals and sediment. Baylands Corridor Option 2 would protect the most acres of these lands and thus provide the greatest water quality function.

Stream Conservation Areas (SCAs), as required by *Draft 2005 CWP Update* policies, designate and protect areas adjacent to streams that allow surface runoff to drain overland, filter through vegetation, and infiltrate into the ground. SCAs minimize streambank erosion (e.g., rills and gullies) by reducing the flow of surface runoff over the bank. Riparian vegetation filters and traps sediment and other pollutants mobilized from upslope areas and roadways. These areas are an integral part of the in-channel environment as they provide nutrient exchange and sediment storage. SCAs could reduce upstream impacts from erosion and increases in peak flows by providing overbank areas for sedimentation to occur and flood waters to disperse.

For parcels that contain a SCA, the Miller Creek Watershed (Las Gallinas Valley Planning Area) would incur the greatest amount of residential development (i.e., approximately 670 housing units) and nonresidential floor area (i.e., approximately 922,000 square feet). This is due to the large parcel sizes that comprise the St. Vincent / Silveira property and other parcels with development potential located further upstream that border Miller Creek. The Mill Valley Watershed (Richardson Bay Planning Area) and the Novato Creek Watershed (Novato Planning Area) each could have over 60 housing units developed on parcels with a SCA. The San Antonio Creek Watershed (Novato and West Marin Planning Areas) could have over 600,000 square feet of non-residential floor space developed on parcels with a SCA.

Preserving these important functions of SCAs is an objective of the *Marin County Watershed Management Plan* (Watershed Management Plan).[38] The Watershed Management Plan would improve water quality by providing areas outside of stream channels for the storage of sediment caused by hillside erosion and slope failures. The Watershed Management Plan includes measures that can be utilized by residents and developers to improve water quality within a watershed. In addition, the Watershed Management Plan provides guidance to local conservation groups and agencies (e.g., Marin Conservation Corps and Marin County Stormwater Pollution Prevention Program [MCSTOPPP]) on how to manage and restore natural areas by using techniques to repair / improve degraded areas (e.g., eroding stream banks and hillslopes) that may be delivering high sediment loads to local streams.

The proposed Housing Overlay Designation would have implications for water quality. **Exhibit 3.0-6** show parcels assigned to the Housing Overlay Designation. The majority of these parcels would be designated for residential land uses but would include some commercial uses as well. Commercial land uses generate higher quantities of stormwater contaminants than do residential uses because of greater vehicle traffic and often more intensive landscape management using fertilizers and pesticides.

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[38] *Administrative Draft Marin County Watershed Management Plan*, April 2004.

As described in the setting section, the majority of the commercial uses would be located within six specific sites as redevelopment associated with additional housing since there is existing commercial or industrial (i.e., rock mining) development. The St. Vincent's / Silveira property would result in development of some previously undeveloped terrain and in a greater amount of common nonpoint source pollutants in stormwater runoff compared to what currently occurs.

With respect to septic systems, all areas within the Housing Overlay Designation are within a sanitary district or a service district that is responsible for ensuring wastewater effluent is treated. The San Rafael Rock Quarry is not associated with a sanitary or service district. The quarry operation and McNear's Brickyard currently treat wastewater with septic systems. Scenario 2 and Scenario 3 of the *Draft 2005 CWP Update* assign 350 housing units to the San Rafael Rock Quarry. Scenario 1 does not assign any housing units to the San Rafael Rock Quarry. If either Scenario 2 or Scenario 3 were adopted and the Rock Quarry developed, it would be necessary to extend sewer lines to the site to ensure that San Francisco Bay waters are not contaminated from faulty septic systems at such a high density. If Scenario 1 were adopted, no such extension would be necessary because no housing units would be constructed.

The development / redevelopment of parcels under the Housing Overlay Designation would occur in the City-Centered Corridor within watersheds that ultimately drain to San Francisco Bay. The Marinwood, Strawberry, and Marin City Shopping Centers and the Oak Manor strip center have intensive existing commercial uses. Impervious surfaces (e.g., building roof or paved parking areas) cover most of the land area at each shopping center. Impervious surfaces cover a substantial portion of the San Rafael Rock Quarry and include buildings, paved areas, and the open pit quarry. However, there is an area of vegetated knoll and tidal marsh not covered by impervious surface and allows some natural drainage and water quality processes to function while providing wildlife habitat.

The *Draft 2005 CWP Update* contains several policies and implementation programs that, if adopted and implemented, would reduce adverse effects to water quality from nonpoint source pollution (i.e., polluted stormwater) and improperly maintained septic systems. The policies would reduce the use of pesticides and fertilizers, minimize erosion and downstream sedimentation, and provide public education and outreach to reduce residential nonpoint source pollution. Continued implementation of Marin County ordinances noted in this section would also reduce impact from nonpoint source pollution.

Policy **WR-1.3** and Program **WR-1.b** would help improve water quality by establishing quantitative development standards that maximize stormwater infiltration and minimize additional runoff from impervious surfaces. Stormwater infiltration allows biological processes in the soil to bind to and break down pollutants. Furthermore, infiltration allows a more natural hydrologic regime where stormwater moves more slowly towards the groundwater table and is released into streams over time.

Program **WR-1.c** would monitor Marin County water quality in order to assess changing trends. Monitoring of water quality would allow agency managers to determine where additional efforts are needed to reduce pollutants affecting water quality.

Policies **WR-2.1**, **WR-2.2**, **WR-2.5**, **AG-1.13** and Programs **WR-1.a**, **WR-1.d**, **WR-2.j**, **WR-2.k** would decrease contaminant loading of stormwater from residential, agricultural, and commercial areas through education and outreach. Education would disseminate information to the public about simple practices, that when practiced throughout a watershed, could greatly reduce impacts to water quality.

Policy **BIO-4.5**, **BIO-5.4** and Programs **BIO-5.e**, **WR-1.e**, **WR-1.f** would decrease water quality impairment from sediment by restoring eroding and degraded streambanks and would increase the water quality and flood storage function of SCAs when restoration work takes place within such an area. Natural water quality treatment functions would be enhanced by the restoration of diked bay marshlands. Restoring natural systems eliminates areas of excessive erosion, and thus downstream sedimentation. Such measures would improve the function of natural water quality treatment processes.

Policies **WR-2.3**, **WR-2.4**, **BIO-4.16**, **BIO-5.2** and Program **BIO-5.e**, **WR-2.b** would minimize the generation of stormwater contaminants by addressing water quality protection during the design phase of projects using development techniques described in the *Start-at-the-Source-Design Guidance Manual for Stormwater Quality Protection*. [39] These techniques include on-site stormwater detention, biofiltration through vegetated areas, and permeable pavements. These policies would educate developers and their consultants and create standards to minimize both offsite runoff and the suspended and dissolved contaminants associated with urban stormwater. Water quality would also be protected through the implementation of Best Management Practices (BMPs) discussed in the *Start-at-the-Source Design Guidance Manual* targeted at contractor activities, erosion and sediment control, and post-construction site conditions. These BMPs include techniques utilized during construction and immediately after construction during the vegetation establishment period. For example, silt fencing, erosion control mats, and dispersed straw protect exposed sediment from being mobilized by raindrop splash and sheet runoff until vegetation becomes established. Requiring these design techniques be used in future development or redevelopment in the unincorporated area would greatly reduce the amount of pollutants leaving such sites.

As described in the environmental setting, MCSTOPPP is a joint entity of the cities, towns, and unincorporated areas of Marin County aimed at protecting water quality. MCSTOPPP is also a resource base for documents and informative pamphlets guiding the use and implementation of BMPs and *Start-at-the-Source* techniques. County procedures implemented by the Department of Public Works (DPW) and the Community Development Agency (CDA) include the standards set forth by MCSTOPPP (e.g., *Start-at-the-Source* techniques), the County's Surface Water Management Plan and the County's Urban Runoff Ordinances. The DPW and CDA share responsibility for ensuring that development projects adhere to these requirements. Implementation of this responsibility is enforced through both the environmental review process and issuance of building and grading permits. While these ordinances and permitting programs would not completely eliminate impacts from urban stormwater runoff, they would greatly reduce them.

Policy **BIO-5.10** and Programs **BIO-5.f**, **WR-2.a**, **CD-4.b** would improve the quality of impaired water bodies through the coordination of local, State and federal agencies. In addition these policies would facilitate the acquisition of baylands essential for treatment of urban stormwater runoff. Federal and State agencies are currently strengthening water quality standards and criteria in order to mitigate cumulative development impacts to the waters of San Francisco Bay and its tributaries.

Programs **WR-2.c**, **WR-2.d**, **WR-2.e**, **WR-2.f**, **WR-2.g WR-2.h**, **WR-2.i** would minimize adverse affects to water quality from septic and alternative waste disposal systems for both new and existing development. These programs would provide for important research and monitoring and would

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[39] *Start-at-the-Source Design Guidance Manual for Stormwater Quality Protection*, EOA, Inc., Prepared for the Bay Area Stormwater Management Agencies Association, January 1999. Available online at http://www.cleanwaterprogram.org/uploads/SAS_Manual_index.pdf

benefit areas like West Marin where faulty septic systems are believed to have contributed to pathogen contamination in Lagunitas Creek and Tomales Bay. Because property owners often do not maintain septic systems properly, implementation of these programs would reduce adverse effects to water quality by ensuring appropriate maintenance and monitoring of septic systems, especially for systems near waterways.

Policies **BIO-4.1**, **BIO-4.2**, **BIO-4.4**, **BIO-4.7**, **BIO-4.8**, and **BIO-4.9** and Programs **BIO-4.a** and **BIO-4.b** establish Stream Conservation Areas (SCAs) that would limit / prohibit development in flood-prone and environmentally sensitive areas. As described above, SCAs would establish development setbacks, maintain vegetation, and allow filtration and infiltration of stormwater.

While these policies and programs, including the work of MCSTOPPP, would reduce some of the adverse effects to water quality associated with nonpoint source pollution, there is still the potential for water quality impacts from improperly maintained septic systems. Water quality standards could periodically be exceeded for pollutants generated by faulty septic systems. Therefore, it would be necessary to amend program **WR-2.i** to reduce adverse effects to water quality to the maximum extent practical for new development and redevelopment projects.

Implementation of program **WR-2.i** would be required to reduce impacts to high-risk areas, such as Tomales Bay from faulty septic systems to a less-than-significant level. Implementation of this program could be modeled after the East Shore Study. Although the program would cover the entire county, only high-risk areas would need to be targeted to reduce required funding. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, program **WR-2.i** would be implemented within five years. [40]

However, the language for Program **WR-2.i** needs to be amended to ensure its implementation. Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative water quality impact. The following mitigation would be required.

Mitigation Measure 4.5-1 In order to reduce impacts to water quality from septic system operation to a less-than-significant level, the County would amend Program **WR-2.i** to reduce adverse effects to water quality to the maximum extent practical for new development and redevelopment projects and to continue to implement existing ordinances.

Mitigation Measure 4.5-1(a) Revise Program **WR-2.i** of the *Draft 2005 CWP Update* as follows:

> **WR-2.i;** ~~*Consider*~~ *Establish~~ing~~ a Septic Inspection, Monitoring, and Maintenance District*. Establish a countywide Septic Management and Monitoring District that would include all portions of unincorporated areas with septic systems. Modify applicable codes to enable the inspection and monitoring of on-site septic systems in a risk-based, comprehensive and cost effective way. <u>Establishment requires a petition or election to put the district in place.</u>

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[40] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

Mitigation Measure 4.5-1(b) Continue to implement County ordinances addressing nonpoint source pollution, erosion and sediment control, and surface runoff pollution control plans to ensure that project related and cumulative impacts to water quality standards are minimized or avoided through conditions on project approval as required by the ordinances.

Significance After Mitigation Adoption of the revised program described in Mitigation Measure 4.5-1, along with continued enforcement of the referenced ordinances would minimize the impact of future land uses and development to the extent practicable.. Adoption and implementation of Mitigation Measure 4.5-1 would reduce this impact to a less-than-significant level and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised program as described in Mitigation Measure 4.5-1 as part of *Marin Countywide Plan 2005*. Environmental Health Services would be responsible for administering the septic monitoring program.

Impact 4.5-2 Water Quality – Soil Erosion and Downstream Sedimentation Related to Construction

Development consistent with the Draft 2005 CWP Update would involve construction and grading activities that could result in erosion and downstream sedimentation of Marin County waterways. Sediment and other associated pollutants entering receiving waters would result in adverse changes to water quality. However, existing regulations and water quality policies and programs contained in the Draft 2005 CWP Update would reduce this to a less-than-significant impact.

Implementation of the *Draft 2005 CWP Update* would result in the construction of a wide range of land uses including residential, commercial, industrial, public (e.g., roads, wastewater, energy production, and landfill facilities), and agricultural (e.g., processing and support facilities). During construction, vegetative cover that stabilizes the soil would be removed by grading and earthmoving activities. Stormwater would mobilize and transport exposed soil to nearby drainageways. Other pollutants, which may be bound to soil particles (e.g., oils and pesticides), could be transported as well. Furthermore, grading and earthmoving activities could alter drainage patterns and exacerbate erosion, especially for development on hillside areas. Sediment delivery from construction sites is a substantial component of nonpoint source pollution. Excessive sedimentation within a SCA could reduce the value of the area as a natural filter of stormwater pollutants. Therefore, development consistent with the *Draft 2005 CWP Update* would increase erosion and downstream sedimentation and could result in violations of water quality standards as defined by the RWQCB in the *1995 Basin Plan*.

Marin County has complied with its NPDES Phase II permit requirements under the development of *Action Plan 2010* by MCSTOPPP (See Environmental Setting, MCSTOPPP). NPDES Phase I or II permits would be required for construction projects that disturb more than five acres or one acre, respectively. The RWQCB may require a permit for a project smaller than one acre depending on site-specific concerns. Projects requiring NPDES permits would also be required to prepare Stormwater Pollution Prevention Program (SWPPP) to ensure that Best Management Practices (BMPs) are utilized to eliminate the offsite transport of sediment.[41] Information on BMPs may be obtained from MCSTOPPP for the preparation of SWPPPs. MCSTOPPP is a County information source for

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[41] The California Stormwater Quality Association has a BMP Construction Handbook available for download at http://www.cabmphandbooks.com/Construction.asp

residents and developers concerned with protecting water quality during and after construction projects. Common BMPs include silt fences, which prevent sediment transport while allowing water to pass, and sedimentation basins, which allow site drainage to a basin where sedimentation occurs before stormwater is discharged to drainageways.

The *Draft 2005 CWP Update* contains policies and programs that, if adopted and implemented, would reduce water quality impacts due to erosion and downstream sedimentation from construction sites. The policies include requiring Start-at-the-Source techniques and BMPs to eliminate offsite sediment transport.

Policies **WR-2.3**, **WR-2.4**, and Program **WR-2.b** would minimize sediment generation at construction sites by addressing water quality protection during the design phase of projects through the use of techniques in the *Start at the-Source; Design Guidance Manual for Stormwater Quality Protection*. [42] These policies and program would educate developers and their consultants as well as require grading plans that minimize soil erosion and promote on-site sediment retention. In addition, they address issues related to the design, construction, and maintenance of County buildings, roads, bridges, and drainages that would minimize erosion and downstream sedimentation of waterways.

Existing requirements, including NPDES permit requirements, proposed policies of the *Draft 2005 CWP Update*, and future RWQCB regulatory initiatives such as the TMDL program, would substantially reduce the extent of erosion and downstream sedimentation from construction activities. Such measures would ensure that adverse effects to water quality resulting from construction activities would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.5-2 None Required.

Impact 4.5-3 Groundwater Recharge

Land uses and development consistent with Draft 2005 CWP Update would result in additional impervious surfaces and the diversion of groundwater to surface water (i.e., through subsurface drainage features or localized dewatering measures), thereby reducing groundwater recharge in some Marin County watersheds. Reductions in groundwater recharge and / or local dewatering measures could affect the yield of downslope wells and have adverse effects on sensitive plant communities. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in the construction of additional impervious surfaces (e.g., rooftops, streets, parking lots, etc) which decrease the land area available for infiltration of rainfall, thereby reducing groundwater recharge. In Marin County, development on hillsides typically requires the construction of retaining walls and subsurface drainage features that divert intercepted groundwater to storm drain catch basins. Storm drains then discharge directly to surface drainageways, further minimizing groundwater recharge. In addition, groundwater recharge would be reduced in developable areas affected by landslides where remediation would be required to protect the integrity of new and / or existing downslope properties. [43] Typical landslide remediation

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[42] *Start-at-the-Source Design Guidance Manual for Stormwater Quality Protection*, EOA, Inc., Prepared for the Bay Area Stormwater Management Agencies Association, January 1999. Available online at http://www.cleanwaterprogram.org/uploads/SAS_Manual_index.pdf

[43] The County's Landslide Mitigation Policy is discussed in ***Section 4.7 Geology***

includes grading and compaction of unstable soils as well as the installation of subsurface drains to reduce pore pressures within the soil mass. Such landslide repairs would also divert intercepted groundwater to surface drainageways and potentially reduce groundwater recharge. The local character of groundwater recharge and its spatial distribution within the groundwater basin affect the nature of the potential impact. In this context, reduced groundwater recharge could have adverse effects on Marin County groundwater resources and sensitive plant communities.

Adverse effects to groundwater supplies and well yields could occur in the Inland Rural Corridor where groundwater wells are commonly used by homes and agricultural uses. Within watersheds dominated by permeable soils, development of additional impervious surfaces and the conversion of agricultural uses (e.g., to residential uses) could substantially reduce groundwater recharge areas. Areas of substantial recharge typically include valley floors where alluvial (e.g., sand and gravel) soils are common, although locally substantial recharge can also occur within fractured bedrock environs. A well's sustainable yield is determined by both pumping and recharge rates: pumping rates (averaged over time) must be equal to or exceeded by recharge rates. If pumping rates are consistently higher than recharge rates, well yields will begin to drop until a well is no longer serviceable.

Sensitive plant communities in serpentine-based soils are sometimes found in the headwater areas at higher elevations of some watersheds. In addition, hillsides of any elevation may be home to seep wetlands. These plant communities rely on areas of groundwater recharge and groundwater aquifers to sustain the ecosystem. Slope dewatering associated with landslide remediation or drainage pattern alteration (e.g., construction of concrete cross-slope drains) would likely result in the most adverse effects on such sensitive plant communities that otherwise would not be directly affected by residential development.

With respect to the Housing Overlay Designation, two of the five areas where housing would be redirected are located over the Novato Valley groundwater basin: the Marinwood Shopping Center and the St. Vincent's / Silveira properties. Due to the already high percentage of impervious surface at the Marinwood Shopping Center groundwater recharge is severely limited. Therefore, redevelopment of the site would not result in substantial adverse effects to groundwater recharge. While the St. Vincent's / Silveira properties are mainly open space, their proximity to San Pablo Bay maintain a high groundwater table, which limits the available capacity for recharge. In addition, there is the possibility of saltwater intrusion by saline bay waters. These two factors limit the importance of the properties as an area of recharge for the Novato Valley groundwater basin and development of the St. Vincent's / Silveira properties would not result in substantial adverse effects to groundwater recharge.

Exhibit 4.5-8 shows significant groundwater basins described in the *1995 Basin Plan* for each of the seven planning areas. These groundwater basins receive most significant recharge inflows in alluvial valleys set back from the bay margin, where both the hydraulic conductivity of soils (i.e., the soil's ability to infiltrate water) and the distance from the ground surface to the water table is greater. Because the locations of potential housing units within the seven planning areas are speculative, groundwater resources would be best protected if new housing units were located outside the groundwater basin boundaries. If development would occur in an area important to groundwater recharge, impervious surfaces should be located in a portion of the site that would not limit groundwater recharge. Only four planning areas - the Novato, Las Gallinas, Central San Rafael, and Lower Ross Valley- are all or partially located over a significant groundwater basin. Scenario 1 places the least number of housing units in these four planning areas and would therefore have the fewest adverse effects to groundwater resources.

The *Draft 2005 CWP Update* contains policies and programs to reduce adverse effects to groundwater resources that would result from increased impervious surface coverage over areas that contribute to

groundwater recharge. The policies include maintaining areas important to groundwater recharge and incorporating development techniques into the project design that promote infiltration, and thus, groundwater recharge. In addition, MCSTOPPP would provide information on development techniques that help maintain water quality and natural hydrologic processes. Proper site design at locations with suitable subsurface conditions (e.g., sufficient depth to winter groundwater elevations) could incorporate vegetated swales for filtration and infiltration.

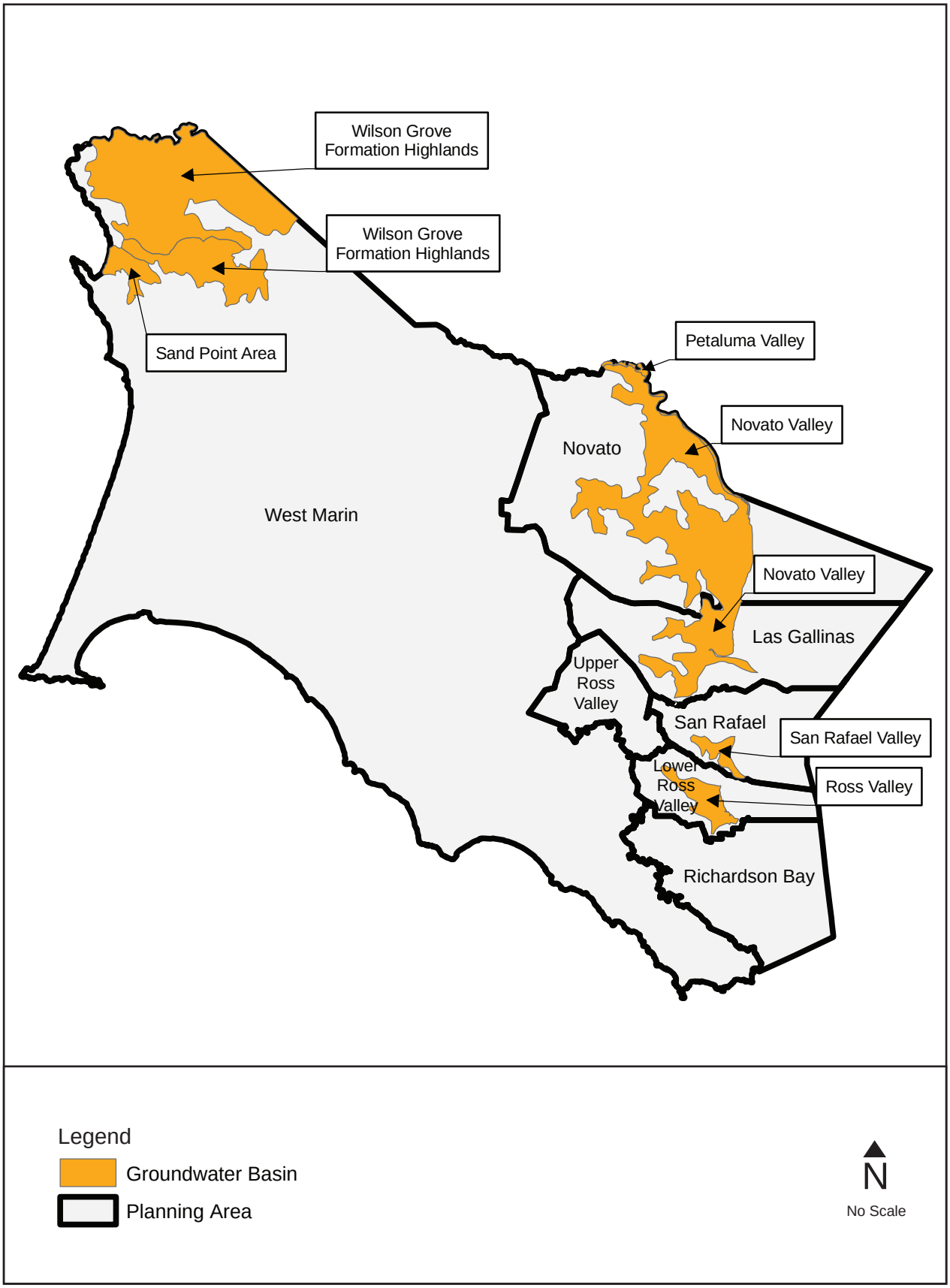
The Marin County Code also includes ordinances that serve the function of both protecting water quality and increasing groundwater recharge. Section 24.04.627, Surface Runoff Pollution Control Plan, lists permanent BMPs that can encourage groundwater recharge (e.g., infiltration trenches and grassed swales). Section 23.18.093, Best Management Practices for New Developments and Redevelopments, states that the preferred method is to retain drainageways above ground and in as natural state as possible, as opposed to storm drain construction. This would allow for exchange between surface water and groundwater, and where the underlying geology is appropriate, result in recharge to the local and regional groundwater basins.

Policy **BIO-4.16** and Programs **WR-1.b**, **WR-2.b** and **PFS-2.o** would avoid impacts to groundwater resources by addressing groundwater recharge during the design phase of a project. Examination of the project site plan to identify potential impacts to groundwater resources would occur during environmental review. The precise development plan would be required to show that no impact to a groundwater basin or subbasin would occur. Program **WR-2.b** would require developers to utilize techniques from the *Start-at-the-Source* manual that would promote post-development groundwater recharge. Program **WR-1.b** would establish development standards to maximize stormwater infiltration based on criteria developed by the Bay Area Stormwater Management Agency Associates. Program **PFS-2.o** would require documentation that new development projects would not adversely affect a groundwater basin or subbasin.

Policies **WR-1.1**, **WR-1.3**, **WR-1.4**, and Program **WR-1.f** would address groundwater recharge through the protection, restoration, and enhancement of areas that significantly contribute to recharge. Limiting development footprints to areas that do not serve an important recharge role would protect groundwater recharge areas and minimize adverse effects to groundwater basins and subbasins.

Program **WR-1.a** would address groundwater recharge through education and outreach. The program would continue to fund and support MCSTOPPP and County stormwater program efforts to encourage residents to adopt practices that increase groundwater infiltration.

Exhibit 4.5-8
Significant Marin County Groundwater Basins



Source: Clearwater Hydrology and Marin County Community Development Agency, July 2006.

While these policies and programs, including the work of MCSTOPPP, would reduce some impacts to groundwater resources, additional impervious surfaces constructed within Marin County watersheds could still reduce local groundwater recharge to nearby wells, groundwater basins, or to ecosystems that support sensitive plant communities. Therefore, implementation of Program **PFS-2.o** would be required to reduce this impact to a less-than-significant level. Implementation of this program would require documentation that new development projects would not adversely affect a groundwater basin or subbasin. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Program **PFS-2.o** would not be implemented within five years. [44]

Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative impact. The following mitigation would be required.

Mitigation Measure 4.5-3(a) Revise the timeframe of implementation of Program **PFS-2.o** to the medium-term or sooner.

Mitigation Measure 4.5-3(b) Continue to implement County ordinances that maintain continued groundwater recharge, require surface runoff pollution control plans and best management practices for new developments and redevelopments to ensure that project related and cumulative impacts to groundwater recharge are minimized or avoided through conditions on project approval as required by the ordinances.

Significance After Mitigation Adoption of the relevant *Draft 2005 CWP Update* policies discussed above, along with Mitigation Measure 4.5-3 would reduce adverse effects of development to groundwater resources and water wells to a less-than-significant level and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting Mitigation Measure 4.5-3 as part of the *Marin Countywide Plan 2005*. Project applicants would be responsible for preparing groundwater and well impact analyses to determine potential impacts on groundwater recharge, seasonal groundwater levels, and sensitive plant communities. The Marin County Community Development Agency would be responsible for conducting design and peer reviews of the groundwater impact analyses as well as recommending and overseeing implementation of appropriate mitigation measures.

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[44] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation

Land uses and development consistent with the Draft 2005 CWP Update could result in an alteration of local drainage patterns and / or the modes of stormwater conveyance that would increase watershed peak flow rates. Increased peak flow rates may exacerbate hillside or channel / floodplain erosion and downstream sedimentation. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in additional impervious surface areas that would reduce the *time of concentration* and increase *peak flow rates* in receiving drainageways. [45] [46] Vegetated areas allow stormwater to infiltrate the ground and slow the delivery of runoff to channels that combine to reduce runoff volumes and peak flows. In contrast, impervious surfaces (e.g., concrete) dramatically reduce local infiltration rates, while storm drains accelerate the delivery of runoff which cumulatively lead to an increase in runoff volumes and peak flows. Increases in surface runoff volumes and peak flows would also reduce the base flow (i.e., streamflow derived from groundwater discharge) conveyed in both on-site and downstream drainageways.[47] A substantial reduction in the duration and / or the extent to which base flow is conveyed between storms, or during the dry season, would result in dryer soil conditions and less vegetation on the lower channel banks. Depending on the magnitude and extent of the reduction, organisms living within or adjacent to the channel could be adversely affected by these conditions as well.

Increases in peak flow rates would likely increase the potential for erosion, both overland and in drainage swales and creeks. In particular, peak flow increases (i.e., above natural background levels) and the related steepening of the rising and falling limbs of the flood hydrograph could exacerbate creek bank erosion and / or cause destabilizing channel incision. [48] Bank erosion risk due to rapid drawdown of near-stream groundwater levels would also increase. Channel incision (i.e., a deepening of the channel) would be common where concentrated flows (i.e., those in storm drains) were delivered to natural channels. In the absence of natural controls such as instream bedrock outcrops, this incision (or "headcut") could progressively migrate upstream. Lateral adjustments in natural channels could also occur, even absent localized incision of the channel beds. In either case, the resultant eroded bed and bank sediments are transported at variable rates downstream, depending on the characteristics of subsequent flood events. Instream sedimentation could also create local channel instability, due to deflection or re-direction of currents, resulting in a chain of channel instability.

Downstream sedimentation could produce temporary point- or mid-channel bars or increase the rate of deposition in ponds, lakes or reservoirs, or other engineered hydraulic structures such as engineered flood control channels and roadway culverts. In some cases, sedimentation would likely reduce the

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[45] *Time of concentration* is the time it takes for a drop of water to travel from the furthest part of a watershed to the point at which flow rates are being calculated.

[46] *Peak flow rate* is the highest discharge associated with a particular rainstorm, and is registered as the peak of the flood hydrograph for that rainfall event.

[47] On particular parcels of land where existing soil surfaces have been severely amended, (i.e., by the application of hardened materials such as gravel road beds and / or the continual imposition of structural loads), the efficiency of runoff generation during a storm event may approach that of fully or nearly fully impervious surfaces such as concrete. In these cases, computed project-related increases in runoff volumes and peak flow rates may by substantially reduced.

[48] Channel incision can lower adjacent water tables, detrimentally affect riparian vegetation, and oversteepen channel banks, increasing the risk of bank collapse, which can increase both downstream sediment loads and the rate and extent of downstream sedimentation

conveyance capacities for channels and hydraulic structures, resulting in an increased risk of roadway or property flooding. For a more detailed discussion of the impact of sedimentation on downstream channel and hydraulic structure capacities, see *Impact 4.5-5 Stormwater Drainage System Capacities*.

A proposed project's level of impact would vary and depend on such factors as existing impervious surface area, project size and density, the extent of storm drain construction, and the extent to which the drainage design incorporates peak flow reduction methodologies (e.g., the use of porous paving, on-site stormwater detention, and other *Start-at-the-Source* stormwater management technologies). Erosion of upstream areas and related downstream sedimentation typically leads to a number of adverse changes to water quality and aquatic habitat, including decreased water depths, increased water temperatures, and degraded fishery resources in coastal streams.

The *Draft 2005 CWP Update* proposes changes to the Land Use Plan as well as programmatic approaches to reduce erosion and downstream sedimentation. These include redirecting some residential and commercial development away from West Marin and designating areas that serve important water quality functions as Stream Conservation Areas.

As described above in *Impact 4.5-1 Water Quality Standards*, both the *Marin County Watershed Management Plan* and the *Draft 2005 CWP Update* contain methods to reduce erosion and downstream sedimentation. Implementation of the *Draft 2005 CWP Update* would designate Stream Conservation Areas (SCAs) to protect areas adjacent to streams that allow surface runoff to drain overland, filter through vegetation, and infiltrate into the ground. In addition to minimizing streambank erosion (e.g., rills and gullies) by reducing the flow of surface runoff over the bank, SCAs would maintain an undeveloped corridor to convey floodwaters during high flow conditions. Maintaining these corridors would be important to reduce flooding in both rural and urban environments. As discussed in *Impact 4.5-1 Water Quality Standards*, the Miller Creek Watershed (670 housing units), Mill Valley Watershed (65 housing units), and Novato Creek Watershed (80 housing units) have development potential on parcels with a designated SCA (**Map 2-7** [Major Watersheds]). If development were to occur on parcels with a SCA, it would be necessary to avoid / minimize the amount of impervious surface within the SCA in order to maintain the natural hydrologic processes described above.

The reallocation of housing units from environmentally sensitive areas or within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems to the Housing Overlay Designation (see **Exhibit 3.0-6**) would reduce adverse changes associated with erosion and downstream sedimentation to aquatic resources, especially in West Marin. Reallocating these housing units would help maintain low-density housing throughout West Marin. Instead, these units would be constructed in the City-Centered Corridor in areas of existing medium and high density. The *Draft 2005 CWP Update* would also relocate housing units from areas with sensitive natural resources in the City-Centered Corridor to the Housing Overlay Designation. Despite these measures, *Start-at-the-Source* stormwater management technologies would still be necessary to minimize peak flow impacts associated with new development under each of the three scenarios.

The majority of development consistent with the *Draft 2005 CWP Update* would occur as infill development. Infill would likely consist of low- to medium-density development. **Exhibits 3.0-14** and **3.0-17** describe the amount of housing units and square feet of nonresidential floor area for each of the seven planning areas. Dense development may occur in the Housing Overlay Designation areas and the St. Vincent's / Silveira properties. Erosion and downstream sedimentation would be more likely in areas where infill development and / or development within Housing Overlay Designation areas would occur within the same watershed. In these areas, increases to peak flow rates and

subsequent erosion and downstream sedimentation would be compounded if measures to reduce peak flows (e.g., *Start-at-the-Source*) were not incorporated into project design.

Of all Marin County watersheds, the Mill Valley Watershed would incur the greatest number of residential development (approximately 1,000 housing units) with implementation of the *Draft 2005 CWP Update*. These housing units would be located throughout its subwatersheds. Erosion and sedimentation issues would continue to be of special concern within this watershed due to the steep nature of the local topography. It would be important to implement BMPs during and after new construction projects in order to avoid / minimize mobilization of sediment from work areas. It would also be important to implement measures that maintain predevelopment peak flow rates for any new development within the watershed to avoid / minimize erosion in receiving drainages due to increased peak flows.

The *Draft 2005 CWP Update* contains policies and programs to reduce impacts to county drainage channels from erosion and downstream sedimentation resulting from additional impervious surfaces and increased peak flow rates. These policies would include requiring stream setbacks and grading plans for new development / redevelopment.

The Marin County Code and NPDES Phase II permit requirements would also ensure that peak flow controls would be incorporated into project design. Section 23.18.093, Best Management Practices for New Developments and Redevelopments, of the County Code would allow the director of Public Works to establish controls on the volume and rate of stormwater runoff as appropriate. To comply with the NPDES requirements, post-development peak flow rates are not to exceed the estimated pre-development flow rates where the increased peak flow rate will result in increased potential for downstream erosion.

Policies **BIO-4.1**, **BIO-4.2**, **BIO-4.4**, **BIO-4.7**, **BIO-4.8**, **BIO-4.14**, **WR-1.1**, **WR-1.3**, **WR-1.4** and Programs **BIO-4.f**, **BIO-4.g**, **BIO-4.h**, **BIO-4.i**, **BIO-4.k**, would reduce erosion and downstream sedimentation by establishing setbacks in Stream Conservation Areas (SCAs) that limit / prohibit development. SCAs would provide buffer areas along stream channels where sediment could settle or be filtered by riparian vegetation before it reaches the stream. In addition, these programs would protect streambed banks and vegetation while ensuring that natural stream and local hydrologic processes are maintained.

Policies **BIO-4.10**, **BIO-4.11** and Programs **WR-1.d**, **WR-2.k** would promote interagency planning and community coordination on a watershed scale in order to protect, enhance, and restore riparian areas as well as identify suitable materials for use within SCAs. Community coordination would allow many interested parties to collaborate and attain the common goal of healthier stream systems.

Policies **BIO-4.12**, **BIO-4.13,** and **WR-2.5** and Programs **WR-1.a** and **AIR-5.b** would address erosion and downstream sedimentation issues through the education of both relevant County staff and the public. Public education would provide the community a means by which to incorporate simple practices to reduce erosion and downstream sedimentation at their residence, commercial, or industrial property that would improve stream health on a watershed scale.

Policies **BIO-4.15**, **BIO-4.16**, **WR-2.3**, **WR-2.4**, **AG-1.5**, and **AG-1.10** and Programs **BIO-4.a**, **WR-1.b**, **WR-2.b**, **EH-3.a**, **EH-3.e**, **EH-3.f**, **EH-3.j**, **TRL-2.b**, and **AG-1.a** would establish development regulations to reduce adverse effects from erosion and downstream sedimentation. Such policies and programs would require an assessment during a project's environmental review to determine the potential for downstream sedimentation as well as allow for agency and public comments related to project design and mitigation measures to reduce such impacts. Programs **AG-1.5**, **AG-1.10,** and

AG-1.a would address erosion by preserving agricultural lands, including limiting subdivision and building size and by protecting productive soils.

Policy **BIO-4.1** and Program **WR-1.c** would reduce adverse effects from erosion through the creation of monitoring programs and the pursuit of federal and State funding to conduct baseline monitoring in Marin County watersheds. Monitoring programs would allow Marin County agency personnel responsible for watershed management to locate problem areas and identify practices that would mitigate erosion.

Policies **BIO-4.5**, **BIO-4.9**, **WR-1.2**, **MIN-1.5**, and Programs **WR-1.e** and **WR-1.f** would facilitate restoration efforts as a condition of approval for discretionary projects. Restoration of degraded stream channels would stabilize areas of persistent erosion and limit sediment influx into county streams.

While the policies and programs listed above would reduce some of the adverse affects of erosion and downstream sedimentation to Marin County streams, implementation of programs **BIO-4.f**, **BIO-4.g**, **BIO-4.h**, **BIO-4.i**, and **EH-3.f** would be required to reduce this impact substantially. Implementation of these programs would help identify impacts to riparian systems, require site assessment for projects affecting SCAs and riparian areas, ensure compliance with SCA regulations, replace vegetation in SCAs removed by projects, and require hydrologic studies for new development. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, all five of these programs would be implemented within five years. [49]

However, adverse effects from erosion and sedimentation caused by increased peak flow rates would still occur because policies of the *Draft 2005 CWP Update* would not address the need to assess the erosion potential of local drainageways that would serve as the receiving waters for a proposed development. Therefore, this would be a significant project impact and the project would make a cumulative significant contribution to a cumulative impact. The following mitigation would be required.

Mitigation Measure 4.5-4 In order to reduce impacts from erosion and downstream sedimentation in Marin County drainageways to a less-than-significant level, the County would add an additional policy to minimize the adverse affects of increased peak flow rates and storm drain discharges from development.

Mitigation Measure 4.5-4(a) Add a new policy to the Natural Systems & Agricultural Element

BIO-4.(new) *Maintain Channel Stability.* Project applicants for new development / redevelopment projects shall, where evidence is presented to the County demonstrating the need for an assessment, be required to prepare a hydraulic and / or geomorphic assessment of on-site and downstream drainageways that are affected by project area runoff. Characteristics pertinent to channel stability would

[49] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

include hillslope erosion, bank erosion, excessive bed scour or sediment deposition, bed slope adjustments, lateral channel migration or bifurcation, channel capacity and the condition of riparian vegetation. The hydraulic and / or geomorphic assessment shall include on-site channel or drainageway segments over which the applicant has control and access. In the event that project development would result in or further exacerbate existing channel instabilities, the applicant could either propose their own channel stabilization program, or defer to the mitigations generated during any environmental review required by the County for the project, which could include pre-project peak flow maintenance. Any proposed stabilization measures shall anticipate any project-related changes to the drainageway flow regime.

Mitigation Measure 4.5-4(b) Continue to implement NPDES Phase II permit requirements relating to peak flow controls to ensure that project related and cumulative impacts to peak flows are minimized or avoided through conditions on project approval as required by the ordinances.

Mitigation Measure 4.5-4(c) Implement Mitigation Measure 4.5-1(b) of *Impact 4.5-1 Water Quality Standards* and 4.5-3(b) of *Impact 4.5-3 Groundwater Recharge* relating to infiltration and peak flow rate control upon adoption of the *Draft 2005 CWP Update*.

Significance After Mitigation Adoption of the relevant *Draft 2005 CWP Update* policies discussed above along with Mitigation Measure 4.5-4 would ensure that discretionary projects are designed and constructed in accordance with accepted engineering practices to minimize local hillslope and channel instability, soil loss, impacts to riparian vegetation, increased peak flows, and adverse affects to downstream storm drainage facilities. These measures would also ensure that applicable regulatory statutes would be followed. Therefore, project impacts related to drainages, erosion and downstream sedimentation would be reduced to a less-than-significant level and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the policies and programs as described in Mitigation Measure 4.5-4 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency would be responsible for monitoring their implementation. Project applicants would be responsible for preparing and implementing appropriate site controls for erosion and downstream sedimentation to ensure that peak flow reduction and appropriate channel stabilization measures are utilized. Any such stabilization measures would also be subject to review and approval by the Department of Public Works.

Impact 4.5-5 Stormwater Drainage System Capacities

Implementation of the Draft 2005 CWP Update would increase peak flow rates, erosion, and downstream sedimentation in and around new development. Such increases would reduce the capacity of drainageways and could result in flood flows that exceed existing downstream channel or stormwater system capacities. This would be a significant impact.

As described in the previous impacts, implementation of the *Draft 2005 CWP Update* would result in additional impervious surfaces that would increase both peak flow rates of stormwater runoff and erosion and downstream sedimentation. In addition, site development typically involves compaction of soils that would also reduce stormwater infiltration in areas not covered by impervious surfaces. As peak flow rates increase, so does the scour potential of storm flows. This typically leads to erosion and downstream sedimentation within drainages and flood channels. Excessive sedimentation could reduce the capacity of drainage channels and stormwater conveyance systems and therefore may cause increased flooding.

Development consistent with the *Draft 2005 CWP Update* would generally occur in developed portions of the City-Centered Corridor watersheds. However, some housing units would be located in the relatively undeveloped Inland Rural Corridor. In some subwatersheds within the City-Centered Corridor, existing development is of low density. This is also true for the Inland Rural Corridor, although, many subwatersheds have no development.

Implementation of the *Draft 2005 CWP Update* would minimize and / or avoid development in areas along stream courses designated as SCAs. Preserving native soils and existing vegetation within SCAs would provide buffer areas along streams that would allow stormwater infiltration and convey flood flows. However, additional impervious surfaces could result in increased in peak flows, if not properly mitigated. Thus, any increase in peak flow rates within receiving drainageways could overload drainage system capacities and affect downstream channel stability. Channel instability could lead to increased scour of streambeds and banks, large-scale bank failures (e.g., slumps), tree collapse, and other dysfunctions. Local erosion could affect downstream sedimentation and obstruct culvert capacities, which can create localized flooding or hillslope instabilities.

Engineered flood control works exist along many of the streams flowing eastward from the City-Centered Corridor. Engineering maintenance (e.g., dredging) is typical in the lower reaches close to the San Francisco Bay margin. Larger streams including Arroyo Corte Madera Del Presidio and Coyote Creek (Mill Valley Watershed), Corte Madera Creek (Ross Valley Watershed), Gallinas Creek (Gallinas Creek Watershed), and Miller Creek (Miller Creek Watershed) have been modified (e.g., by channel widening and concrete lining) to convey flood flows more efficiently. See **Exhibit 3.0-15**, **3.0-18**, and **Map 2-7** (Major Watersheds) for the distribution of residential and nonresidential floor area development throughout the seven planning areas that encompass the referenced watersheds. While development of approximately 1,000 housing units could occur within the Mill Valley Watershed, not all the units would located within areas that drain into Arroyo Corte Madera Del Presidio. However, for housing units in areas that would drain into the creek upstream of and within its engineered reaches, it would be important for peak flows to remain at predevelopment levels and that BMPs and *Start-at-the-Source* techniques be utilized in order to avoid reducing existing storm drain capacities.

The Housing Overlay Designation (see **Exhibit 3.0-6***)* would include a number of parcels along both Miller Creek and Corte Madera Creek. Development of these parcels and additional parcels in the Las Gallinas and Upper and Lower Ross Valley Planning Areas would increase impervious surfaces and may exacerbate flooding within each watershed by increasing peak flows beyond the capacity of existing flood control works.

Scenario 3 of *Draft 2005 CWP Update* would place the greatest amount of residential development at both the St. Vincent's / Silveira properties and the San Rafael Rock Quarry. Additional impervious surfaces at these two locations would have a minimal affect on the flood conveyance capacity of the County flood control channels since they drain directly to the San Francisco Bay or adjacent tidal marshes. Scenario 3 also leaves the least number of housing units in the Residual Housing Overlay, therefore, Scenario 3 is preferred for protecting the capacity of County flood control channels.

However, the *Draft 2005 CWP Update* contains policies and programs that, if adopted and implemented, would reduce impacts to the capacity of stormwater drainage systems by minimizing increases in both peak flow rates and erosion and downstream sedimentation. These policies would promote stormwater infiltration, maintain existing vegetation, and require grading plans for discretionary projects to reduce soil erosion.

Marin County Code and NPDES Phase II permit requirements would also ensure that peak flow controls be incorporated into project design. Section 23.18.093, Best Management Practices for new developments and redevelopments, of the County Code would allow the director of Public Works to establish controls on the volume and rate of stormwater runoff as appropriate. To comply with the NPDES requirements post-development peak flow rates are not to exceed the estimated pre-development flow rates where the increased peak flow rate will result in increased potential for downstream erosion.

Policies **CD-1.3**, **CD-5.1**, and **SV-1.9** and Programs **CD-1.c**, **CD-5.g**, and **DES-4.e** would ensure that environmental constraints are considered when determining the density and intensity of new development. Consideration of hydrological constraints (e.g., the capacity of the stormwater drainage system for new development) would ensure that projects are designed at a density appropriate to the storm drain system capacity so that flooding would not be exacerbated.

Policies **WR-1.1**, **WR-1.3**, **WR-1.4**, **WR-2.1**, **WR-2.3**, **BIO-4.4**, **BIO-4.9**, **SV-1.4**, **SV-1.9**, **SV-1.10**, and **EH-3.2** and Program **DES-3.b** would preserve the capacity of stormwater drainage systems by promoting stormwater infiltration and protecting riparian vegetation. Such actions would reduce both the volume of stormwater runoff and erosion and therefore, minimize downstream sedimentation and reduction in channel capacity. These policies and programs would establish design guidelines to preserve and enhance drainages that perform natural and flood conveyance functions. Channel enhancement and flood conveyance may be improved through the removal of constricting culverts.

Policy **WR-2.3** and Program **EH-3.f** would require hydrologic and geologic studies for new development that demonstrate that increased sedimentation of Marin County drainageways would not occur. This would ensure that appropriate measures are included throughout the design and construction phase of a project to minimize sediment production.

Policies **CD-5.2** and **PFS-1.4** would require new development to reduce its demand on County drainage facilities and that project applicants pay a "fair share" of the costs of flood control. Such requirements would likely reduce the amount of stormwater being discharged from a site. If a reduction is not possible, the project applicant's "fair share" contribution would ensure that appropriately sized stormwater drainage facilities would be constructed.

Program **TR-4.a** would require the project applicant to work with Caltrans and / or a private transportation consultant to identify measures (e.g., increased infiltration) that would minimize stormwater runoff from roadways. Minimizing stormwater runoff from roadways would reduce the demand on stormwater drainage facilities.

These policies and programs would reduce some impacts to the capacity of Marin County's stormwater drainage facilities. However, implementation of the *Draft 2005 CWP Update* would still result in increases in peak flow rates that would increase flooding. Policies of the *Draft 2005 CWP Update* would not address maintaining predevelopment peak flow rates so that existing stormwater drainage system capacities would not be reduced or exceeded. In addition, the policies would not require a complete hydraulic and geomorphic assessment of on-site and downstream drainageways. Such assessments would be necessary to ensure that the stability of drainageways would not be compromised or that their capacity be reduced. Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative impact. The following mitigation would be required.

Mitigation Measure 4.5-5 To minimize the potential impact of flooding from undersized stormwater drainage system capacity, Mitigation Measures 4.5-1(b) of *Impact 4.5-1 Water Quality Standards*, 4.5-

3(b) of *Impact 4.5-3 Groundwater Recharge*, and 4.5-4(b) of *Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation* should be implemented upon adoption of the *Draft 2005 CWP Update*.

Significance After Mitigation Adoption of the relevant *Draft 2005 CWP Update* policies discussed above along with Mitigation Measures 4.5-5 would ensure that discretionary projects are designed and constructed in accordance with accepted engineering practices. Such practices would minimize local hillslope and channel instability, soil loss, impacts to riparian vegetation, increased peak flows, and adverse effects to downstream storm drainage facilities. Therefore, this would be reduced to a less-than-significant impact and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the policies as described in Mitigation Measure 4.5-5 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Marin County Department of Public Works would be responsible for adherence of proposed projects to County policies and monitoring their implementation. Project applicants would be responsible for preparing and implementing appropriate site controls for erosion and downstream sedimentation to ensure that peak flow reduction and channel stabilization measures are utilized.

Impact 4.5-6 Stormwater Drainage System Expansions

Development consistent with the Draft 2005 CWP Update would require the expansion of existing stormwater drainage systems. Depending on the routes selected for the storm drain alignments and other right-of-way and environmental factors, such construction could result in secondary impacts to hydrology and water quality. This would be a significant impact.

As described in *Impact 4.5-5 Stormwater Drainage System Capacities*, some development consistent with the *Draft 2005 CWP Update* would result in the extension and / or expansion of existing storm drain systems. Expansion of stormwater drainage systems would typically occur for infill development within foothill areas and / or for non-infill development in lowland areas adjacent to existing development. The latter type of development would require the extension of existing storm drains to serve the development. Newly constructed roadways may also require extensions.

The construction of expanded storm drains could involve hillslope excavations and possibly eliminate existing small drainageways. The conversion of natural drainageways to constructed storm drain systems could substantially increase peak flow rates. Such conversions could also directly increase hillslope and channel erosion and sedimentation where new storm drain system expansions transition to existing, natural (i.e., earthen) channels. As discussed in *Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation*, such erosion and sedimentation could result in adverse changes to downstream water quality. Excessive erosion and sedimentation may also have secondary impacts to the biological foodweb that exists within the natural sediments of modified and unmodified creek beds.

Expanded storm drain systems would be necessary if development were to occur at the San Rafael Rock Quarry or the St. Vincent's / Silveira properties. Both areas have limited storm drain systems to route stormwater runoff from existing buildings and paved areas. All three *Draft 2005 CWP Update* Scenarios would require storm drain extension and expansion at the St. Vincent's / Silveira properties. If Miller Creek were to serve as the receiving waters for any new development, it would be necessary to assess its capacity and stability. Scenario 2 and Scenario 3 would require storm drain extension and expansion at the San Rafael Rock Quarry. Scenario 1 would not require storm drain extension at the San Rafael Rock Quarry as no development would occur

The *Draft 2005 CWP Update* contains policies and programs that, if adopted implemented, would reduce water quality impacts from eroded sediment entering Marin County drainageways. The policies would promote consideration of sensitive habitats in decisions regarding development densities. They would also preserve channel stability by restricting development in SCAs that preserve floodplain areas and riparian vegetation. Riparian vegetation plays a key role in filtering sediment and anchoring stream banks.

As discussed previously, Marin County Code also contains ordinances that serve the function of both protecting water quality and increasing infiltration, which in turn, could reduce the extent of storm drain expansion. Section 24.04.627, Surface Runoff Pollution Control Plan, discusses permanent BMPs that could encourage infiltration (e.g., infiltration trenches and grassed swales). Section 23.18.093, Best Management Practices for New Developments and Redevelopments, states that the preferred method is to retain drainageways above ground and in as natural state as possible, as opposed to storm drain construction.

Policies **CD-1.3**, **CD-5.1**, **SV-1.9** and Programs **CD-1.c**, **CD-5.g**, **DES-4.e** would ensure that environmental constraints are considered when determining the density and intensity of new development. During design review, a hydrological assessment of both local and downstream drainage systems would determine if expansion of such systems would be required.

Policies **WR-1.1**, **WR-1.3**, **WR-1.4**, **WR-2.1**, **WR-2.3**, **BIO-4.9**, **SV-1.4**, **SV-1.9**, **SV-1.10 EH-3.2** and Program **DES-3.b** would preserve the capacity of stormwater drainage systems by promoting stormwater infiltration and protecting riparian vegetation. Such actions would reduce both the volume of stormwater runoff and erosion and therefore, minimize downstream sedimentation and reduction in channel capacity. These policies and programs would establish design guidelines to preserve and enhance drainages that perform natural and flood conveyance functions. Channel enhancement and flood conveyance may be improved through the removal of constricting culverts.

Policies **BIO-4.1**, **BIO-4.2**, **BIO-4.4**, **BIO-4.7**, **BIO-4.8**, **BIO-4.14**, **WR-1.3**, and **WR-1.4** and Programs **BIO-4.f**, **BIO-4.g**, **BIO-4.h**, **BIO-4.i**, and **BIO-4.k**, would minimize erosion and downstream sedimentation by establishing development setback requirements in SCAs. The programs would also protect streambed, banks, and riparian vegetation, while maintaining natural stream and local hydrologic processes. Protection of riparian vegetation would maintain streambank stability and provide a filtering mechanism to trap sediment.

Policy **WR-2.3** and Program **EH-3.f** would require hydrologic and geologic studies for new development that demonstrate that increased sedimentation of Marin County drainageways would not occur. This would ensure that appropriate measures are included throughout the design and construction phase of a project to minimize sediment production and its off-site transport.

While these policies and programs would reduce some impacts to water quality from the expansion of storm drain systems, peak flow rates would still increase because specific measures to reduce such flows are not included in the *Draft 2005 CWP Update*. Detailed hydraulic studies of receiving drainage systems would also not be required. Such studies would assess the capacity and stability of downstream drainage systems for discretionary projects. Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative impact. The following mitigation would be required.

Mitigation Measure 4.5-6 Implement Mitigation Measures 4.5-1(b) of *Impact 4.5-1 Water Quality Standards*, 4.5-3(b) of *Impact 4.5-3 Groundwater Recharge*, and 4.5-(b) of *Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation* upon adoption of the *Draft 2005 CWP Update*.

Significance After Mitigation Adoption of the relevant *Draft 2005 CWP Update* policies discussed above, along with Mitigation Measure 4.5-6 would combine to minimize erosion impacts from future construction of storm drain system expansions. Furthermore, they have the ability to maintain peak flows at predevelopment levels, which would be necessary to preserve the existing capacity of storm drain systems and minimize downstream erosion. Therefore, this would be reduced to a less-than-significant impact and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting and implementing the policies and programs as described in Mitigation Measure 4.5-6 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Marin County Department of Public Works would be responsible to ensure that discretionary projects adhere to County policies as well as monitor their implementation. Project applicants would be responsible for preparing and implementing appropriate site controls for erosion and downstream sedimentation to ensure that peak flow reduction and channel stabilization measures are utilized.

Impact 4.5-7 Exposure of People or Structures to Flood Hazards

Implementation of the Draft 2005 CWP Update could result in the development of residential or commercial structures in floodplains, and expose occupants and / or structures to flood hazards. Similar development could occur in shoreline areas and would be subject to flooding due to extreme high tides or coincident high tides and watershed flooding. Sea level rise associated with the warming of the earth's atmosphere would exacerbate these risks.

One Hundred (100)-year floodplains for streams conveying higher discharge floodflows are usually mapped either by FEMA or by consultants retained by the Marin County Flood Control and Water Conservation District. The 100-year floodplain may be separated into different flood hazard zones as defined by FEMA (See Flooding, FEMA Flood Mapping above). However, the smaller drainageways that dominate Marin County are not typically covered by such technical analyses and their associated floodplain delineations. Adherence to environmental and engineering review procedures utilized by the County should minimize the risk of any flood damage to new development near these smaller drainageways. However, new development would cause local increases in peak flow rates, which would affect the performance of existing stormwater drainage facilities (e.g., exceed storm drain capacities) and could increase the extent or frequency of downstream flooding.

Areas subject to flooding include those along Marin County's shoreline or those immediately adjacent to low-lying terrain where flooding is influenced by tide heights. These areas include major creek outlets along San Francisco Bay (e.g., Miller Creek, Gallinas Creek, Corte Madera Creek, and Arroyo Corte Madera Del Presidio) and at the southern end of Tomales Bay at the mouth of Lagunitas Creek.

To date, FEMA-designated flood zones do not consider the potential rise in sea level that could accompany global warming. The Bay Conservation and Development Commission's (BCDC) study of sea level rise and its impacts on San Francisco Bay cited evidence that global sea level rise during the preceding century was about 0.0039 feet per year.[50] According to BCDC staff, the 1988 study remains the local benchmark study for assessing the impacts of sea level rise in the Bay Area.[51]

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[50] *Sea Level Rise: Predictions and Implications for San Francisco Bay*, San Francisco Bay Conservation and Development Commission, December 1987, revised October 1988.

[51] Clearwater Hydrology conversation with Bob Batha, Staff Scientist, BCDC, September 2001.

However, because the rate at which sea level rise will occur depends on several interrelated factors, the BCDC and its consultants proposed a range of 0.005 to 0.05 feet per year for general planning purposes. Moreover, similar extrapolations applied to the computation of the highest estimated tide (HET) produced a predicted HET for the Year 2036 for the Point Orient, Sausalito, and Presidio gauging stations of 6.9 feet, 6.3 feet, and 6.4 feet NGVD, respectively. These HET elevations represent an increase of 0.2 to 0.5 feet over the station estimates cited by the Corps of Engineers. [52] However it should be noted, that these revised HET elevation data exclude the influence of wave runup or regional runoff entering the bay; both of which could increase the local flood elevation.

The low-lying areas near the mouths of the major creeks flowing into San Francisco Bay and the Lagunitas Creek outlet into Tomales Bay could be affected by rising sea level elevations. This would include portions of the St. Vincent's / Silveira properties. If sea level elevations continue to rise, flooding from extreme high tide events in conjunction with wave runup may occur. However, most flooding in the near-term would result from a combination of watershed flooding and a coincident high tide.

The proposed Baylands Corridor of the *Draft 2005 CWP Update* would protect baylands and large adjacent upland areas that provide significant habitat connectivity and buffering of the baylands (see **Exhibit 3.0-3**). Aside from habitat protection, designation of a Baylands Corridor would protect lands that serve an important flood control function. The remaining lands adjacent to San Francisco Bay, from Point San Pedro to northern Novato and around portions of Richardson Bay provide a storage area during high tide events.

The Baylands Corridor would provide some protection from rising sea levels by preserving baylands that buffer urban development from extreme high tides. Lands assigned to the Baylands Corridor would also provide a storage area when watershed flooding and a high tide occur coincidentally. All three Baylands Corridor options would provide the same level of flood storage and high tide buffering functions.

Parcels within the Housing Overlay Designation that are in the low-lying areas which could be affected by the flooding described above, would be located within the Santa Venetia area, at Tam Junction in Mill Valley, northwest of Tamalpais High in Mill Valley, and near the College of Marin. Each of these areas includes multiple parcels that also lie within the mapped FEMA 100-year floodplain. While residential development of the Housing Overlay Designation would occur in areas that contain existing suburban development, appropriate measures would still need to be taken to elevate structural lowest floors above the 100-year flood surface elevation and ensure that new development does not exacerbate flooding.

The planning areas with the greatest development potential on parcels that are intersected by FEMA-mapped 100-year floodplains are the planning areas of Novato (approximately 140 housing units), Las Gallinas Valley (approximately 590 housing units), and Richardson Bay (approximately 170 housing units) (see **Exhibit 3.0-14** and **3.0-15**). These three planning areas also could have the greatest amount (in square feet) of nonresidential floor area development slated for parcels intersected by FEMA mapped floodplains (see **Exhibit 3.0-17** and **3.0-18)**. Intersection of a parcel with a FEMA 100-year floodplain does not render the entire parcel a flood hazard. Rather, the area of the parcel that is not within the designated floodplain could be developed. Also, if a parcel is entirely within the floodplain, as described above, a structure could be elevated above the mapped flood surface

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[52] *San Francisco Bay Tidal Stage vs. Frequency Study*, US Army Corps of Engineers, October 1984.

elevation. In this case, documentation would be required to confirm the site modifications would not raise upstream flood elevations.

The *Draft 2005 CWP Update* contains policies and programs that, if adopted and implemented, would reduce the exposure of people or structures to flooding. These policies would preserve storm drain system capacity or designate SCAs that establish a development setback from streams. Such setbacks would be effective in protecting structures from flooding, especially in smaller drainages not assessed by FEMA.

As discussed above, Marin County Code and NPDES Phase II permit requirements would also ensure that peak flow controls be incorporated into project design to reduce impacts from flooding. Section 23.18.093, Best Management Practices for New Developments and Redevelopments, of the County Code allows the director of Public Works to establish controls on the volume and rate of stormwater runoff as appropriate. Chapter 23.09, Floodplain Management, of the County Code covers permit requirements under Section 23.09.033 and standards of construction under Section 23.09.034 to protect people and structures from flood hazards. To comply with the NPDES requirements, post-development peak flow rates are not to exceed the estimated pre-development flow rates where the increased peak flow rate will result in increased potential for downstream erosion.

Policies **CD-1.3**, **CD-5.1**, and **SV-1.9** and Programs **CD-1.c**, **CD-5.g**, and **DES-4.e** would ensure that environmental constraints are considered when determining the density and intensity of new development. Consideration of hydrological constraints (e.g., the capacity of the stormwater drainage system for new development) would ensure that projects are designed at a density appropriate to the storm drain system capacity so that flooding would not be exacerbated.

Policies **WR-1.1**, **WR-1.3**, **WR-1.4**, **WR-2.1**, **WR-2.3**, **BIO-4.9**, **SV-1.4**, **SV-1.9**, **SV-1.10**, and **EH-3.2** and Program **DES-3.b** would preserve the capacity of stormwater drainage systems by promoting stormwater infiltration and protecting riparian vegetation. Such actions would reduce both the volume of stormwater runoff and erosion and therefore, minimize downstream sedimentation and reduction in channel capacity. These policies and programs would establish design guidelines to preserve and enhance drainages that perform natural and flood conveyance functions. Channel enhancement and flood conveyance may be improved through the removal of constricting culverts.

Policies **BIO-4.1**, **BIO-4.2**, **BIO-4.4**, **BIO-4.7**, **BIO-4.8**, **BIO-4.14**, **WR-1.3**, and **WR-1.4** and Programs **BIO-4.f**, **BIO-4.g**, **BIO-4.h**, **BIO-4.i**, and **BIO-4.k**, would minimize erosion and downstream sedimentation by establishing development setback requirements in SCAs. The programs would also protect streambed, banks, and riparian vegetation, while maintaining natural stream and local hydrologic processes. Protection of riparian vegetation would maintain streambank stability and provide a filtering mechanism to trap sediment. This in turn preserves stormwater drainage system capacity and reduces risk from flooding.

Policy **WR-2.3** and Program **EH-3.f** would require hydrologic and geologic studies for new development that demonstrate that increased sedimentation of Marin County drainageways would not occur. This would ensure that appropriate measures are included throughout the design and construction phase of a project to minimize sediment production. Minimizing sedimentation in drainageways would preserve system capacity and reduce risks from flooding.

Policy EH-3.3 and Programs **EH-3.k** and **AR-5.c** would require the County to anticipate sea level rise and consult with the U.S. Geological Survey and the San Francisco Bay Conservation and Development Commission and other monitoring agencies to map areas that could be subject to future inundation. In addition, these policies would require amending the Marin County Development Code

to incorporate construction standards for areas subject to increased flooding from sea level rise. The program would also require preparation of response strategies.

In addition to these policies and programs, Section 23.09-Floodplain Management of the Marin County Development Code, would address exposure of people and structures to flood hazards. Specifically, it would continue to require the use of FEMA floodplain maps and would regulate development within a FEMA designated floodplain

While these policies and programs would substantially reduce the exposure of people or structures to flood hazards, additional policies would be needed such as that proposed in Mitigation Measure 4.5-4(a) to address channel stability. In addition, it would be necessary to implement Programs **EH-3.k** and **AIR-5.c** to reduce adverse effects of sea level rise. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, program **EH-3.k** would be implemented within five years. [53] However, given that program **AIR-5.c** would require additional funding it cannot be certain that this program would be implemented in a timely manner. [54]

Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative impact. The following mitigation would be required.

Mitigation Measure 4.5-7 In order to reduce the exposure of people or structures to flood hazards to a less-than-significant level, the County would need to address issues related to channel stability, and sea level rise.

Mitigation Measure 4.5-7(a) Implement Mitigation Measures 4.5-3(b) of *Impact 4.5-3 Groundwater Recharge*, and 4.5-4(a) and 4.5-4(b) of *Impact 4.5-4 Drainage – On-Site and Downstream Erosion and Sedimentation* upon adoption of the *Draft 2005 CWP Update*.

Mitigation Measure 4.5-7(b) Obtain additional funding necessary to implement Program **AIR-5.c**. In addition, County staff would amend the Marin County Development Code to include construction standards for areas threatened by future sea level rise.

Mitigation Measure 4.5-7(c) Continue to implement County ordinances that regulate floodplain development to ensure that project related and cumulative impacts to flooding are minimized or avoided through conditions on project approval as required by the ordinances.

Significance After Mitigation Adoption of the relevant *Draft 2005 CWP Update* policies discussed above along with Mitigation Measures 4.5-7(a), 4.5-7(b) and 4.5-7(c) would ensure that people and structures are protected against the 100-year flooding event. Addressing rising sea level elevations would protect future development in low-lying areas affected by extreme high tide events. Addressing

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[53] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[54] As described in **Figure 2-16** Atmosphere and Climate Program Implementation and **Figure 2-8** Environmental Hazards Program Implementation in the *Draft 2005 CWP Update*.

development densities and regulating SCAs would ensure that the conveyance capacity of stormwater drainage systems would be preserved. These measures would reduce the exposure of people and structures to flooding to a less-than-significant impact and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting and implementing the policies and programs as described in Mitigation Measure 4.5-7(a) and 4.5-7(b) as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Marin County Department of Public Works would be responsible for determining appropriate values of future sea level rise.

4.6 BIOLOGICAL RESOURCES

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Biological Resources – Environmental Setting

This section provides background information on sensitive biological resources within the county, the regulations and programs that provide for their protection, and an assessment of the potential impacts of implementing the *Draft 2005 CWP Update*. Existing biotic conditions are described in the *Biological and Wetland Protection Technical Background Report*, April 2002, updated January 2006, which includes a detailed summary of local, State, and federal regulations that provide for the protection and management of sensitive biological and wetland resources. This report is included in **Appendix 1** to the Draft EIR, incorporated by reference, and summarized below.

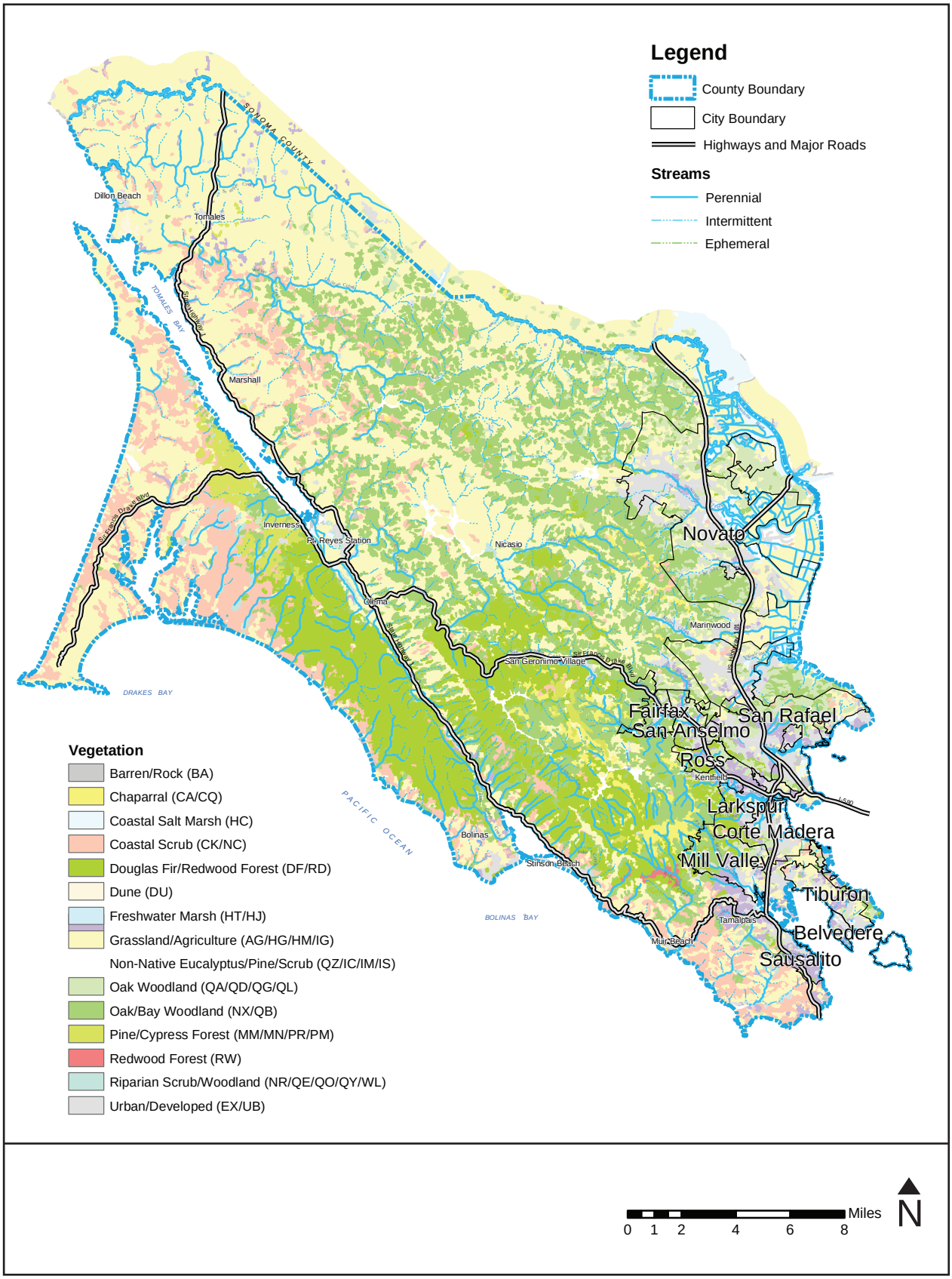
VEGETATION AND WILDLIFE HABITAT

Marin County is known for its natural beauty and diversity of natural resources, ranging from the marine environments of the coastal zone to the forests, chaparral, woodlands and grasslands of Mount Tamalpais. Of the total 332,928 acres of land area in Marin County, approximately 50 percent are under public management as parks, open space, conservation easements, and watershed lands. This includes 118,669 acres of park and open space lands, 22,731 acres of public watershed lands managed by the Marin Municipal Water District and the North Marin Water District, and 27,196 acres of easement lands held by the Marin Agricultural Land Trust and the Marin County Open Space District. The majority of the developed urban and suburban uses in Marin County are in the City-Centered Corridor in east Marin County. The remainder is generally in private ownership as grazing land and woodlands at the north-central and northwest part of the county.

Natural communities in Marin County support a wide diversity of plant and animal species, including a high number of special-status species. Natural community types in the county include mixed evergreen forest, oak woodland, pine forest, Douglas fir / redwood forest, grassland, coastal beach dune, northern coastal scrub, chaparral, coastal salt marsh, riparian, and freshwater marsh. **Exhibit 4.6-1**illustrates the distribution of vegetative cover in Marin County. Major distinguishable characteristics include the extensive grasslands to the north that integrate with scrub and forestlands in the Point Reyes Peninsula; the forests, woodland, and chaparral covered slopes of Mt. Tamalpais; the grasslands and woodlands of the north-central and northwestern part of the county; and a mosaic of grassland, woodland, and urban development in the City-Centered Corridor.

Historic land uses altered much of the landscape in Marin County, including the plant communities and wildlife dependent upon them. Beginning in the mid-nineteenth century and continuing into the present, activities such as livestock grazing, timber operations, clearing and disking for agricultural production, road building, and urban and suburban development have markedly altered the remaining natural communities. Native perennial grasslands have been largely replaced by non-native annual grasslands, and a number of highly invasive species now threaten the remaining grasslands. Fire suppression, livestock grazing, and more recently, the affects of Sudden Oak Death have greatly altered the extent of woodland and forest cover. Timber harvesting, agricultural operations (e.g., grazing), and other land uses continue to affect the aquatic habitat and viability of anadromous fisheries.

Exhibit 4.6-1
Marin County Vegetation



Source: County of Marin Community Development Agency, July 2005. (Modified USDA Forest Service Pacific Southwest Region Remote Sensing Lab. Additional information available at: http://www.fs.fed.us/r5/rsl/clearinghouse/aa-ref-sec263a.shtml.)

These influences on the natural landscape have changed in the past few decades, from one of primarily agricultural-related activities to one of increased pressure to develop, particularly along the western fringe of the City-Centered Corridor and scattered locations in the Inland Rural and Coastal Recreation Corridors. Urban and suburban development have contributed to considerable fragmentation of the remaining natural areas associated with the system of local parks and open space lands along stream corridors and ridgelines throughout the City-Centered Corridor.

Although past influences have greatly altered the natural landscape, the extensive system of open space lands provides a unique opportunity to work toward the protection and enhancement of biological and wetland resources in the county. This includes the major federal holdings of Point Reyes National Seashore, Golden Gate National Recreation Area, Muir Woods National Monument and Point Reyes National Seashore in West Marin; the State park and Marin Municipal Water District watershed lands around Mount Tamalpais; smaller County-held and local parks in the City-Centered Corridor; and State-held lands along the shoreline and open water of San Francisco Bay. These remaining undeveloped lands serve as core areas for habitat biodiversity and maintenance of connectivity between these areas is essential for their sustainability. The scattered permanently protected open space, the remaining undeveloped tidal and diked baylands, and network of riparian corridors throughout the county serve as a foundation for protecting and restoring the values and functions of the natural environment.

SPECIAL-STATUS SPECIES

Special-status species are plants and animals that are legally protected under State and / or federal Endangered Species Acts (ESA), or other regulations. [1] This designation also includes other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with legal protection under the federal and State ESAs often represent major constraints to development, particularly when they are wide-ranging or highly sensitive to habitat disturbance and where proposed development would result in a *take* of these species. Take, as defined by the federal ESA, means to *harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect* a threatened or endangered species. The U.S. Fish and Wildlife Service (USFWS) further defines *harm* to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modifications or degradation.

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[1] Special-status species include:

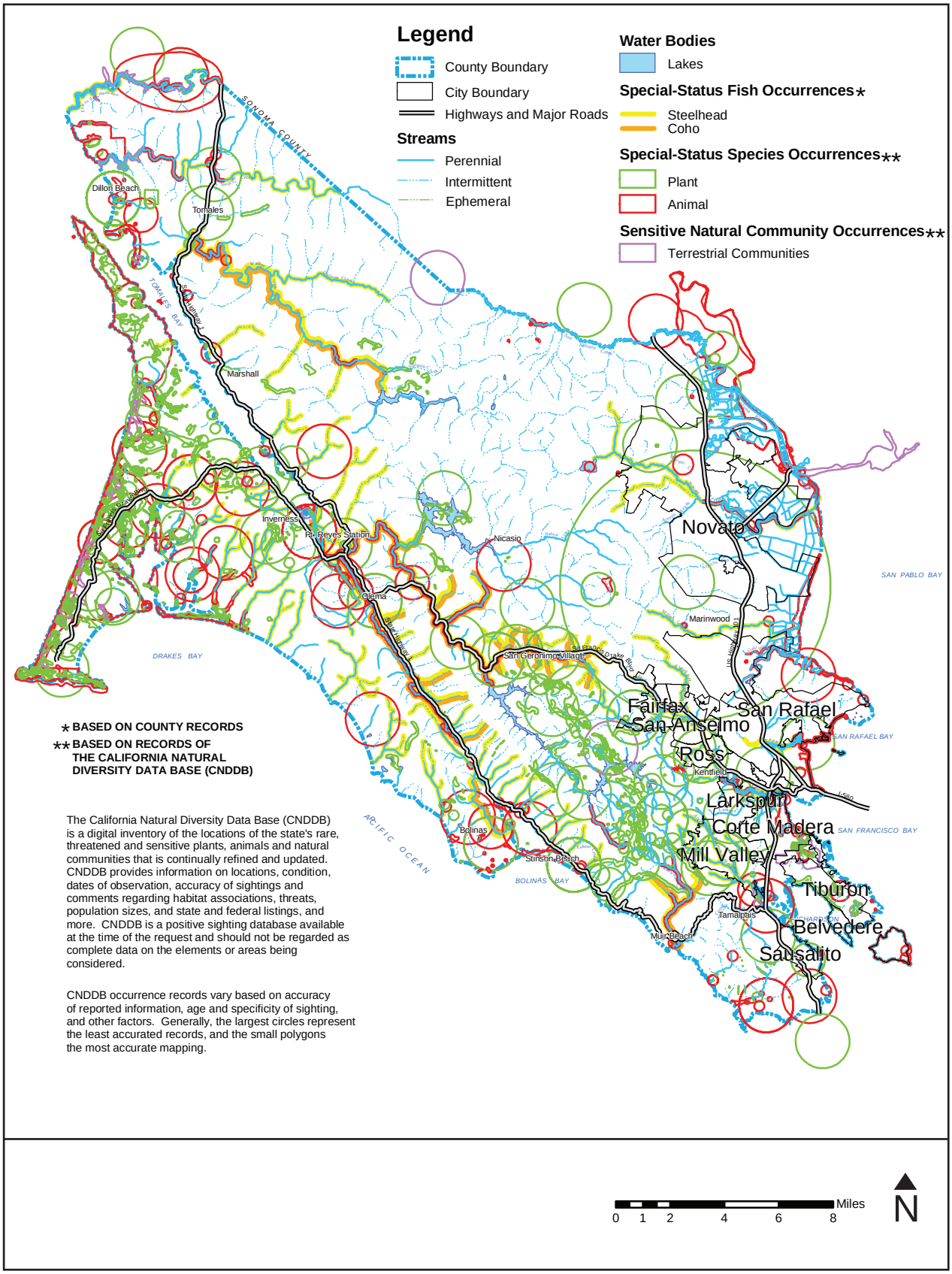
Designated (rare, threatened, or endangered) and candidate species for listing by the CDFG.
Designated (threatened or endangered) and candidate species for listing by the USFWS.
Species considered to be rare or endangered under the conditions of Section 15380 of the California Environmental Quality Act Guidelines, such as those identified on lists 1A, 1B, and 2 in the 2001 *Inventory of Rare and Endangered Plants of California* by the California Native Plant Society (CNPS).
And possibly other species which are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on list 3 in the CNPS Inventory or identified as animal "California Special Concern" (CSC) species by the CDFG. Species designated as CSC have no legal protective status under the California Endangered Species Act but are of concern to the CDFG because of severe decline in breeding populations and other factors.

The primary information source on the distribution of special-status species in California is the California Natural Diversity Database (CNDDB) inventory, which is maintained by the Wildlife and Habitat Data Analysis Branch of the California Department of Fish and Game (CDFG). The CNDDB inventory provides the most comprehensive statewide information on the location and distribution of special-status species and sensitive natural communities. Occurrence data are obtained from a variety of scientific, academic, and professional organizations; private consulting firms; and knowledgeable individuals; and is entered into the inventory as expeditiously as possible. The occurrence of a species of concern in a particular region is an indication that an additional population may occur at another location if habitat conditions are suitable. However, the absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from the area in question, only that no data has been entered into the CNDDB inventory.

NDDB records indicate that special-status plant and animal species occur in a wide range of habitat types throughout all of Marin County. As indicated in **Exhibit 4.6-2**, most of the reported occurrences are from the National Park Service lands of Point Reyes National Seashore and Golden Gate National Recreation Area, and the State Park and Marin Municipal Water District watershed lands on Mount Tamalpais. Many others occur along the shoreline of the bay, or unique habitat types such as the serpentine-derived soils and outcrops along the Tiburon Ridge. Still others are dependent on the creeks and streams throughout the county for dispersal and essential breeding habitat. **Exhibit 4.6-3** provides a list of the 75 animal species and 78 plant species reported from Marin County which are monitored by the CNDDB, together with several listed, proposed, and candidate species not carefully monitored by the CNDDB. **Exhibit 4.6-2** also shows areas of designated critical habitat mapped by the USFWS for a number of federally listed species. This mapping effort has been simplified to show occurrences of plant and animal species, together with streams known to support coho salmon and steelhead trout.

It should be noted that CNDDB occurrence records tend to focus on listed species or those with a high inventory priority. Occurrence information for numerous special-status species, which are known from or frequent in Marin County is not either monitored at all, or is recorded on only a sporadic basis by the CNDDB. This includes the possible seasonal occurrence of some bird species, the limited status of some animal species as a California Special Concern (CSC) species by the CDFG, the limited status of Species of Concern to the U.S. Fish and Wildlife Service (USFWS), and the limited status of many plant species on Lists 2, 3, or 4 of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants of California*. **Exhibit 4.6-3** identifies some of these species, but the number of occurrences from the CNDDB records does not accurately reflect their generally greater abundance and distribution than species that are actually listed under the State or federal Endangered Species Acts.

Exhibit 4.6-2
Marin County Special-Status Plant and Animal Species



Source: County of Marin Community Development Agency, June 2005. (Modified from California Department of Fish and Game California Natural Diversity Database. Additional information available at: http://www.dgf.ca.gov.)

Exhibit 4.6-3
Special-Status Animal Species Known or Suspected from Marin County

Common Name (Scientific Name)	***Status Federal / State***	***Habitat Characteristics***
Amphibians / Reptiles		
California tiger salamander (Ambystoma californiense)	FT / CSC	Breeds in pools and adults occupy surrounding grasslands/open woodlands
Loggerhead sea turtle (Caretta caretta)	FT / –	Open ocean
Green sea turtle (Chelonia mydas)	FT / –	Open ocean
Northwestern pond turtle (Clemmys marmorata marmorata)	SC / CSC	Streams / ponds / lakes
Leatherback sea turtle (Dermochelys coriacea)	FE / –	Open ocean
Ridley sea turtle (Lepidochelys olivacea)	FT / –	Open ocean
California horned lizard (Phrynosoma coronatum frontale)	SC / CSC	Forests / woodlands / grasslands with loose soil
Northern red-legged frog (Rana aurora aurora)	SC / CSC	Forests / woodlands / grasslands along streamsides
California red-legged frog (Rana aurora draytonii)	FT / CSC	Forests / woodlands / grasslands along streamsides
Foothill yellow-legged frog (Rana boylii)	SC / CSC	Streams with rocky substrate
Western spadefoot toad (Spea hammondii)	SC / CSC	Grasslands / open woodlands with seasonal pools
Birds		
Tricolored blackbird (Agelaius tricolor) (nesting colony)	SC / CSC	Freshwater marsh and surrounding fields
Great egret (Ardea alba) (rookery)	– / –	Colonial nester in large trees
Great blue heron (Ardea herodias) (rookery)	– / –	Colonial nester in trees, cliff-sides, marshes
Golden eagle (Aquila chrysaetos)	– / CSC; FP	Open grasslands / woodlands
Burrowing owl (Athene cunicularia) (burrow sites)	– / CSC	Open grasslands / scrub
Marbled murrelet (Brachyramphus marmoratus)	FT / SE	Old growth forest / coastal estuaries / open ocean

Common Name (Scientific Name)	***Status Federal / State***	***Habitat Characteristics***
Birds cont.		
Western snowy plover (Charadrius alexandrinus nivosus) (nesting)	FT / CSC	Nesting along sandy beaches and shorelines
Northern harrier (Circus cyaneus) (nesting)	– / CSC	Nesting in marsh and low shrubs
Back swift (Cypsefloides niger) (nesting)	SC / CSC	Nesting on cliffs and behind falls
Yellow warbler (Dendroica petechia brewsteri) (nesting)	SC / CSC	Nesting in willows and riparian cover
Snowy egret (Egretta thula) (rookery)	– / –	Colonial nester in trees, cliff-sides, near marshland
White-tailed kite (Elanus leucurus) (nesting)	SC / FP	Nesting in grassland / marshland with trees
Tufted puffin (Fratercula cirrhata)	– / CSC	Colonial nester on off-shore islands / cliffs
Saltmarsh common yellowthroat (Geothlypis trichas sinuosa)	SC / CSC	Salt and brackish water marsh
Bald eagle (Haliaeetus leucocephalus)	FT / SE	Open water of lakes, bays, and ocean shoreline
Loggerhead shrike (Lanius ludovicianus)	SC / CSC	Open grassland / scrub
California black rail (Laterallus jamaicensis coturniculus)	– / ST; FP	Coastal saltmarsh
Black-crowned night heron (Nycticorax nycticorax) (rookery)	– / –	Colonial nester in trees / shrubs near marshland
Ashy storm-petrel (Oceanodrama homochroa) (rookery)	SC / CSC	Colonial nester on off-shore islands
Osprey (Pandion haliaetus) (nesting)	– / CSC	Nesting in trees associated with water bodies
California Brown pelican (Pelecanus occidentalis oalifornicus)	FE / SE; FP	Coastal / bay shorelines and open water
California clapper rail (Rallus longirostris obsoletus)	FE / SE	Salt and brackish marsh
California least tern (Sterna antillarum browni)	FE / SE; FP	Coastal / bay shorelines and open water
Northern spotted owl (Strix occidentalis caurina)	FT / –	Forest and woodland

Common Name (Scientific Name)	***Status Federal / State***	***Habitat Characteristics***
Fish		
Green sturgeon (Acipenser medirostris)	PT / CSC	Brackish water, marsh / bays
Tidewater goby (Eucyclogorius newberryi)	FE / CSC	Brackish water, marsh / bays
Tomales roach (Lavinia symmetricus ssp. symmetricus)	– / CSC	Tributaries of Tomales Bay
Coho salmon (Oncorhynchus kisutch)	FT / SE	Spawns in freshwater streams
Chinook salmon (Onchorhynchus tshawytscha)	FT / –	Spawns in freshwater streams
Steelhead trout (Oncorhynchus mykiss)	FT / CSC	Spawns in freshwater streams
Invertebrates		
Tomales isopod (Caecidotea tomalensis)	– / –	Freshwater marsh / ponds
Monarch butterfly (Danaus plexippus) (colonies)	– / –	Overwinters in blue gum eucalyptus
Black abalone (Haliotes cracheriodii)	C / –	Rocky intertidal zone and ocean waters
White abalone (Haliotes sorensi)	FE / –	Rocky intertidal zone and ocean waters
Williams' bronze shoulderband (Helminthoglypta arrosa williamsi)	– / –	Known only from Hogg Island
Peninsula coast range shoulderband snail (Helminthoglypta nickliniana awania)	– / –	Known only from Point Reyes headland
Ricksecker's water scavenger beetle (Hydrochara ricksecker)	– / –	Aquatic habitat / pools and ponds
Mission blue butterfly (Icaricia icarioides missionensis)	FE / –	Shrubs / grasslands with lupine host
San Bruno elfin (Incisalia mossii bayensis)	FE / –	Coastal scrub with stonecrop host plant
Bumblebee scarab beetle (Lichnanthe ursina)	– / –	Coastal dunes
Tiburon micro-blind harvestman (Microcina tiburona)	– / –	Serpentine outcrops near spring / seeps
Myrtles silverspot (Spexeria zerene myrtleae)	FE / –	Scrub / grassland with larval host

Common Name (Scientific Name)	***Status Federal / State***	***Habitat Characteristics***
Invertebrates cont.		
California freshwater shrimp (Syncaris pacifica)	FE / SE	Freshwater streams with undercut banks
Mammals		
Pallid bat (Antrozous pallidus)	– / CSC	Roosts in protected locations
Point Reyes mountain beaver (Aplodontia rufa phaea)	– / CSC	Springs / seeps with dense cover
Guadalupe fur seal (Arctocephalus townsendi)	FT / ST; FP	Open ocean, beaches
Sei whale (Balaenoptera borealis)	FE / –	Open ocean
Blue whale (Balaenoptera musulus)	FE / –	Open ocean
Finback whale (Balaenoptera physalus)	FE / –	Open ocean
Townsend's western big-eared bat (Corynorhinus townsendii townsendii)	– / CSC	Roosts in protected locations
Grey whale (Eschrichtius robustus)	FE / –	Open ocean
Right wale (Eubalaena glacialis)	FE / –	Open ocean
Steller seal-lion (Eumetopias jubatus)	FT / –	Open ocean, beaches
Greater western mastiff-bat (Eumops perotis californicus)	SC / SCS	Roosts in protected locations
Southern sea otter (Enhydra lutris nereis)	FT / FP	Nearshore marsh habitat
Humpback whale (Megaptera novaengliae)	FE / –	Open ocean
Long-eared myotis bat (Myotis evotis)	SC / –	Roosts in protected locations
Fringed myotis bat (Myotis thysanodes)	SC / –	Roosts in protected locations
Long-legged myotis bat (Myotis volans)	SC / –	Roosts in protected locations
Yuma myotis bat (Myotis yumanensis)	SC / C	Roosts in protected locations
Sperm whale (Physeter catodon)	FE / –	Open ocean

Common Name (Scientific Name)	***Status Federal / State***	***Habitat Characteristics***
Mammals cont.		
Salt marsh harvest mouse (Reithrodontomys raviventris)	FE / SE; FP	Coastal saltmarsh
Angel Island mole (Scapanus latimanus isularis)	– / CSC	Coastal scrub / prairie on Angel Island
Point Reyes jumping mouse (Zapus trinotatus orarius)	– / CSC	Coastal scrub / grassland from Point Reyes

Source: Environmental Collaborative and *Biological and Wetland Protection Technical Background Report*, April 2002, updated January 2006.

Exhibit 4.6-4
Special-Status Plant Species Known or Suspected from Marin County

Common Name (Scientific Name)	***Status Federal/ State/CNPS***	***Habitat***
Pink sand-verbena (Abronia umbellata ssp. breviflora)	SC / – / 1B	Coastal dunes / stand
Blasdale's bent grass (Agrostis blasdalei)	SC / – / 1B	Coastal dunes / scrub / prairie
Point Reyes bent grass (Agrostis clivicola var punta-reyesensis)	SC / – / –	Coastal scrub / prairie / coniferous forest
Sonoma alopecurus (Alopecurus aequalis var sonomensis)	FE / – / 1B	Freshwater marsh / riparian scrub
Napa false indigo (Amorpha californica var napensis)	– / – / 1B	Forest / chaparral / woodland
Bent-flowered fiddleneck (Amsinckia lunaris)	– / – / 1B	Coastal bluff scrub / woodland / grassland
Mt. Tamalpais manzanita (Arctostaphylos hookeri ssp. montana)	SC / – / 1B	Chaparral / grassland
Marin manzanita (Arctostaphylos virgata)	– / – / 1B	Coniferous forest / chaparral
Coastal marsh milk-vetch (Astragalus pynostachyas var p.)	– / – / 1B	Dunes / marshes / swamps
Point Reyes blennosperma (Blennosperma nanum var. robustum)	SC / SR / 1B	Coastal prairie / scrub
Small groundcone (Boschniakia hookeri)	– / – / 2	Coniferous forests
Thurber's reed grass (Calamagrostis crassiglumis)	SC / – / 2	Coastal scrub / freshwater marsh
Tiburon mariposa lily (Calochortus tiburonensis)	FT / ST / 1B	Serpentine grassland
Coastal bluff morning-glory (Calystegia purpurata ssp. saxicola)	– / – / 1B	Dunes / coastal scrub
Swamp harebell (Campanula californica)	SC / – / 1B	Bogs / ferns / marshes in coniferous forest
Flaccid sedge (Carex leptalea)	– / – / 2	Bogs / fens / meadows / seeps
Lyngbye's sedge (Carex lyngbyei)	– / – / 2	Marshes / swamps
Tiburon indian paintbrush (Castilleja affinis ssp. neglecta)	FE / ST / 1B	Serpentine grassland

Common Name (Scientific Name)	***Status Federal/ State/CNPS***	***Habitat***
Humbolt Bay owl's clover (Castilleja ambigua ssp. humboldtiensis)	SC / – / 1B	Coastal saltmarsh
Mt. Vision ceanothus (Ceanothus gloriosus var. porrectus)	SC / – / 1B	Coniferous forest / coastal scrub / prairie
Mason's ceanothus (Ceanothus masonii)	SC / SR / 1B	Chaparral / serpentine
San Francisco Bay spineflower (Chorizanthe cuspidata var. cuspidata)	SC / – / 1B	Coastal scrub / prairie / dunes
Woolly-headed spineflower (Chorizanthe cuspidata var. villosa)	– / – / 1B	Coastal scrub / prairie / dunes
Robust spineflower (Chorizanthe robusta var. robusta)	FE / – / 1B	Woodlands, coastal dunes / scrub
Sonoma spineflower (Chorizanthe valida)	FE / SE / 1B	Coastal prairie
Franciscan thistle (Cirsium andrewsii)	– / – / 1B	Forest / coastal bluff scrub / prairie / coastal scrub
Mt. Tamalpais thistle (Cirsium hydrophilum var. vaseyi)	SC / – / 1B	Forest / chaparral
Raiche's red ribbons (Clarkia concinna ssp. raichei)	SC / – / 1B	Coastal bluff scrub
Round-headed chinese houses (Collinsia corymbosa)	– / – / 1B	Coastal dunes
Point Reye's bird's beak (Cordylanthus maritimus ssp. palustris)	SC / – / 1B	Coastal saltmarsh / dunes
Soft bird's beak (Cordylanthus mollis spp. mollis)	FE / SR / 1B	Coastal saltmarsh
Baker's larkspur (Delphinium bakeri)	FE / SR / 1B	Coastal scrub
Yellow larkspur (Delphinium luteum)	FE / SR / 1B	Chaparral / coastal scrub / prairie
Western leatherwood (Dirca occidentalis)	– / – / 1B	Forest / chaparral / woodland
Supple daisy (Erigeron supplex)	– / – / 1B	Coastal bluff scrub / prairie
Minute pocket-moss (Fissidens pauperculus)	– / – / 1B	Forest floor along coast
Marin checker lily (Fritillaria affinis var tristulis)	– / – / 1B	Coastal bluff scrub / prairie
Fragrant fritillary (Fritillaria liliacea)	SC / – / 1B	Coastal scrub / prairie / grassland

Common Name (Scientific Name)	***Status Federal/ State/CNPS***	***Habitat***
Dune gilia (Gilia capitata ssp. chamissonis)	– / – / 1B	Dunes / coastal scrub
Wooly-headed gilia (Gilia capitata ssp. tomentosa)	– / – / 1B	Coastal bluff scrub / outcrops
Dark-eyed gilia (Gilia millefoliata)	– / – / 1B	Coastal dunes
San Francisco gumplant (Grindelia hirsutula var. maritima)	– / – / 1B	Coastal bluff scrub / coastal scrub / grassland
Diablo helianthella (Helianthella castanea)	– / – / 1B	Forest / chaparral / woodland / coastal scrub / grassland
Short-leaved evax (Hesperevax sparsiflora var. brevitolia)	– / – / 2	Coastal bluff scrub / dunes
Marin western flax (Hesperolinon congestum)	FT / ST / 1B	Chaparral / grassland
Santa Cruz tarplant (Holocarpha macradenia)	FT / SE / 1B	Coastal prairie / coastal scrub / grassland
Kellogg's horkelia (Horkelia cuneata ssp. sericea)	SC / – / 1B	Coniferous forest / coastal scrub / chaparral
Point Reyes Horkelia (Horkelia marinensis)	SC / – / 1B	Coastal scrub / prairie / dunes
Thin-lobed horkelia (Horkelia tenuiloba)	– / – / 1B	Coastal scrub / chaparral
Baker's goldfields (Lasthenia macrantha ssp. bakeri)	– / – / 1B	Coniferous forest / coastal scrub
Perennial goldfields (Lasthenia macrantha ssp. macrantha)	– / – / 1B	Coastal bluff scrub / dunes / coastal scrub
Beach layia (Layia carnosa)	FE / SE / 1B	Coastal dunes
Tamalpais lessingia (Lessingia micradenia var. micradenia)	SC / – / 1B	Chaparral / grassland in serpentine
Maison's lilaeopsis (Lilaeopsis masonii)	SC / SR / 1B	Fresh and brackish marsh
Coast lily (Lilium maritimum)	– / – / 1B	Forest / prairie / coastal scrub / marshes / swamps
Point Reyes meadowfoam (Limnanthes douglasii ssp. sulphurea)	SC / SE / 1B	Freshwater marsh / prairie / seeps
Large-flowered linanthus (Linanthus grandiflorus)	SC / – / 4	Coastal bluff scrub
Tidestrom's lupine (Lupinus tidestromii)	FE / SE / 1B	Coastal dunes
Marsh microseris (Microseris paludosa)	– / – / 1B	Forest / woodland / coastal scrub / grassland

Common Name (Scientific Name)	***Status Federal/ State/CNPS***	***Habitat***
Baker's navarretia (Navarretia leucocephala ssp. bakeri)	– / – / 1B	Woodland / seeps / pools / grassland / forest
Marin County navarretia (Navarretia rosulata)	– / – / 1B	Coniferous forest / chaparral
White-rayed pentachaeta (Pentachaeta bellidiflora)	FE / SE / 1B	Grassland on serpentine
North Coast phacelia (Phacelia insularis var. continentis)	SC / ST / 1B	Coastal bluff scrub / dunes
Point Reyes rein orchid (Piperia elegans ssp. decurtata)	– / – / 1B	Coastal bluff scrub only from Point Reyes National Seashore
Hairless popcorn flower (Plagiobothrys glaber)	– / – / 1A	Meadows / seeps / marshes / swamps
North Coast semaphore grass (Pleuropogon hooverianus)	SC / SB / 1B	Forest / steeps
Marin knotweed (Polygonum marinense)	SC / – / 3	Marshes / swamps
Tamalpais oak (Quercus parvula var. tamalpaisensis)	– / – / 1B	Coniferous forest only on Mt. Tamalpais
California beaked-rush (Rhynchospora californica)	SC / – / 1B	Bogs / marshes / seeps / coniferous forest
Point Reyes checkerbloom (Sidalcea calycosa ssp. rhizomata)	– / – / 1B	Marshes / swamps
Marin checkerbloom (Sidalcea hickmanii ssp. viridis)	SC / – / 1B	Chaparral
Purple-stemmed checkerbloom (Sidalcea malviflora ssp. purpurea)	– / – / 1B	Forest / prairie
Tamalpais jewel-flower (Streptanthus batrachopus)	SC / – / 1B	Coniferous forest / chaparral
Mt. Tamalpais jewel-flower (Streptanthus glandulosus ssp. pulchellus)	– / – / 1B	Chaparral / grassland
Santa Cruz microseris (Stebbinsoseris decipiens)	SC / – / 1B	Forest / chaparral / coastal scrub and prairie
Tiburon jewel-flower (Streptanthus niger)	FE / SE / 1B	Grassland on serpentine
Showy Indian clover (Trifolium amoenum)	FE / – / 1B	Grassland / coastal bluff scrub
San Francisco owl's clover (Triphysaria floribunda)	SC / – / 1B	Coastal prairie / grassland

Status Designations

Federal:	FE =	Listed as "endangered" under the federal Endangered Species Act.
	FT =	Listed as "threatened" under the federal Endangered Species Act.
	PE =	Proposed for federal listing as "endangered".
	PT =	Proposed for federal listing as "threatened".
	C =	A candidate species under review for federal listing. Candidates include taxa for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened.
	SC =	Species of Concern; formerly considered a candidate species for listing by the USFWS.
State:	SE =	Listed as "endangered" under the California Endangered Species Act.
	SR =	Listed as "rare" under the California Endangered Species Act.
	ST =	Listed as "threatened" under the California Endangered Species Act.
	CP =	California fully protected species; individual may not be possessed or taken at any time.
	CSC =	Considered a species of special concern by the CDFG; taxa have no formal legal protection but nest sites and communal roosts are generally recognized as significant biotic features.
CNPS:	1A =	Plants of highest priority; plants presumed extinct in California.
	1B =	Plants of highest priority; plants rare and endangered in California and elsewhere.
	3 =	Plants requiring additional information; a review list.
	4 =	Plants of limited distribution; a watch list.

Source: Environmental Collaborative and *Biological and Wetland Protection Technical Background Report*, April 2002, updated January 2006.

The USFWS also maintains information on special-status species as part of their project review and consultation responsibilities, and will prepare lists of known or suspected species from a particular county or U.S. Geological Survey (USGS) quadrangle. A request for special-status species known or suspected to occur in Marin County generated a list of 190 species that are listed, candidate, or Species of Concern (generally former candidate species in previous classification system of USFWS). These include 55 listed species, five proposed and candidate species, and 130 species recognized as Species of Concern by the USFWS or the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA Fisheries). The greater number of species in the USFWS list compared to the CNDDB records is due in part to the inclusion of numerous candidate species, Species of Concern, and species considered to be of local or regional concern due to conservation significance. A number of marine wildlife species not in the CNNDB inventory are also included in the USFWS list. Discrepancies between the two lists provide an indication of the limitations in collecting and monitoring data on special-status species, and need for detailed assessments when proposed development could affect sensitive habitat.

For many of the special-status species known to occur in Marin County, habitat suitability is severely limited by the direct and indirect effects of development. These include the direct loss of habitat because of conversion to urban uses, effects of on-going habitat modifications due to vegetation management and agricultural practices, and indirect effects such as non-point discharge into aquatic habitat and recreational activities on open space lands. Habitat fragmentation is an important consideration in evaluating the recovery of listed species and the viability of natural communities as a whole. Identification and protection of essential habitat for special-status species must be recognized during the environmental review of proposed development applications and in planning future open space acquisitions.

A number of special-status species known from Marin County are wide-ranging and the focus of management efforts by trustee agencies. Species of particular concern include California red-legged frog, northern spotted owl, coho salmon, and steelhead trout. The following provides a summary of relevant management issues for each of these species.

- ***Northern Spotted Owl*** – The USFWS listed the northern spotted owl as a threatened species in 1990. The southern limit of their range extends into Marin County where they occur in Golden Gate National Recreation Area, Muir Woods National Monument, Point Reyes National Seashore, and other parts of the County. On-going studies have been conducted to monitor population health and further define essential habitat, including annual status reports. According to these status reports, the Marin County population of spotted owl is subject to several threats, including: 1) urban development along park boundaries; 2) disturbance due to intense urban recreational pressures; 3) hazardous fuel management; 4) potential for catastrophic wildfire along the urban / wildland interface; 5) possible genetic isolation; and 6) continued range expansion of the barred owl. Of particular concern is the continuing die-off of tanbark and coast live oaks throughout spotted owl habitat due to SOD, and the long-term impacts this may have on prey populations and owl nesting habitat.

- ***Coho Salmon and Steelhead Trout*** – Coho salmon and steelhead trout are both listed as threatened under the federal ESA within the Central California Coast Evolutionarily Significant Unit. These species are anadromous, spawning in coastal streams and rivers, then migrating to, and maturing in the ocean. Both of these species are known to occur in streams within Marin County. **Exhibit 4.6-2** indicates streams with established or historic records of these species. Where a record of salmon or steelhead has been reported from a stream, generally the entire drainage has been indicated as supporting the species, although habitat conditions have not always been confirmed in the field.

  Marin County is currently participating in the FishNet 4C program, which is a county-based, regional salmonid protection and restoration program created under a Memorandum of Agreement between the six central California coastal counties of Marin, Mendocino, Monterey, San Mateo, Santa Cruz, and Sonoma. FishNet 4C recognizes the need for these counties to meet the requirements of the ESA in protecting anadromous salmonids and their habitats. Given these requirements, a prime objective of the FishNet 4C program has been to evaluate the land management practices of each county and any written policies related to protecting salmonid populations, and to make recommendations for improving these practices and policies. Based on the FishNet 4C review, Marin County has a number of policies in place that serve to protect fish habitat, particularly in the coastal zone where strict development standards protect salmonid streams and riparian buffers. Outside the coastal zone, measures to protect fish habitat are less stringent and less consistent, generally pertaining to riparian buffers and grading, as well as a comprehensive stormwater pollution prevention ordinance. Identified deficiencies in the FishNet 4C review relate to policy gaps regarding wildlife habitat, streamflow quantity modifications, riparian corridor protection, sedimentation, channel modification, water quality, and fish passage.

- ***California red-legged frog*** – The USFWS recently designated 209,000 acres of west and north-central Marin as critical habitat for the federally threatened California red-legged frog. Of this land, the National Park Service, the State Department of Parks and Recreation, and the Marin Municipal Water District manage approximately 52 percent of this land. The remaining 48 percent of the land is privately owned and generally under agricultural zoning and used for grazing. Management plans of the National Park Service, State Department of Parks and Recreation, and the Marin Municipal Water District include consideration of this species, although some conflicts with agricultural use and water quality degradation are of concern. Future development in the Coast Recreation Zone and the Inland Rural Corridor must consider the potential affects on this listed species, including plans for open space improvements and habitat restoration. Continued loss of upland dispersal habitat, fragmentation of remaining breeding locations, competition and predation by bullfrog, and degradation of aquatic habitat are primary concerns regarding protection and recovery of this species.

SENSITIVE NATURAL COMMUNITIES

In addition to species-oriented management, protecting habitat on an ecosystem-level increasingly is recognized as vital to the protection of natural diversity in the state. This is considered the most effective means of providing long-term protection of ecologically viable habitat, and can include whole watersheds, ecosystems, and sensitive natural communities. Providing functional habitat connectivity between natural areas is essential to sustaining healthy wildlife populations and allowing for the continued dispersal of native plant and animal species.

The CNDDB maintains records of sensitive natural communities, those considered rare or threatened in the state. Until recently, the classification of natural communities used by the CNDDB was generally a habitat-based approach defined by dominant or characteristic plant species as described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California*.[2] Currently, the CNDDB's system of classification of natural communities is based on the system described in the *Manual of California Vegetation*.[3] This system is floriscally-based and uses two units of classification called the *alliance* and the *association* in the National Vegetation Classification.[4] Although only recently implemented on a broad scale, this quantitative vegetation classification and systematic mapping method will allow conservationists and resource managers a greater understanding of natural ecosystems, their abundance, and their relative security. This new system is now in use by the CDFG, CNPS, State Parks, National Park Service, USGS, and some local agencies, and has been or is currently in use to map the Golden Gate National Recreation Area, Point Reyes National Seashore, Suisun Marsh, Yosemite, Sequoia, and Kings Canyon National Parks, and Napa County.

The purpose of the CNDDB natural community inventory was originally to identify and determine the significance and rarity of the various vegetation types in the state. While identifying and mapping sensitive natural communities continues to be a primary focus of the inventory, a more thorough understanding of all natural communities is essential to accurately define rarity, identify monitoring trends and threats, and broaden the approach to ecosystem-level conservation of biological diversity. This will presumably lead to mapping of vegetation throughout the state using the newer classification system. In the interim, the CNDDB maps recorded sensitive natural community types according to the older Holland classification system. Considerable work is necessary in updating and refining existing mapping records, identifying new occurrences of sensitive natural communities, and expanding the database to include the identification of high-quality stands of all natural communities.

The CNDDB considers several of the natural communities in Marin County a high inventory priority for mapping and protection. These communities were designated as sensitive due to rarity and continuing loss because of development, flood control improvements, and other factors. As indicated in **Exhibit 4.6-2**, sensitive natural communities currently mapped by the CNDDB in Marin County include coastal and valley freshwater marsh, coastal brackish marsh, coastal terrace prairie, central dune scrub, northern coastal salt marsh, northern maritime chaparral, northern vernal pool, and

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2 *Preliminary Descriptions of the Terrestrial Natural Communities of California*, R. F. Holland, State of California, Department of Fish and Game 1986.

3 *Manual of California Vegetation*, Sawyer and Keeler-Wolf, CNPS Press, 1995.

4 *International Classification of Ecological Communities: Terrestrial Vegetation of the United States*, Grossman et al, The Nature Conservancy, 1998.

serpentine bunchgrass. Each of these natural community types has been greatly reduced in extent due to a number of human-induced activities such as the filling of marshlands, leveling and conversion of vernal pools for agricultural crops and development, and historical overgrazing and replacement of native grasslands with non-native species. Additional stands of native grasslands not mapped by the CNDDB occur in many locations throughout the county, as do the sensitive riparian forest, and scrub communities along creeks and larger drainages.

A number of other sensitive natural community types are known from Marin County but have not been mapped in the CNDDB inventory. Based on the new *Manual of California Vegetation* (MCV) classification system, these include Valley Oak Forests and Woodlands, Oregon White Oak Woodlands, several associations of Black Oak Forests and Woodlands, Coastal and Montane Redwood Forests, several alliances and associations of Douglas Fir Forests, California Bay Forests and Woodlands, California Buckeye Woodlands, several alliances and associations of riparian scrubs and woodlands, Northern Coastal Bluff Scrubs, several associations of Coyote Brush Scrub, and numerous alliances of native grasslands. Although much of the open space and watershed lands of western Marin have been mapped using the MCV system, detailed mapping of the remainder of the county would be necessary to both characterize the existing natural communities and to more accurately understand their distribution and rarity. Even if a countywide mapping effort were completed, detailed vegetation surveys would still be necessary on sites proposed for development where there is a potential for occurrence of sensitive natural communities. This is due to the resolution of the countywide mapping program, which would map vegetation cover types as small as about 2.5 acres and could miss smaller features which are still of significance.

In 2004, the State passed changes to Public Resources Code Section 21083.4 in 2004. These changes now require project applications be evaluated for potential impacts to oak woodlands. A range of mitigation measures are available to the decision making body in cases where a project would have a significant effect on oak woodlands. While most oak forests and woodlands are not considered to have a high priority for mapping and protection as a sensitive natural community type with the CNDDB, they should be recognized as an important habitat type in the county due to their relatively high wildlife habitat value, threats due to urban and agricultural expansion, and their vulnerability to the affects of Sudden Oak Death (SOD). Tanoaks and coast live oaks are dying in large numbers, and black oaks, California buckeye, California bay, madrone, huckleberry, and rhododendron are suspected hosts or potential carriers of the fungus suspected to cause oak mortality. This fungus, a species of *Phytophthora*, and several beetle species are consistently associated with the dying oaks. SOD is contributing to significant changes in vegetative cover over large parts of the county, altering habitat for woodland-dependent species and exacerbating hazardous fire conditions where wildlands interface with developed areas.

WETLANDS

Although definitions vary to some degree, in general, wetlands are considered areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration, and purification functions. The U.S. Army Corps of Engineers (Corps of Engineers) and the USFWS developed technical standards for delineating wetlands that generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation.

Wetlands in the county include areas of salt and brackish water marsh along the shoreline of the coast and bay, riparian habitat along creeks and streams, and scattered freshwater seeps and springs.

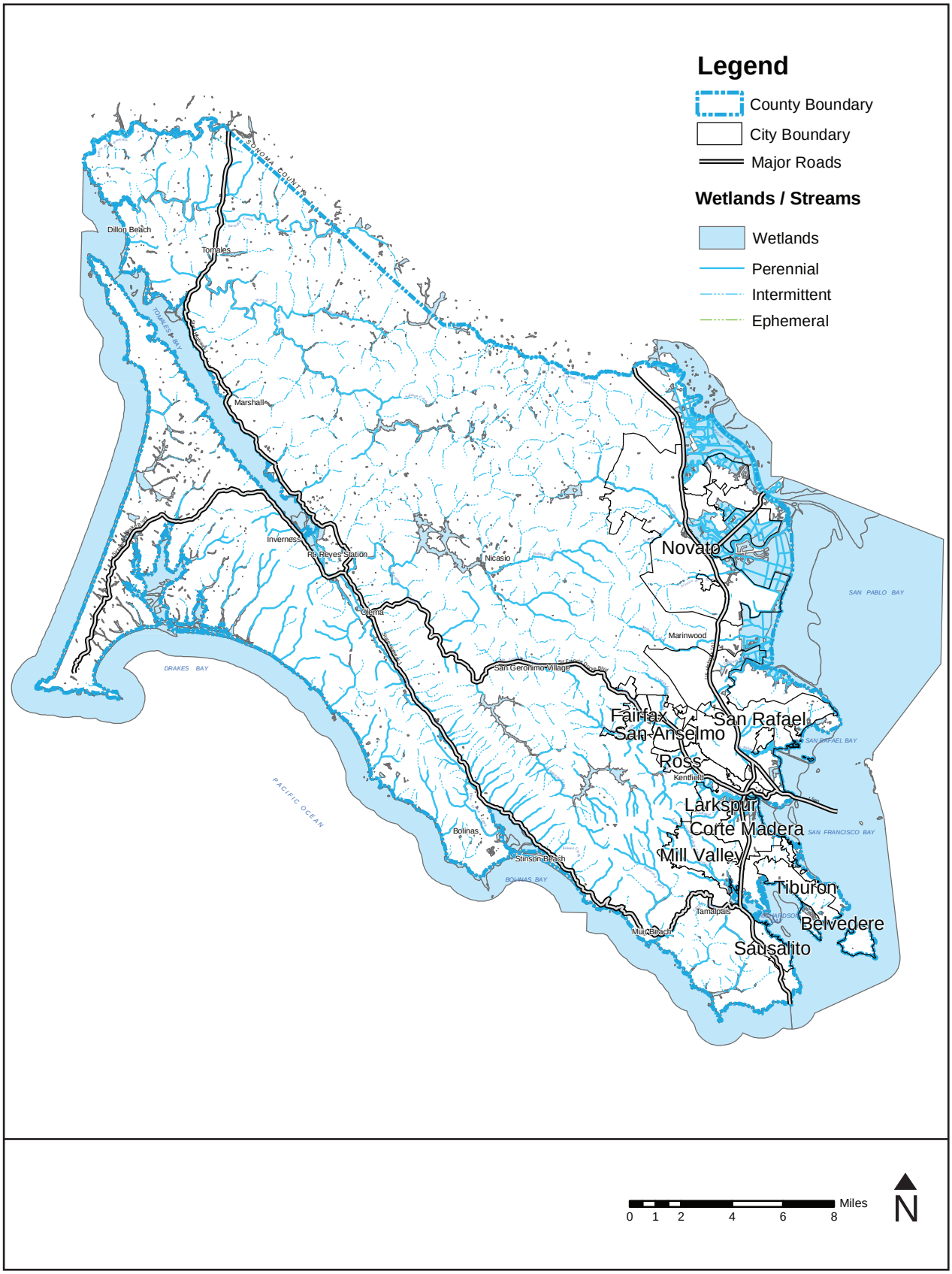
Exhibit 4.6-5 shows the extent of major wetland systems mapped as part of the National Wetlands Inventory (NWI), which consist of a range of characteristic wetland types, together with streams mapped by County staff. These include the marine and estuarine system of the ocean, bays, and lagoons; the riverine (i.e., river) and lacustrine (i.e., lake) systems of major creeks and channels; and the palustine (i.e., wetland) system comprising freshwater marsh, riparian scrub and woodland, and scattered stock ponds. In general, the NWI did not identify some wetland features, such as freshwater seeps and springs because of the general scale of the mapping effort. Detailed wetland delineations would be required to determine the extent of jurisdictional wetlands and other waters as specific locations, particularly where development is proposed.

HABITAT CONNECTIVITY

Marin County contains a diverse assemblage of both natural and human-influenced environments: from the shoreline, coastal terraces, and ridgelines of the coast, the expansive open space and watershed lands surrounding Mount Tamalpais, to the more intensively developed City-Centered Corridor interspersed with riparian corridors, wooded hillsides, and the baylands along San Francisco and San Pablo bays. The unprotected natural areas that remain, primarily in the City-Centered and Inland Rural Corridors, are subject to continued development pressures, contributing to declining water quality, habitat conversion and fragmentation.

Protecting and enhancing habitat connectivity and functional movement corridors between the remaining natural areas is essential to sustaining populations and allowing for the continued dispersal of native plant and animal species. Natural linkages include the undeveloped baylands and shorelines, riparian corridors and drainages, undeveloped ridgelines, and corridors across valley floors where impermeable barriers such as dense urban development, exclusionary fencing, and heavily traveled roadways have not yet eliminated options for wildlife movement and plant dispersal. While narrow corridors may be the only option in some locations due to the extent of existing development, habitat linkages are most effective through maintenance of a permeable landscape (i.e., one that allows for uninhibited movement of species across large areas).

Exhibit 4.6-5
Marin County Wetlands and Streams



Source: County of Marin Community Development Agency, June 2005. (Modified from the National Wetlands Inventory. Additional information available at: http://www.nwi.fws.gov.)

Relatively few studies or maps of opportunities to maintain and enhance biodiversity and habitat connectivity have been prepared that address resources in Marin County or the state as a whole. The Missing Linkages conference in November 2000, cosponsored by the California Wilderness Coalition, The Nature Conservancy, the Biological Resource Division of the USGS, the Center for Reproduction of Endangered Species, and California State Parks provided the first coordinated statewide effort in California to systematically identify, study, and protect wildlife corridors. The resulting report, *Missing Linkages: Restoring Connectivity to the California Landscape*, describes the methodology in identifying large-scale landscape linkages, connectivity choke-points, and missing links, and prioritizes these features based on conservation opportunities, presence of target species, overall threat, and existing documentation. [5] [6] While the Missing Linkages conference focused primarily on wildlife movement, it does provide a starting point in considering the importance of linking core wildlands for both wildlife connectivity and plant dispersal.

The Missing Linkages conference report identified nine habitat linkages for the North Coast and Bay Area Ecoregions encompassing the Marin County vicinity. [7] Identified linkages extending into and across Marin County consisted of Coastal Wetlands for the Pacific Flyway and the Bay Wetlands. These regional linkages serve as an important first step in identifying opportunities for regional habitat connectivity in the county. However, they do not address fragmentation on the local level, nor do they address the need to protect habitat connectivity and provide for movement corridors between core areas and important natural communities in the county. The 1999 *Baylands Ecosystem Habitat Goals* report also emphasizes the importance of protecting the remaining baylands and adjacent uplands because of their importance in maintaining and restoring the health of the bay ecosystem. [8] This includes specific recommendations for the baylands of North Marin, extending along the western side of San Pablo Bay from the mouth of the Petaluma River to Point San Pedro.

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5 California Wilderness Coalition, 2001.

6 Linkage types defined during the Missing Linkages conference consist of the following:

Landscape linkage = large, regional connections between habitat blocks ("core areas") meant to facilitate animal movement and other essential functions between different sections of the landscape. These linkages are not necessarily constricted, but are essential to connectivity function in the ecoregion. They may include habitat linkages, riparian corridors, etc.

Connectivity choke-point = A narrow, impacted, or otherwise tenuous habitat linkage connecting two or more core areas. Choke-points are essential to maintain landscape-level connectivity, but are particularly in danger of losing connectivity function. An example of a connectivity choke-point is a narrow peninsula of habitat, surrounded by human-dominated matrix, that connects larger core areas. Another example would be an underpass under a major roadway that is critical to allow animal movement between core areas.

Missing link = highly impacted area currently providing limited to no connectivity function (due to intervening development, roadways, etc.), but based on location one that is critical to restore connectivity function. Fore example, a missing link might be a critical section of a major highway that bisects two large core areas but that is currently impermeable to animal movement.

7 California Wilderness Coalition, 2001.

8 *Baylands Ecosystem Habitat Goals, a Report of Habitat Recommendations*, San Francisco Bay Area Wetlands Ecosystem Goals Project, 1999.

In addition to countywide biological resources, the *Draft 2005 CWP Update* addresses some specific land use designation options and sites. The following section addresses these specific *Draft 2005 CWP Update* components and their relevant biological resources setting information.

CITY-CENTERED CORRIDOR HOUSING SITES

As discussed in ***Chapter 3.0 Description of the Proposed Project,*** the *Draft 2005 CWP Update* assumes varying degrees of development on the St. Vincent's and Silveira properties and the San Rafael Rock Quarry. In addition, the *Draft 2005 CWP Update* proposes the establishment of a Housing Overlay Designation (Policy **CD-2.3**) and Housing Bank (Policy **CD-2.2**). The Housing Overlay Designation includes four specific sites: Marinwood Shopping Center, Strawberry Shopping Center, Marin City Shopping Center, and the Fairfax / Oak Manor Shopping Center.

Most of the sites with Housing Overlay Designations (see **Exhibit 3.0-6**) are already developed with urban uses and impervious surfaces. Therefore, additional development would not result in any direct impacts to sensitive biological resources. A few of the Housing Overlay parcels are located near sensitive marshland or riparian corridors, which must be considered as part of any future redevelopment. This includes the Marin City Shopping Center and Marinwood Shopping Center sites.

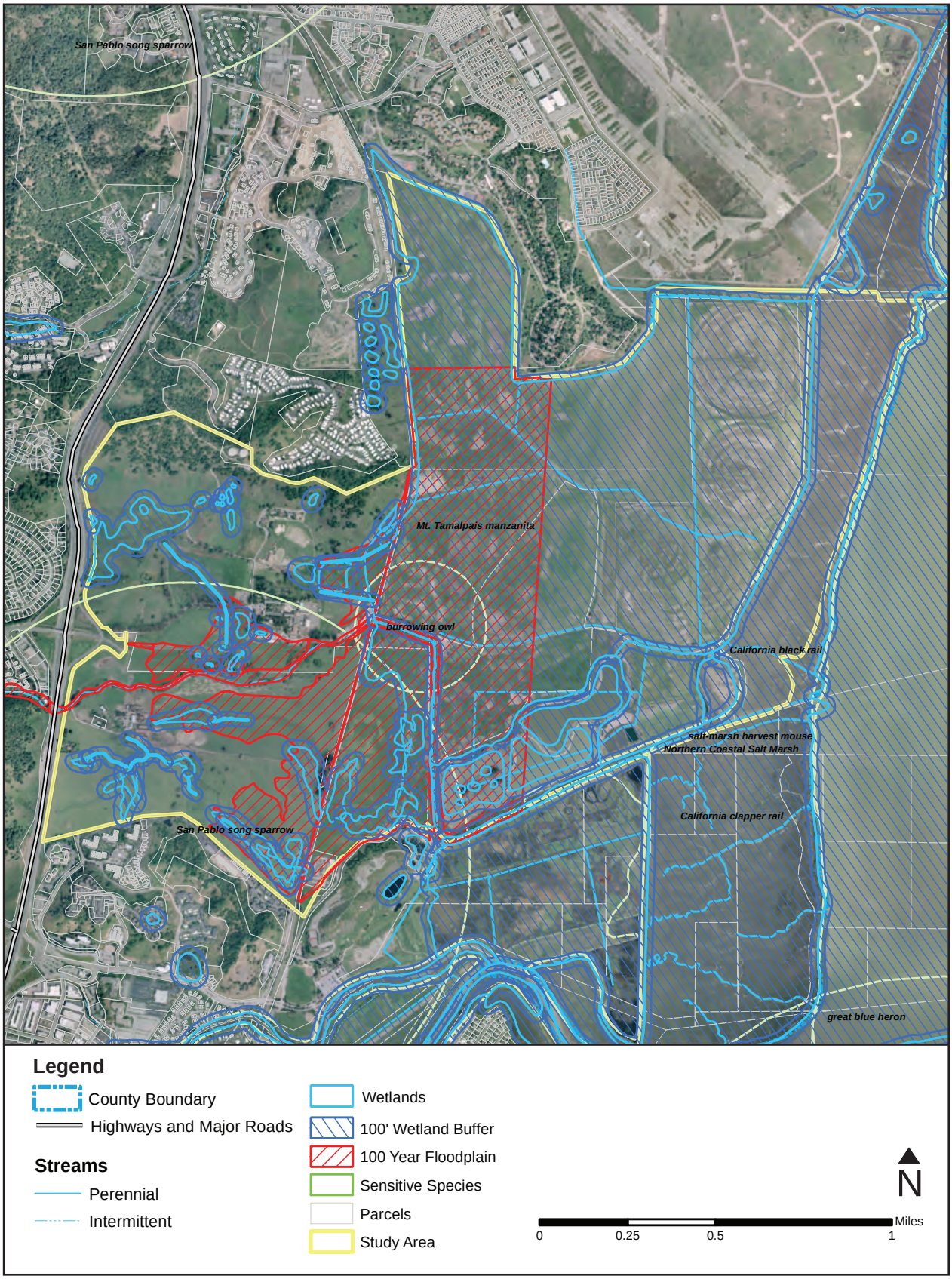
The San Rafael Rock Quarry is located near sensitive marshland or riparian corridors that must be considered as part of any future development The St. Vincent's / Silveira properties are largely undeveloped, and contain biological resources of varying sensitivity and potential constraints to future development. The general biological setting of the four specific sites in the Housing Overlay Designation, in addition to the conditions on the St. Vincent's / Silveira properties and the San Rafael Rock Quarry, are discussed below.

St. Vincent's / Silveira Properties

The St. Vincent's / Silveira properties are largely undeveloped lands, including the tidelands and diked baylands of San Pablo Bay, open grasslands, oak woodlands, and the riparian woodland and scrub along Miller Creek. **Exhibit 4.6-6** shows the major known sensitive biological features on the site, including coastal salt marsh, seasonal wetlands and pools, the Miller Creek riparian corridor and Stream Conservation Area, oak woodlands, and scattered mature native oaks.

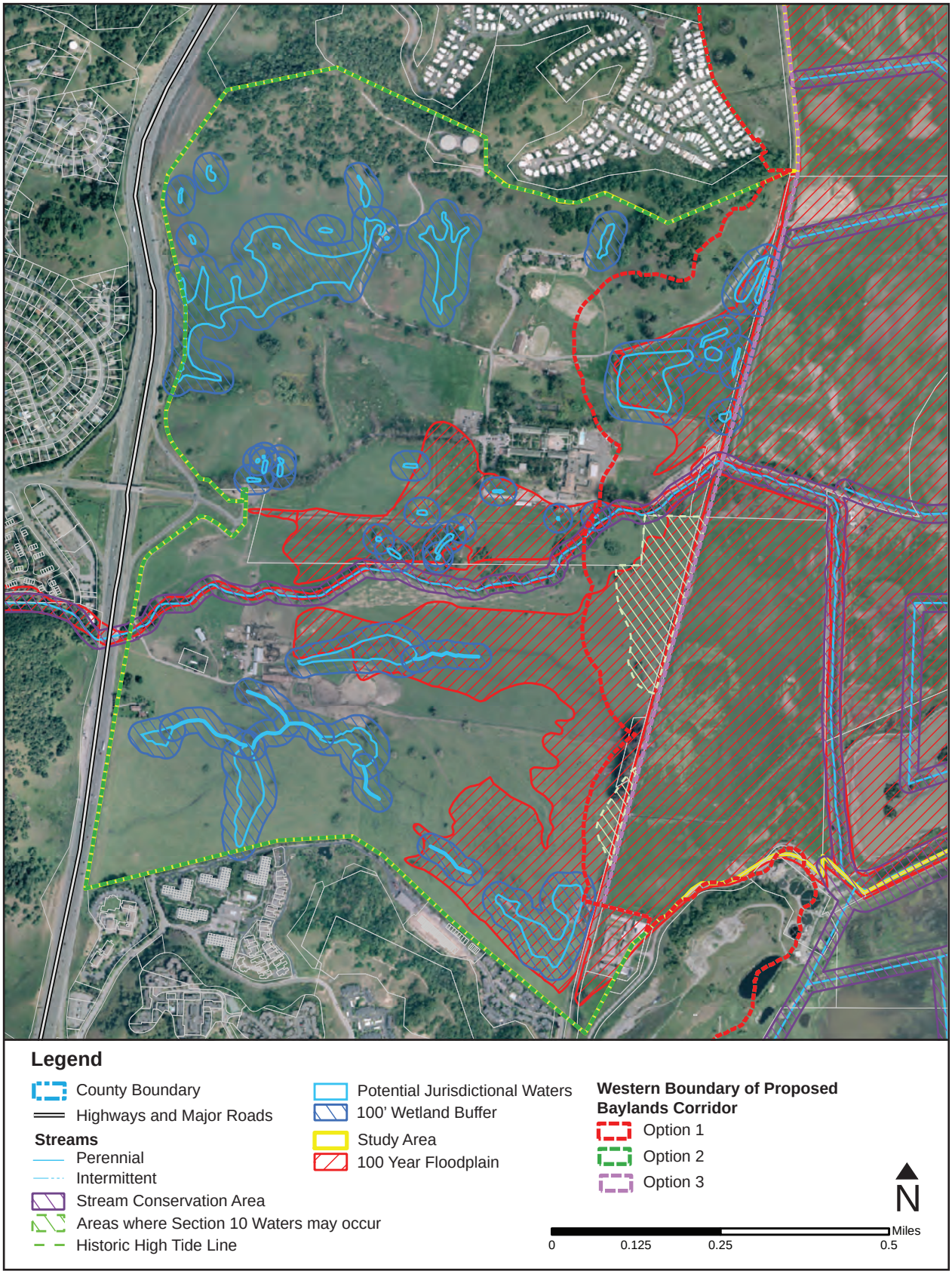
The coastal salt marsh and Miller Creek corridor are known to support a number of special-status species, including the State and federally-endangered California clapper rail, the State-threatened black rail, and the federally-threatened steelhead. The complex of marshlands, seasonal wetlands, open grasslands, and oak woodlands provide relatively undisturbed foraging opportunities for terrestrial birds and mammals, contributing to the habitat values of the site. These undeveloped habitats may support a number of special-status bird species, particularly foraging and possibly nesting by raptors. Jurisdictional wetlands include the Miller Creek channel below the Ordinary High Water Marsh, several smaller drainages in the hillsides and across the valley floor, seeps in the northern portion of the site, scattered seasonal wetlands on the valley floors, and the coastal salt marshes along the bay. All of these features may be regulated waters under Section 404 of the Clean Water Act and / or the Porter-Cologne Act. In addition, most of the site east of the Historic Tidelands may also be regulated under Section 10 of the Rivers and Harbors Act. Various portions of the site have been included in the proposed Baylands Corridor (see **Exhibit 3.0-3** in this Draft EIR or **Maps 2-5a** and **2-5b** [Baylands Corridor Options 1-3] in the *Draft 2005 CWP Update*).

Exhibit 4.6-6(a)
Biological Resources of the St. Vincent's / Silveira Properties



Source: County of Marin Community Development Agency, 2006. (Modified from the National Wetlands Inventory, California Department of Fish & Game Natural Diversity Database, Federal Emergency Management Agency National Flood Insurance Program Flood Insurance Rate Map, Hartesveldt St. Vincent's / Silveira Properties: Biology Update Jurisdictional Waters.)

Exhibit 4.6-6(b)
Biological Resources of the St. Vincent's / Silveira Properties



Source: County of Marin Community Development Agency, 2006. (Kenkay Associates Ecological Footprint Study: St. Vincent's / Silveira, Federal Emergency Management Agency National Flood Insurance Program Flood Insurance Rate Map, Hartesveldt St. Vincent's / Silveira Properties: Biology Update Jurisdictional Waters.)

Marinwood Shopping Center

No special-status species, sensitive natural communities, Stream Conservation Areas, or wetlands occur in the developed portion of this site. Miller Creek forms a dense riparian corridor at the southern edge of the site, dominated by mature native trees, with jurisdictional waters occurring below the Ordinary High Water Mark. The creek corridor provides important habitat for terrestrial and aquatic species, and serves as a movement corridor for fish and wildlife. Miller Creek is known to support the State and federally-endangered California freshwater shrimp, as well as runs of the federally-threatened steelhead. Other special-status species may occur along or utilize the habitat along this creek, making it a highly sensitive feature on the site. Surface runoff from the developed portion of the site drains into the creek, so the indirect impacts of construction sedimentation and urban runoff must be addressed as part of any future redevelopment.

San Rafael Rock Quarry

Coastal salt marsh occupies the western portion of the site, containing highly sensitive wetlands that may provide habitat for one or more special-status species. Some relatively undisturbed uplands occur along the ridgeline where quarry excavation has not occurred. These areas support primarily introduced stands of eucalyptus and a cover of non-native grassland, but still provide foraging opportunities for wildlife. Raptors and other birds may use the mature trees for roosting and possibly nesting. The low-lying sections of the western portion of the site supporting coastal salt marsh, together with a band along the shoreline are included in the proposed Baylands Corridor (see **Exhibit 3.0-3**).

Further detailed analysis would be necessary to determine the extent of jurisdictional waters, sensitive natural communities, and the potential for occurrence of special-status species on this site. Areas of exposed hillside or developed with structures and pavement would be of limited habitat value and are not expected to support sensitive resources. However, coastal salt marsh, seasonal wetlands, or drainages could occur in the proximity and any future redevelopment must consider this possibility. Surface runoff from the site drains into the marshlands or open waters of San Pablo Bay, so the indirect impacts of construction sedimentation and future urban runoff must be addressed as part of any future redevelopment.

Strawberry Shopping Center

No sensitive resources are believed to be associated with the site due to the extent of development, including absence of special-status species, sensitive natural communities, Stream Conservation Areas, or wetlands. Surface runoff from the site drains into nearby Richardson Bay, so the indirect impacts of construction sedimentation and urban runoff must be addressed as part of any future redevelopment.

Marin City Shopping Center

An approximately 2.2-acre area of coastal salt marsh occurs to the north of the shopping area and south of U.S. 101, with Richardson Bay occurring northeast of the freeway. The marsh appears to be a remnant natural feature, most likely an extension of Richardson Bay before fills were installed for the freeway and surrounding development. The marsh consists of an open water / mud flat area fringed by salt marsh vegetation including cord grass, pickleweed and salt grass. No special-status species, sensitive natural communities, Stream Conservation Areas, or wetlands occur in the developed portion of the site. However, the marshlands contain sensitive jurisdictional wetlands, provide habitat for shorebirds and other wildlife, and there is a remote possibility that they may provide habitat for a

number of special-status species associated with coastal salt marsh, making this portion of the site highly sensitive. Surface runoff from the developed portion of the site drains into the marshland, so the indirect impacts of construction sedimentation and urban runoff must be addressed as part of any future redevelopment.

Fairfax / Oak Manor

No sensitive resources are believed to be associated with the site due to the extent of development, including absence of special-status species, sensitive natural communities, Stream Conservation Areas, or wetlands. Surface runoff from the site drains into nearby Fairfax Creek, so the indirect impacts of construction sedimentation and urban runoff must be addressed as part of any future redevelopment.

Biological Resources – Significance Criteria

The biological resources analysis uses criteria from the *State CEQA Guidelines*. According to these criteria, the project would have a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal areas, etc.) through direct removal, filling, hydrological interruption, or other means;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native nursery sites;

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

According to *State CEQA Guidelines*, if the following condition occurs the lead agency (in this case Marin County) shall find that the project may have a significant effect on the environment: [9]

- The project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare or threatened species.

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[9] Under *CEQA Guidelines* Section 15065.

Biological Resources – Impacts and Mitigation Measures

INTRODUCTION

The Biological Resources section in the Natural Systems & Agriculture Element of the *Draft 2005 CWP Update* serves to update and refine the relevant sections of the Environmental Quality Element from the *1994 CWP*. Goals, policies, and implementing programs in the *Draft 2005 CWP Update* follow the basic framework established under the *1994 CWP* but clarify and expand a number of the important goals and policies, particularly with regard to protection of sensitive biological resources, riparian corridors, wetlands, and baylands. These include new and expanded policies and programs to enhance native habitat and biodiversity, addressing habitat acquisition, woodland and tree protection, support for vegetation and wildlife disease management programs, promoting the use of native plant species, controlling the spread invasive exotic plants and requiring their removal, restricting the use of herbicides and encouraging the use of integrated pest management, and controlling the spread of non-native invasive animal species. Policies and programs to protect sensitive biological resources include the continued process of identification during environmental review pursuant to CEQA, restrictions on proposed development to avoid or minimize disturbance to sensitive resources, preservation of areas of important wildlife habitat such as nursery areas and movement corridors, restrictions on disturbance in sensitive habitat during the nesting season, protection of sensitive coastal habitat, and coordination with trustee agencies.

A site assessment by a qualified professional would continue to be required for development applications that may adversely affect sensitive biological or wetland resources. Adequate mitigation measures would be required to ensure the protection of any sensitive resources and achieving “no net loss” of sensitive habitat acreage, values and functions.

The policies and programs in the *Draft 2005 CWP Update* related to establishment of a Stream Conservation Area (SCA) along riparian corridors were updated from the *1994 CWP*. SCAs protect the active channel, water quality and flood control functions, and associated fish and wildlife habitat values along streams. Proposed development must be setback both to protect the stream and to provide an upland buffer encompassed by the SCA. Policies and implementing programs address setback standards, allowable uses and restrictions, restoration and enhancement efforts, and requirement for a site assessment where incursions into the SCA are proposed or adverse impacts to riparian resources may otherwise occur.

The SCA setback distances vary depending on which environmental corridor (i.e., City-Centered, Inland Rural, Coastal Recreation, or Baylands Corridors) it is located within (see **Figure 2.2** [Typical Cross Section of a Stream Conservation Zone] in the *Draft 2005 CWP Update*). In the City-Centered Corridor, the setback distance ranges depending on parcel size but assumes avoidance of woody riparian vegetation for smaller parcels under 0.5 acres and minimum setback distances of 100 feet from top-of-bank for parcels greater than two acres in size. In the Inland Rural, Coastal, and Baylands corridors, a minimum setback distance of 100 feet from top-of-bank or an additional 50 feet from the edge of woody riparian vegetation is specified regardless of lot size unless an exception is allowed because the parcel falls entirely within the SCA or development outside the SCA is either infeasible or would have greater impacts. A site assessment is required where incursion into a SCA is proposed or where full compliance with all SCA criteria would not be met for any parcel size.

The SCA policies and programs served as a model for establishing a Wetland Conservation Area (WCA) around jurisdictional wetlands under the *Draft 2005 CWP Update*. Standards were established to provide minimum setback distances around jurisdictional wetlands which are intended to serve as a development buffer around these sensitive features, similar to setback standards along a SCA. As with the SCA setbacks, the WCA setbacks standards provide greater flexibility in the City-Centered Corridor depending on parcel size, but are a specified minimum distance of 100 feet for the Inland Rural, Coastal, and Baylands corridors (see **Figure 2-1** [Typical Cross-Sections of Wetland Conservation Area] in the *Draft 2005 CWP Update*).

Policies and programs would address setback standards, mitigation requirements, and landowner education. A site assessment by a qualified professional would be required where incursions into the WCA are proposed or adverse impacts to wetland resources may otherwise occur. Mitigation priorities call for avoidance of wetland areas to the extent feasible. Where complete avoidance is not possible, mitigation would be required through replacement habitat on-site through restoration and / or habitat creation, if no net loss of wetland acreage, function, and habitat values occurs. On-site wetland mitigation would be required at a minimum ratio of two acres for each acre lost (2:1 replacement ratio). Off-site mitigation would be allowed only when an applicant has demonstrated that no net loss of wetland functions and values would occur and that on-site mitigation would not be possible or would result in isolated wetlands of extremely limited value. In those rare instances where on-site wetland loss is unavoidable and on-site replacement is infeasible, mitigation must be provided at a minimum 3:1 replacement ratio, preferably of the same habitat type as the wetland area that would be lost.

The Baylands Corridor was established as part of the *Draft 2005 CWP Update* to protect important baylands and large adjacent undeveloped uplands along the San Pablo Bay and San Francisco Bay. The Baylands Corridor reinforces and refines the current Bayfront Conservation Zone, protecting important tidelands and adjacent undeveloped uplands within the City-Centered Corridor. Modifications have been made to boundaries of the current Bayfront Conservation Zone where appropriate to provide for more consistent mapping criteria and to exclude non-tidal portions of small, developed, privately-owned parcels from the Baylands Corridor. It should be noted that development within the Bayfront Conservation Zone is currently limited by policies that are intended to protect sensitive resource values or are offset by demonstrated benefits.

Three options are presented in the *Draft 2005 CWP Update* (see **Exhibit 3.0-3**) with major differences between them related to the inclusion or exclusion of lands on the St. Vincent's / Silveira properties and the vicinity of Gnoss Field. Establishment of a Baylands Corridor would aim to ensure that baylands and large, adjacent essential uplands are protected as well as encourage habitat enhancement efforts. For parcels larger than two acres in size, proposed development must adhere to development setback standards for areas qualifying for protection under the SCA and WCA, but greater setback distances must be provided as necessary to ensure that hydrologically isolated features such as seasonal wetlands and freshwater marsh are adequately linked to permanently protected habitat. These additional development setbacks would intend to prevent fragmentation and preserve essential upland buffers in the Baylands Corridor. Policies and implementing programs for the Baylands Corridor would also serve to prioritize land for restoration and open space acquisition.

Impact 4.6-1 Special-Status Species

Land uses and development consistent with the Draft 2005 CWP Update could result in the loss of populations or essential habitat for special-status species. This would be a significant impact.

Land uses and development consistent with the *Draft 2005 CWP Update* could result in adverse effects to special-status species known from Marin County. As indicated by the distribution of special-status plant and animal species shown in **Exhibit 4.6-2**, numerous occurrences are known from within or at the periphery of urbanized areas. These include occurrences of both plants and animal species along the shoreline of San Francisco and San Pablo Bays, records of special-status fish species along streams that pass through the City-Centered Corridor, and occurrences of special-status plant species along ridgelines and remaining open space lands such as Ring Mountain, Tiburon Ridge, the lower slopes of Mount Tamalpais, and elsewhere. Most occurrences of special-status species are known from outside urbanized areas, in permanent open space lands and the vicinity of rural communities, or grazing and watershed lands. Existing mapping in **Exhibit 4.6-2** only represents the known occurrences of special-status species, generally either because of chance encounters or as part of past detailed surveys. This mapping does not represent all populations of special-status species in the county, and future development and land use activities could affect unknown occurrences where present within the limits of grading and development. Site-specific habitat suitability assessments and possibly detailed surveys would be necessary to determine the extent of any special-status species on undeveloped lands proposed for development.

Potential impacts to special-status species include direct loss of individuals or localized populations, elimination or degradation of essential habitat, and isolation of disjunct occurrences or subpopulations due to habitat fragmentation. Conversion of existing natural habitat to urban development, roadways and other infrastructure improvements could result in the elimination of populations of special-status species where present within the limits of proposed grading and development.

The installation of actively managed agricultural uses (such as vineyards and row crops), confined livestock and overgrazing, mining extraction, and other activities could also result in the elimination of essential habitat for special-status species. This includes open space improvements such as construction of new trails if improperly planned, sited, and constructed. Intensive agricultural production in close proximity to essential habitat for special-status species could result in indirect impacts through drift of fertilizers, pesticides, and herbicides, or through water quality degradation in streams supporting anadromous fish and other aquatic special-status species through increased sedimentation and runoff contamination.

Even if a population is deliberately avoided, new development and intensively managed land practices could result in fragmentation of the existing habitat and leave the special-status species population at risk to extirpation (local extinction). Isolated subpopulations may be particularly vulnerable to extirpation due to natural or man-made influences such as fire and vegetation management practices, intensive grazing or agricultural production, invasion by highly aggressive non-native species that can out-compete or deplete the native flora or fauna, and other factors. Indirect impacts could include disruption of critical functions affecting reproductive success, degradation of habitat quality to such an extent that occupied habitat is no longer suitable for individual survival, and other influences.

A detailed, parcel-by-parcel assessment would be necessary in order to accurately locate sensitive resources and assess potential impacts resulting from development consistent with the *Draft 2005*

CWP Update. However, a comparison of parcels that have development potential with known occurrence records for special-status species provides some indication of potential impacts. [10]

As shown in **Exhibits 3.0-14** and **3.0-15**, a total of 5,391 housing units would occur in the unincorporated area as a result of buildout of the *Draft 2005 CWP Update* land use plan. Specific occurrences of special-status plant and animal species (i.e., as monitored by CNDDB) extend over portions or all of the parcels where 12.8 percent of the housing (approximately 690 units) would be located. [11]

Of these 690 housing units, 25 percent (approximately 175 units) would be located on parcels that are 0.5 acres or less in size. Such development would likely result in a significant adverse impact(s) to known sensitive resources given the limited flexibility in siting new structures or other improvements on parcels of this size. Another 25 percent (approximately 175 units) would be located on parcels between 0.5 to two acres in size. The remaining 50 percent (approximately 340 units) of these housing units would be located on parcels greater than two acres in size. Parcels of this size would provide some degree of added flexibility to avoid populations of known special-status species or their essential habitat.

Of the projected 1,236,781 square feet of nonresidential floor area that would occur in unincorporated Marin County, 5.1 percent (approximately 62,800 square feet) would occur on parcels where specific occurrences of special-status species (i.e., as monitored by the CNDDB) extend over portions or all of the parcel. Of these 62,800 square feet of nonresidential floor area, the majority (approximately 55,700 square feet) of development would occur on parcels greater than 0.5 acres in size and would likely provide some degree of flexibility to avoid sensitive resources. Approximately 3,000 square feet would occur on parcels less than 0.5 acres in size and could result in significant adverse impacts to known sensitive resources given the limited flexibility in siting new structures or other improvements on parcels of this size.

In the unincorporated area, mapped occurrences of special-status species are currently known from only approximately ten percent of the parcels with development potential. However, this does not preclude the possible occurrence of special-status species on undeveloped parcels currently with no known sensitive resources. In general, further site assessment would be necessary to determine whether an undeveloped parcel supports a population or essential habitat for special-status species, and to evaluate the significance of potential impacts accurately.

Local, State, and federal regulations provide varying levels of protection for special-status species, depending on a number of factors including legal protective status, rarity and distribution, and magnitude of the potential impact on essential habitat, specific occurrence and overall population levels, and take of individual plants or animals. Activities requiring discretionary approvals by the County, State, and federal agencies provide for the greatest oversight because proposed activities must be evaluated for their potential impact on special-status species and other sensitive biological resources. These include most development applications, which are reviewed under CEQA and the National Environmental Policy Act (NEPA) when federal funds or authorization is required. However, some land use activities allowed under the *Draft 2005 CWP Update* require only a

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[10] Marin County Community Development Agency provided data for this analysis based on queries of its Geographical Information Systems (GIS) database.

[11] Marin County Community Development Agency, November 2006.

ministerial permit[12] application and may receive little or no review by local, state or federal authorities. These include most current agricultural uses and ministerial permits for construction of a single family home, garage and other associated buildings, or grading for a new driveway on a parcel where residential use is allowed. These activities, however, do not appear to represent a major concern over the potential for adverse impacts to sensitive resources such as special-status species given the past history of agricultural use in the County and limited impacts associated with other land use activities handled under ministerial permits for which the County has no discretionary authority.

The degree to which the proposed redistribution of residential development through establishment of the Housing Overlay Designation would affect sensitive resources such as special-status species would depend on the details of specific development plans. Many of the proposed housing sites in the Housing Overlay Designation are already developed with impervious structures and structures in the City-Centered Corridor, in which case little or no direct impact on special-status species are anticipated. In general, the reallocation of residential development from the Inland-Rural and Coastal Corridors would reduce the likelihood that occurrences of special-status species would be adversely affected. Again, this assumes further assessment of each Housing Overlay Designation area is conducted, including detailed surveys where warranted, and appropriate avoidance of any sensitive resources is provided.

It should be noted that there remains a varying level for occurrence of special-status species on many of the proposed Housing Overlay Designation areas. **Exhibit 3.0-6** shows parcels assigned to the Housing Overlay Designation, some of which are located adjacent to or encompass sensitive resources such as creek, marshland, and undisturbed open space lands. The Miller Creek corridor, known to support the federally-threatened steelhead and possibly the federally-threatened California red-legged frog and coho salmon, passes through a number of the parcels with a Housing Overlay Designation in the Marinwood area. Streams also pass through the vicinity of a number of other Housing Overlay Designation areas and could support steelhead and other special-status species, including parcels in the Kentfield and Mill Valley vicinities. Parts of the San Rafael Rock Quarry contains coastal salt marsh and freshwater marsh habitat, which could support the State and federally-endangered salt marsh harvest mouse, the State and federally-endangered California clapper rail, and the State-threatened California black rail, among other species. The northern edge of the Gateway Center at the Marin City Shopping Center Housing Overlay Designation area contains remnant coastal salt marsh habitat that could support or provide foraging habitat for a number of special-status species. Where warranted based on presence of suitable habitat, further detailed surveys would be necessary to confirm presence or absence of any sensitive resources such as special-status species and any constraint they may pose to proposed development.

Future development on the St. Vincent's / Silveira properties could also result in direct or indirect impacts to special-status species depending on details of the proposed development application. As indicated in **Exhibit 4.6-6**, most of the known occurrences of special-status species on these largely undeveloped properties are associated with the coastal salt marsh habitat along the shoreline of San Pablo Bay, such as salt marsh harvest mouse, California clapper rail, and California black rail. The Miller Creek corridor bisects the properties, which is known to support steelhead, and records of burrowing owl, other raptors, and other bird species protected under the federal Migratory Bird Treaty Act have been reported or are known to occur in the vicinity. **Exhibit 4.6-6** shows the specific

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[12] "Ministerial" describes a governmental decision involving little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The public official merely applies the law to the facts as presented but uses no special discretion or judgment in reaching a decision.

occurrences of sensitive resources along the shoreline of the bay and the more general occurrences of San Pablo song sparrow and burrowing owl that extend over upland areas. This exhibit also shows the location of known wetlands, perennial and intermittent streams, and mapped 100-year floodplain on the properties. Potential impacts to known or unreported occurrences of special-status species would depend on the degree to which sensitive resources are accurately identified and avoided, which require appropriate setbacks to provide a buffer from possible direct and indirect impacts. Future development on these properties may result in significant impacts that would require habitat creation or enhancement as mitigation, which could be sited within or adjacent to existing sensitive habitat such as the coastal salt marsh along the shoreline of San Pablo Bay on the St. Vincent's / Silveira properties. Creation or enhancement activities could result in direct or indirect affects on occurrences of special-status species during construction unless appropriate precautionary measures are implemented. However, there is considerable land area that could be enhanced to improve existing habitat functions and values and to compliment the location of these properties along the shoreline of the bay.

Mitigation priorities applied by trustee agencies addressing potential impacts to special-status species range from preferred avoidance to lowest priority of creating replacement habitat off-site to achieve no net loss. The significance of the potential impact on special-status species and corresponding need for mitigation can vary depending on a number of factors. These factors include the actual status of the affected species, magnitude of disturbance, vulnerability of the population to extirpation, and other considerations. Those special-status species which are actually listed species under the Endangered Species Acts (i.e. rare, threatened, or endangered) generally represent the highest potential constraint to proposed development, are much more stringently regulated, and typically are considered to have a higher need for habitat avoidance. The feasibility of mitigation options must also be considered when developing appropriate mitigation for special-status species. Habitat creation may not be feasible, or may be of questionable success and may only be allowed by regulatory agencies as part of a combined mitigation plan that includes permanent protection of other off-site locations known to support the species of concern.

The Biological Resources section of the Natural Systems & Agriculture Element contains policies that provide for the identification and protection of special-status species as part of development review. The degree to which special-status species are protected would depend in part on how accurately individual populations and essential habitat are identified and how stringently relevant policies are applied and enforced, together with regulatory oversight and resource management by State and federal agencies. Updated and expanded policies and programs in the *Draft 2005 CWP Update* would serve to improve and strengthen protections for special-status species. Policies **BIO-1.1** and **BIO-2.1** would acknowledge the environmental review process pursuant to CEQA and the importance of protecting sensitive resources such as special-status species. The Natural Resource Information Program outlined in Program **BIO-1c** would provide up-to-date information on occurrences of special-status species and would aid in educating landowners and possible development applicants of habitat protection and management of sensitive resources, such as special-status species, including those activities authorized under ministerial permits. Policy **BIO-2.3** would serve to limit development impacts by restricting or modifying proposed development in areas that contain essential habitat for special-status species. Policy **BIO-2.9** would call for consultation with trustee agencies during environmental review when special-status species may be adversely affected. Policy **BIO-2.10** would promote early consultation at the outset of project planning to ensure that the possible requirements to protect sensitive habitat are incorporated into development plans. Policy **BIO-2.6** would restrict development near sensitive habitat during the nesting season, protecting important bird nesting areas. Program **BIO-2.a** would require a site assessment by a qualified professional where proposed development applications may adversely affect sensitive resources, including occurrences of special-status species. Program **BIO-2.c** would require coordinating County review with that of other

jurisdictional agencies and requires evidence of compliance with any necessary permits from federal and State agencies prior to issuance of County grading or building permits, which should aid in ensuring that inadvertent impacts are avoided during the permit review and authorization process. Program **BIO-2.d** would serve to inform project applicants that other agencies might have jurisdiction and the possible implications with regard to their proposed development activities if sensitive resources are present.

The *Draft 2005 CWP Update* would include designations over sensitive habitat areas that would directly and indirectly serve to avoid and protect essential habitat for some special-status species. These include establishment of Stream Conservation Areas (SCA) along designated streams, Wetland Conservation Areas (WCA) around jurisdictional wetlands, and establishment of the Baylands Corridor along the shoreline of San Francisco Bay and San Pablo Bay (see **Exhibit 3.0-3**). The SCA, WCA, and Baylands Corridor would serve to protect known sensitive habitat areas and the adjacent uplands that serve as an important buffer. The differences in the extent of the designated Baylands Corridor presented in Options 1, 2, and 3 generally pertain to the St. Vincent's / Silveira properties and lands near Gnoss Field. All three options would encompass the known occurrences of special-status species along the shoreline of the bay on the St. Vincent's / Silveira properties (see **Exhibit 4.6-6**), but Option 2 would provide for greater avoidance of habitat along Miller Creek and expanded opportunities to protect foraging habitat and possible nesting habitat for raptors and other bird species dependent on the remaining grasslands, oak woodland, and coastal salt marsh habitat in the vicinity. By extending the Baylands Corridor to U.S. 101 under Option 2, greater attention would be given to the interrelationship of the scattered biological and wetland features and how they contribute to the overall habitat values of the entire property and larger baylands ecosystem, as called for in Policy **BIO-5a**. While adoption of Option 2 would provide more stringent controls over habitat important for connectivity purposes than under Options 1 or 3, it would not necessarily preclude development on the St. Vincent's / Silveira properties.

Habitat Conservation Plans or Natural Community Conservation Plans are often times used to provide a coordinated approach to protecting listed special-status species while still recognizing the rights of private property owners. No adopted conservation plans have been prepared for all or parts of Marin County. The County is participating in the FishNet4C program, which intends to meet requirements of the federal ESA in protecting anadromous salmonids and their habitats. However, there is no specific reference to continued participation in the FishNet4C program in the *Draft 2005 CWP Update*, or to the importance of implementing recommendations developed as part of this program, which is essential to improving habitat conditions for listed anadromous fish and other aquatic species.

While adoption and implementation of the above policies and programs would substantially reduce adverse effects to special status species in unincorporated Marin County, continued participation in the FishNet4C program and implementation of four programs in the *Draft 2005 CWP Update* would be required to reduce this impact to a less-than-significant level. Specifically, implementation of Programs **BIO-1.c**, **BIO-2.a**, **BIO-2.c**, and **BIO-2.d** would be necessary to maintain up-to-date informational resources, require site assessments, and coordinate environmental review with jurisdictional agencies and the project applicant. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, programs **BIO-1.c**, **BIO-2.a**, **BIO-2.c**, and **BIO-2.d** would be implemented within five years and therefore could be relied upon to reduce this

impact. [13] [14] However, as the *Draft 2005 CWP Update* does not call for continued participation in the FishNet4C program or the implementation of the program's recommendations, impacts to anadromous fish and other aquatic species could still occur. Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative biological resources impact. The following mitigation would be required.

Mitigation Measure 4.6-1 Add a new policy to the Biological Resources section as follows:

> **BIO-2.(new)** Continue to actively participate in the FishNet4C program and work cooperatively with participating agencies to implement recommendations to improve and restore aquatic habitat for listed anadromous fish species and other fishery resources.

Significance After Mitigation Adoption of Mitigation Measure 4.6-1, together with effective implementation of relevant programs, and oversight by regulatory agencies entrusted with enforcement of State and federal regulations that address protection and management of special-status species, would substantially reduce adverse effects to special-status species resulting from land uses and development consistent with the *Draft 2005 CWP Update*. Therefore, this would be a less-than-significant project impact and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the new policy as described in Mitigation Measure 4.6-1 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Marin County Department of Public Works would share responsibility for ensuring adequate environmental review and avoidance of sensitive resources, for continued participation in the FishNet4C program, and monitoring implementation.

Impact 4.6-2 Sensitive Natural Communities

Development and land use activities consistent with Draft 2005 CWP Update could result in loss of sensitive natural communities. This would be a significant impact.

Development and land use activities consistent with the *Draft 2005 CWP Update* could result in adverse impacts to sensitive natural communities. **Exhibit 4.6-2** shows the mapped extent of sensitive natural communities known from Marin County, which includes areas of coastal salt marsh, freshwater and brackish water marshlands, northern vernal pool, riparian forest and woodlands, freshwater seep and spring, northern maritime chaparral, central dune scrub, coastal terrace prairie, valley needlegrass grasslands, serpentine bunchgrass, and deciduous woodlands dominated by valley oaks or Oregon white oak. Areas qualifying as SCA encompassing perennial, intermittent, and ephemeral streams with woody riparian vegetation are generally considered to support riparian habitat, a sensitive natural community type. Areas qualifying as WCA encompass jurisdictional wetlands that

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[13] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[14] As described in **Figure 2-4** Biological Resources Program Implementation in the *Draft 2005 CWP Update*.

support freshwater marsh, brackish water marsh, coastal salt marsh, and northern vernal pool, all of which are typically considered to be sensitive natural community types. It should be noted that **Exhibit 4.6-2** only represents the known occurrences of sensitive natural communities, generally described because of past detailed surveys or conventional mapping. Site-specific assessments and possibly detailed mapping would be necessary to determine the extent of any sensitive natural communities on undeveloped lands.

As indicated by the distribution of sensitive natural communities shown in **Exhibit 4.6-2**, numerous occurrences are known from within or at the periphery of urbanized areas through the City-Centered Corridor, particularly the riparian scrub and woodland habitat along streams and the remaining marshlands along the shoreline of San Francisco Bay and San Pablo Bay. Other occurrences are known from outside urbanized areas, contained within open space lands or in the vicinity of rural communities, or on grazing and watershed lands. Potential impacts to mapped and unknown occurrences of sensitive natural communities include all or partial conversion to developed uses or intensively managed crops, and fragmentation or modification to such an extent that the resource no longer function as a natural community. Other human-generated influences such as fire suppression, intensive grazing or agricultural production, invasion by highly aggressive non-native species which can out-compete or deplete the native flora, and other factors may also adversely affect sensitive natural communities. Insufficient setbacks from riparian vegetation, marshlands and other wetlands, valley oak woodlands, and other sensitive natural communities can contribute to incremental loss and incursion into the natural community types, again compromising their habitat value and eventually preventing natural regeneration.

A comparison of parcels that have development potential with known occurrence records for sensitive natural communities provides some indication of potential impacts of development consistent with the *Draft 2005 CWP Update*. [15] [16] As shown in **Exhibits 3.0-14** and **3.0-15**, a total of 5,391 housing units would occur in the unincorporated area as a result of buildout of the *Draft 2005 CWP Update* land use plan. Specific occurrences of sensitive natural communities (i.e., as monitored by CNDDB) extend over portions or all of the parcels where 1.8 percent of the housing (approximately 100 units) would be located. [17]

Of these 100 units, approximately 30 percent (30 units) would be located on parcels that are 0.5 acres or less in size. Such development would likely result in a significant adverse impact(s) to known sensitive resources given the limited flexibility in siting new structures or other improvements on parcels of this size. Approximately ten percent (10 units) would be located on parcels between 0.5 to two acres in size. The remaining 60 percent (60 units) of these housing units would be located on parcels greater than two acres in size.

However, this relatively small percentage of units that would occur on these lands is most likely more an indication of the less rigorous monitoring by the CNDDB than an absence of sensitive resources on

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[15] Marin County Community Development Agency provided data for this analysis based on queries of its Geographical Information Systems (GIS) database.

[16] Again, it should be noted that, in general, further assessment would be necessary to determine the presence or absence of sensitive natural community types on undeveloped parcels and to accurately determine the potential impacts of any proposed development.

[17] Marin County Community Development Agency, November 2006.

undeveloped parcels. Consideration of parcels containing areas that qualify as a SCA or WCA under the County's GIS mapping program provides additional information as to the potential effects of development on sensitive natural communities. Such parcels most likely support sensitive natural communities, such as riparian scrub, riparian woodland and freshwater marsh, which are generally not closely mapped or monitored by the CNDDB.

Of the 5,391 projected housing units, 41.5 percent (approximately 2,230 units) would be located on parcels containing areas that qualify as a SCA. Not including stream corridors and areas that may also qualify as a SCA, an estimated 42.4 percent (approximately 2,280 units) would be located on parcels that contain areas that qualify as a WCA. Collectively, 84 percent (approximately 4,510 units) of the total projected housing units would be sited on parcels containing areas that qualify as a SCA and WCA. Of these 4,510 units, approximately 11.5 percent (520 units) would be sited on parcels under 0.5 acres in size. Approximately ten percent (450 units) would be located on parcels between 0.5 and two acres in size and approximately 66 percent (3,540 units) would be sited on parcels greater than two acres in size.

Of the projected 1,236,781 square feet of nonresidential floor area that would occur in unincorporated Marin County, 2.1 percent (approximately 26,100 square feet) would occur on parcels where specific occurrences of sensitive natural communities monitored by the CNDDB extend into or over the parcel. When combined with parcels containing areas that qualify as a SCA or WCA, an estimated 87percent of the parcels with nonresidential (e.g., commercial) development potential appear to contain some type of sensitive natural community. However, only 1.0 percent (approximately 11,870 square feet) of the total 1,236,781 square feet of nonresidential floor area would occur on parcels less than 0.5 acres in size. Approximately 3.9 percent (48,125 square feet) of the total 1,236,781 square feet of nonresidential floor area would occur on parcels between 0.5 to two acres in size. The remainder would occur on parcels greater than two acres in size.

A number of the parcels assigned to the Housing Overlay Designation contain occurrences of sensitive natural communities, which could be affected depending on details of specific development plans. These include the Miller Creek corridor, which forms a SCA on several of the parcels with a Housing Overlay Designation in the Marinwood area, coastal salt marsh on the northern edge of the Marin City Shopping Center Housing Overlay Designation area, SCAs on several of the parcels with a Housing Overlay Designation in the Kentfield and Mill Valley vicinities, plus areas of coastal salt marsh and freshwater marsh on the San Rafael Rock Quarry site. Where warranted, further site assessment of each Housing Overlay Designation area plus the San Rafael Rock Quarry would presumably be conducted and appropriate avoidance of any sensitive resources provided as part of any discretionary application.

As indicated in **Exhibit 4.6-6**, sensitive natural communities on the St. Vincent's / Silveira properties include the Miller Creek corridor, coastal salt marsh along the shoreline of San Pablo Bay, and freshwater marsh associated with the scattered seasonal wetlands and seeps/springs on the property. Based on the setback standards outlined in the *Draft 2005 CWP Update*, **Exhibit 4.5-2** shows the assumed boundaries for the SCA along Miller Creek and the WCAs along the various known wetland features on the properties, focusing on the area between U.S. 101 and the railroad right-of-way where development proposals have been concentrated in the past. Compliance with policies calling the preservation of sensitive resources through establishment of conservation areas, avoidance of SCA, WCA, and Baylands Corridor on the properties would serve to protect the mapped sensitive natural communities and the adjacent uplands that serve as an important buffer areas on the St. Vincent's / Silveira properties. Of the three options which would establish a Baylands Corridor (see **Exhibit 3.0-3**), Option 2 would provide for greater avoidance for habitat along Miller Creek and possibly larger buffers around the scattered seasonal wetlands, seeps and springs on the property. By extending the

Baylands Corridor to U.S. 101 under Option 2, greater attention would be given to the interrelationship of the scattered biological and wetland features and how they contribute to the overall habitat values of the entire property and larger baylands ecosystem, as called for in Policy **BIO-5a**. Therefore, this option would likely provide larger setbacks around sensitive natural communities than provided under Options 1 and 3 but not precluding development on the St. Vincent's / Silveira properties.

As discussed under *Impact 4.6-1 Special Status Species*, mitigation priorities for sensitive resources range from preferred avoidance to creating replacement habitat off-site to achieve no net loss. While this range of mitigation options is again generally consistent with that used by regulatory agencies, the significance of the potential impact on sensitive natural communities and corresponding need for mitigation is generally less rigorous than that used for special-status species. The significance of a potential impact on a sensitive natural community is dependent on a number of factors, including its rarity, its contribution to other natural habitat values in the vicinity, and the degree to which it is to be modified or eliminated as a result of proposed development. Appropriate compensatory mitigation also depends on feasibility of creating replacement habitat or restoring areas of sensitive natural communities affected by proposed development. These various considerations are not specifically acknowledged in the policies related to sensitive natural communities, but are understood to be part of the site assessment and mitigation programs utilized by qualified professionals and regulatory agencies.

The Biological Resources section of the Natural Systems & Agriculture Element contains policies and programs that provide for the identification and protection of sensitive natural communities as part of development review. The degree to which occurrences of sensitive natural communities are adequately protected would depend on accurate identification and how stringently the relevant policies are applied and enforced, together with regulatory oversight and resource management by State and federal agencies. Updated and expanded policies and programs in the *Draft 2005 CWP Update* would serve to improve and strengthen protections for sensitive natural communities. Policies **BIO-1.1** and **BIO-2.1** would acknowledge the environmental review process pursuant to CEQA and the importance of protecting sensitive resources such as sensitive natural communities. The Natural Resource Information Program outlined in Program **BIO-1c** would provide up-to-date information on occurrences of sensitive natural communities and would aid in educating landowners and possible development applicants of habitat protection and management of sensitive resources, such as sensitive natural communities, for both discretionary and ministerial permits.

Several policies and programs in the *Draft 2005 CWP Update* call for protection of sensitive resources, including sensitive natural communities. Policy **BIO-2.3** would limit development impacts by restricting or modifying proposed development in areas that contain sensitive natural communities. Policy **BIO-1.2** would call for continued acquisition of sensitive resources for use as permanent open space while Policy **BIO-1.3** would call for protecting woodlands, forests, and native tree resources. Policy **BIO-2.9** would call for consultation with trustee agencies during environmental review when regulated sensitive natural communities may be adversely affected. Policy **BIO-2.10** would promote early consultation at the outset of project planning to ensure that the possible requirements to protect sensitive habitat are incorporated into development plans. Program **BIO-2.a** would require a site assessment by a qualified professional where proposed development applications may adversely affect sensitive resources, including occurrences of sensitive natural communities. Program **BIO-2.c** would require coordinating County review with that of jurisdictional agencies and requires evidence of compliance with any necessary permits from federal and State agencies prior to issuance of County grading or building permits, which should aid in ensuring that inadvertent impacts are avoided during the permit review and authorization process. Program **BIO-2.d** would inform project applicants that other agencies might have jurisdiction and the possible implications with regard to their proposed

development activities if sensitive resources are present. Programs **BIO-1.a** and **BIO-1.b** would call for natural community mapping and habitat monitoring. This would provide a coordinated approach to mapping of common and sensitive natural communities, and would allow for development of a program to establish cumulative thresholds to prevent further loss of particularly vulnerable natural communities in the County. Numerous policies, including **BIO-6**, **BIO-7**, **BIO-9**, would address the need to control highly invasive species that can degrade or even replace natural communities if left uncontrolled.

Policies in the *Draft 2005 CWP Update* would establish conservation areas over streams and jurisdictional wetlands and creation of a Baylands Corridor over baylands, serving to protect much of the important sensitive natural community types in the County. Policy **BIO-4.1** would limit land uses in designated SCAs to those that create minimal disturbance or alteration to water, soils, vegetation, and wildlife and that maintain or improve stream function or habitat values. Policy **BIO-4.2** would establish setback standards along a SCA, and numerous other policies call for protection of riparian vegetation, control of exotic vegetation, restoration of culverted and damaged streams, among other provisions. Implementing programs call for adoption of an expanded SCA Ordinance, re-evaluation of SCA boundaries, preparation of county-wide mapping, and conduct of site assessment where a proposed development application may affect a SCA. Policy **BIO-5.1** would establish the protection of the Baylands Corridor through specified criteria based primarily on parcel size and proximity to mean high tide. Policy **BIO-5.2** would serve to limit development so that it does not encroach into sensitive resources and requires an environmental assessment where development is proposed within the Baylands Corridor. Other policies would require that tidelands be left in their natural state, that marshlands be restored, preservation of freshwater habitat, restrictions on access, and encouraging open space acquisition of larger parcels. Implementing programs would call for establishing criteria for upland setbacks, providing landowner education, updating the Development Code, enforcing Tidelands and Diked Bay Marshlands restrictions, controlling public access, and other provisions. A discussion of policies and programs related to wetlands is provided under *Impact 4.6-3 Wetlands and Other Waters*.

While adoption and implementation of the above policies and programs would substantially reduce adverse effects to sensitive natural communities in unincorporated Marin County, implementation of Programs **BIO-1.a**, **BIO-1.b**, **BIO-1.c**, **BIO-1.d**, **BIO-1.g**, **BIO-2.a**, **BIO-2.c**, **BIO-2.d**, **BIO-4.a**, **BIO-4.f**, **BIO-4.g**, **BIO-4.h**, **BIO-4.k**, **BIO-5.a**, **BIO-5.b**, and **BIO-5.g** would be necessary to reduce this impact to a less-than-significant level. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, all of these programs except **BIO-1.b** would be implemented within five years and therefore could be relied upon to reduce this impact.[18] [19] However, as Program **BIO-1.b** will require additional grants or revenues, is of low priority, and its timeframe of implementation is long-term, it cannot be certain that this program would be implemented in a timely manner. Therefore, this would be a significant project impact and the project

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[18] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[19] As described in **Figure 2-4** Biological Resources Program Implementation in the *Draft 2005 CWP Update*.

would make a cumulatively significant contribution to a cumulative biological resources impact. The following mitigation would be required.

Mitigation Measure 4.6-2 In order to reduce the impact to sensitive natural communities to a less-than-significant level, the County would obtain funding for Program **BIO-1.b** *(Develop Habitat Monitoring Programs)*, revise its priority to medium, and improve the timeframe of its implementation to the medium-term or sooner.

Significance After Mitigation Adoption of Mitigation Measure 4.6-2, together with effective implementation of relevant programs and oversight by regulatory agencies entrusted with enforcement of State and federal regulations addressing the protection and management of sensitive natural communities, would mitigate potential adverse impacts to sensitive natural communities associated with the *Draft 2005 CWP Update* to a less-than-significant level and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting these policies and programs as part of the *Marin Countywide Plan 2005*, and for ensuring the effective implementation of essential programs. The Marin County Community Development Agency and the Marin County Department of Public Works would share responsibility for ensuring adequate environmental review, avoidance of sensitive resources, and monitoring implementation.

Impact 4.6-3 Wetlands and Other Waters

Development and land use activities consistent with Draft 2005 CWP Update could result in direct or indirect impacts to wetlands and jurisdictional other waters. However, policies and programs of the Draft 2005 CWP Update would reduce this to a less-than-significant impact.

Development and land use activities consistent with the *Draft 2005 CWP Update* could result in direct loss or modification to existing wetlands and unvegetated other waters, as well as indirect impacts due to water quality degradation. Affected wetlands could include both the wetland-related sensitive natural community types described above, as well as areas of open water, degraded and modified streams and channels, unvegetated waters, and isolated seasonal wetlands now dominated by non-native species. **Exhibit 4.6-5** shows the general extent of known wetlands in the County, many of which occur within or near urban areas in the City-Centered Corridor. These mapped wetlands would be most vulnerable to potential direct impacts as a result of future development. However, existing mapping does not indicate all wetlands and jurisdictional waters in the County, and future development or other land use activities outside City-Centered Corridor could also affect jurisdictional waters. Site-specific wetland delineation would be necessary to determine the extent of possible jurisdictional waters where wetlands may be present.

Indirect impacts to wetlands and jurisdictional other waters include an increase in the potential for sedimentation due to construction grading and ground disturbance, an increase in the potential for erosion due to increased runoff volumes generated by impervious surfaces, and an increase in the potential for water quality degradation due to increased levels in non-point pollutants. Water quality degradation may occur even when wetlands and unvegetated channels are avoided by proposed development if setbacks are inadequate to provide critical vegetation filtration functions. A detailed discussion of these direct and indirect impacts is provided under ***Section 4.5, Hydrology, Water Quality, and Flood Hazards***.

A detailed, parcel-by-parcel assessment would be necessary in order to accurately locate any wetland resources and assess potential impacts resulting from development consistent with the *Draft 2005*

CWP Update. However, a comparison of parcels that have development potential with known occurrences of streams and wetlands provides some indication of potential impacts. [20]

As discussed under *Impact 4.6-2 Sensitive Natural Communities*, approximately 84 percent (approximately 4,510 units) of the total projected 5,391 housing units would be located on parcels containing areas that qualify as a SCA and WCA. Of these 4,510 units, approximately 11.5 percent (520 units) would be located on parcels under 0.5 acres in size. Approximately ten percent (450 units) would be located on parcels between 0.5 and two acres in size and approximately 66 percent (3,540 units) would be located on parcels greater than two acres in size.

Of the projected 1,236,781 square feet of nonresidential floor area development, almost 85 percent of the parcels with such development potential appear to contain areas that qualify as either a SCA or WCA. However, only 0.9 percent (approximately 11,630 square feet) of the total 1,236,781 square feet would occur on parcels less than 0.5 acres in size. Approximately 3.9 percent (48,190 square feet) would occur on parcels between 0.5 and two acres in size. The remainder would occur on parcels greater than two acres in size.

As with the sensitive natural communities discussed under *Impact 4.6-2 Sensitive Natural Communities*, a number of the parcels assigned to the Housing Overlay Designation contain occurrences of potential jurisdictional wetlands and waters, which could be affected depending on details of specific development plans. These include the Miller Creek corridor which passes through several of the parcels with a Housing Overlay Designation in the Marinwood area, coastal salt marsh on the northern edge of the Marin City Shopping Center Housing Overlay Designation area, stream corridors on parcels with a Housing Overlay Designation in the Kentfield and Mill Valley vicinities, a larger area of freshwater marsh on the parcels with a Housing Overlay Designation along Auburn Street and Woodland Avenue in the San Rafael vicinity plus coastal saltmarsh and freshwater marsh on the San Rafael Rock Quarry site. Where warranted, further site assessment of each Housing Overlay Designation area plus the San Rafael Quarry would be conducted and appropriate avoidance of any sensitive resources provided as part of any development application.

As indicated in **Exhibit 4.6-6**, potential jurisdictional wetlands encompass a large portion of the St. Vincent's / Silveira properties. These include the Miller Creek corridor, coastal salt marsh along the shoreline of San Pablo Bay, and freshwater marsh associated with the scattered seasonal wetlands and seeps/springs on the property. **Exhibit 4.5-2** shows the assumed boundaries for the SCA along Miller Creek and the WCAs along the various known wetland features on the property, focusing on the area between U.S. 101 and the railroad right-of-way where development proposals have been concentrated in the past. Assuming these conservation areas are adequately avoided, the designated SCA, WCA, and Baylands Corridor on the properties would serve to protect the mapped jurisdictional wetlands and waters on the St. Vincent's / Silveira properties. Of the three options for establishment of the Baylands Corridor (see **Exhibit 3.0-3**), Option 2 would provide for greater avoidance for habitat along Miller Creek and possibly larger buffers around the scattered seasonal wetlands, seeps and springs on the property. Again, by extending the Baylands Corridor to U.S. 101 under Option 2, greater attention would be given to the interrelationship of the scattered biological and wetland features and how they contribute to the overall habitat values of the entire property and larger baylands ecosystem, as called for in Program **BIO-5a**. Therefore, this option would likely provide larger setbacks around sensitive

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[20] Marin County Community Development Agency provided data for this analysis based on queries of its Geographical Information Systems (GIS) database.

natural communities than provided under Options 1 and 3 but not precluding development on the St. Vincent's / Silveira properties.

The Natural System & Agriculture Element contains policies that provide for the identification and protection of jurisdictional wetlands and other waters. Policy **BIO-3.1** would require development to avoid wetland areas so that the existing wetlands and upland buffers are preserved, and calls for creation of a WCA for jurisdictional wetland to be retained. The WCA contains an upland buffer, which varies in size depending on the size of the parcel and location in either the City-Centered Corridor or the Coastal, Inland Rural, and Baylands Corridors. Policy **BIO-3.2** would require thorough mitigation and specifies replacement ratios of 2:1 or 3:1 where avoidance is not possible. Implementing programs call for adoption of a WCA Ordinance, compliance with regulations to protect wetlands, conduct of site assessment where a proposed development application may affect a WCA, establishing clear wetland mitigation criteria, and providing landowner education.

While adoption and implementation of the above policies and programs would substantially reduce adverse effects to wetlands and other waters in unincorporated Marin County, implementation of programs **BIO-1.c**, **BIO-2.c**, **BIO-2.d**, **BIO-3.a**, **BIO-3.b**, **BIO-3.c**, **BIO-3.d**, **BIO-3.e**, **BIO-3.f**, **BIO-3.g**, **BIO-4.a**, **BIO-4.f**, **BIO-4.g**, **BIO-4.h**, and **BIO-4.k** would be required to reduce this impact to a less-than-significant level. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, all of these programs are ongoing or would be implemented in a timely manner and therefore could be relied upon to reduce this impact. [21] [22] Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to cumulative impacts. No mitigation would be required.

Mitigation Measure 4.6-3 None required.

Impact 4.6-4 Wildlife Habitat and Movement Opportunities

Development and land use activities consistent with Draft 2005 CWP Update would result in a reduction of existing natural habitat, contribute to habitat fragmentation, and result in obstruction of movement opportunities. Aspects of the applicable policies contained in Draft 2005 CWP Update would serve to partially address these impacts, but the conversion, fragmentation, and obstruction would be a significant impact.

Development and land use activities consistent with the *Draft 2005 CWP Update* would result in a substantial reduction in existing habitat, would contribute to further fragmentation of remaining natural areas, and could substantially interfere with the movement of native fish and wildlife species. These include potential impacts to special-status species, sensitive natural communities, and streams and wetlands, as well as more general wildlife habitat resources. While the majority of development consistent with the *Draft 2005 CWP Update* would occur within the City-Centered Corridor near

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[21] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[22] As described in **Figure 2-4** Biological Resources Program Implementation in the *Draft 2005 CWP Update*.

existing urban development, collectively a substantial loss of sensitive wildlife habitat and movement opportunities would occur over time.

As shown in **Exhibits 3.0-14** and **3.0-15**, a total of 5,391 housing units would occur in the unincorporated area as a result of buildout of the *Draft 2005 CWP Update* land use plan. Approximately 41.5 percent (2,235 units) of this housing would be sited on parcels containing areas that qualify as a SCA. Of the projected 1,236,781 square feet of nonresidential floor area that would occur in unincorporated Marin County, 61 percent (approximately 756,140 square feet) would occur on parcels containing areas that qualify as a SCA.

Streams tend to serve as important movement corridors for terrestrial and aquatic wildlife, and protection of areas that qualify as a SCA is essential to protect existing habitat functions and values. Areas of native woodland also tend to provide important habitat resources to wildlife, both within a SCA and away from stream corridors. An estimated 67.5 percent (3,641 units) of the 5,391 total housing units contain some type of native woodland cover. Approximately 56 percent (690,300 square feet) of the 1,236,781 square feet of projected nonresidential floor area development would occur on parcels containing some type of native woodlands. The relatively high percentage of parcels with future development potential that support areas of native woodlands provides an indication of the importance of protecting native trees and woodland cover in the review of future development proposals.

As discussed under *Impacts 4.6-1 Special Status Species, 4.6-2 Sensitive Natural Communities, and 4.6-3 Wetlands and Other Waters*, numerous policies in the Natural Systems & Agriculture Element would serve to avoid or minimize adverse impacts to sensitive biological and wetland resources, and would require adequate mitigation during review of individual development applications. Policies also support public acquisition of areas containing sensitive resources, as well as restoration and enhancement of features of local and regional biological significance such as the SCA, WCA, and the Baylands Corridor. Policy **BIO-1.3** would call for the protection of woodlands, forests, and tree resources. Policy **BIO-2.5** would require that important wildlife movement corridors are protected as a condition of discretionary permits, and Policy **BIO-2.4** would require protection of ecotones or natural transitions between habitat types. Policy **BIO-2.6** would restrict disturbance in sensitive habitat during the nesting season. Policies and Programs **BIO-1.4**, **BIO-1.5**, **BIO-1.6**, **BIO-1.7**, **BIO-1.8**, **BIO-1.9**, **BIO-1.e**, and **BIO-1.f** would serve to protect against habitat degradation through restrictions on inappropriate landscaping, controls on the use of herbicide and insecticides, education and controls on the spread of vegetation and wildlife diseases, and efforts to control and eradicate invasive exotic species. Program **BIO-2.b** would provide for a comprehensive assessment of habitat fragmentation and connectivity loss, and would include recommendations for policies to protect essential habitat corridors and linkages, and to restore and improve opportunities for native plant and animal dispersal. Program **BIO-1.g** would expand the education, outreach, and regulatory programs regarding the control of invasive exotic species in the County.

Locations where additional development could have individually significant impacts to existing wildlife habitat include the larger potential development sites, including the St. Vincent's / Silveira properties and the San Rafael Rock Quarry. Several of the smaller parcels assigned to the Housing Overlay Designation contain mature woodlands, stream corridors, and other important wildlife habitat resources. These include: stream corridors and undeveloped open space parcels within the Housing Overlay Designation in the Marinwood area; coastal salt marsh at the northern edge of the Gateway Center in the Marin City Shopping Center Housing Overlay Designation area; freshwater marsh on several parcels within the Housing Overlay Designation near Auburn Street in the San Rafael vicinity; stream corridors that pass through Eastwood Park and Tam Valley School within the Housing Overlay Designation in the Mill Valley vicinity; and stream corridors and marshlands that border the Bacich

Community Center and the Marin Community College property within the Housing Overlay Designation in the Kentfield vicinity. Policies calling for avoidance of jurisdictional wetlands, sensitive natural communities, tree resources, and essential habitat for special-status species would serve to protect the important wildlife habitat areas at the San Rafael Rock Quarry.

Options 1, 2 and 3 for treatment of the Baylands Corridor on the St. Vincent's / Silveira properties (see **Exhibit 3.0-3**) would provide varying opportunities to protect and enhance wildlife habitat on this approximately 1,230-acre site. Under Option 2, linkages would be provided between the mapped biological features on the properties, serving to maintain wildlife connectivity between the scattered seasonal wetlands, Miller Creek corridor, and oak woodlands, and possibly extending to the protected baylands to the east (see **Exhibits 4.6-6** and **4.6-7**). However, the Baylands Corridor designation under Options 1 and 3 do not extend westward to U.S. 101, and Program **BIO-5.a,** which would call for essential linkages between important features such as seasonal wetlands, freshwater marsh, and roosting and nesting areas would not apply to any development application on this portion of the property.

Under Option 1, the western edge of the Baylands Corridor would extend approximately 300 feet landward from the edge of the historic bay marshlands based on mapping prepared by the San Francisco Estuary Institute (see **Exhibit 4.6-7**). The inclusion of an additional 300-foot distance is consistent with the minimum setback recommendations from tidelands contained in the *Baylands Ecosystem Habitat Goals* [23] report, and would provide a larger development setback from sensitive baylands. Although only the Miller Creek corridor is still under tidal influence on this portion of the property, including the historic baylands and adjacent uplands as part of the Baylands Corridor provides for recognition of the potential for possible future restoration and enhancement of the historic baylands.

Under Option 3 the railroad right-of-way would form the western edge of the Baylands Corridor, which under this option would not extend over the boundary of the historic bay marshlands or provide a minimum 300-foot buffer as recommended in the *Baylands Ecosystem Habitat Goals.* This reduced buffer zone and associated development setback distance would limit the effectiveness of the proposed Baylands Corridor and the importance of preserving existing and restored habitat values on the remaining undeveloped tidelands along the bay ecosystem.

Again, by extending the Baylands Corridor to U.S. 101 under Option 2, greater attention would be given to the interrelationship of the scattered biological and wetland features and how they contribute to the overall habitat values of the entire property and larger baylands ecosystem, as called for in Implementation **BIO-5a**. Adoption of Option 2 would not necessarily preclude development on the St. Vincent's / Silveira properties. Potential impacts to wildlife habitat and movement opportunities would depend on specific development plans and the degree to which sensitive resources are avoided and buffered from possible direct and indirect impacts, both for the St. Vincent's / Silveira properties and other largely undeveloped sites in the County.

The other location where the boundary of the proposed Baylands Corridor varies is in the vicinity of Gnoss Field, where Options 1 and 2 in **Exhibit 3.0-3** would extend westward to U.S. 101 and Option 3 would end at the eastern edge of the airfield. The existing airport and related industrial uses would be encompassed within the Baylands Corridor under Options 1 and 2. This would provide for greater

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23 *Baylands Ecosystem Habitat Goals, A Report of Habitat Recommendations,* San Francisco Bay Area Wetlands Ecosystem Goals Project, 1999.

consideration of the importance of remaining seasonal wetlands and other biological resources on the west side of the airport during the environmental review process, and could prevent these sensitive features from becoming further isolated from the extensive tidelands along the edge of San Pablo Bay. Option 3 would not provide for this additional consideration called for in Program **BIO-5a** because it would not extend the Baylands Corridor over the airfield vicinity westward to U.S 101. Any efforts to restore or enhance wetlands located west of the airport would have to be balanced with the possible safety concerns that increased activity by birds and other wildlife may have on airport operations.

While adoption and implementation of the above policies and programs would reduce adverse effects to wildlife habitat and movement opportunities, implementation of Programs **BIO-1.c**, **BIO-1.e**, **BIO-1.g**, and **BIO-2.b** would be necessary to maintain up-to-date informational resources, protect against vegetation and wildlife diseases, develop educational materials and regulatory programs for invasive species control, and conduct habitat connectivity assessment. In addition, adoption of Option 2, which calls for expanded minimum boundaries for the proposed Baylands Corridor in order to provide for greater consideration of remaining sensitive biological features on larger undeveloped properties including the St. Vincent's / Silveira properties and in the vicinity of Gnoss Field would also be necessary. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Programs **BIO-1.c**, **BIO-1.e**, **BIO-1.g**, are ongoing or would be implemented within five years and therefore could be relied upon to reduce this impact. [24] [25] However, given the potential funding and timeframe of implementation for program **BIO-2.b**, it cannot be certain that this program would be implemented in a timely manner.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative biological resources impact. The following mitigation would be required.

Mitigation Measure 4.6-4 The *Draft 2005 CWP Update* shall be revised to provide expanded minimum boundaries for the proposed Baylands Corridor on the St. Vincent's / Silveira properties and to ensure implementation of essential programs necessary to identify and protect important wildlife habitat and movement opportunities. This would consist of the following revisions to the *Draft 2005 CWP Update*:

Mitigation Measure 4.6-4(a) Adopt Option 2 in **Map 2-5a** of the *Draft 2005 CWP Update* to provide for greater consideration of the remaining sensitive biological features on larger undeveloped properties including the St. Vincent's / Silveira properties and in the vicinity of Gnoss Field. This larger corridor would ensure that any future development applications must consider how individual biological features contribute to the overall habitat values of the larger baylands ecosystem, provide adequate setbacks for areas qualifying for protection under the WCA and SCA, and ensure protection of essential linkages to permanently protected habitat. By extending the boundary of the proposed Baylands Corridor on the St. Vincent's / Silveira properties to U.S. 101, additional emphasis would be given on providing essential linkages between the entire Miller Creek corridor, the scattered seasonal

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[24] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[25] As described in **Figure 2-4** Biological Resources Program Implementation in the *Draft 2005 CWP Update*.

wetlands, and the oak woodlands along Pacheco Ridge. The Baylands Corridor under Option 2 would also encompass the entire 300-foot distance landward of the historic bay marshlands on the St. Vincent's / Silveira properties recommended as a minimum setback distance from historic tidelands in the *Baylands Ecosystem Habitat Goals* report. Including the historic tidelands and adjacent uplands as part of the Baylands Corridor on the St. Vincent's / Silveira properties would provide for recognition of the potential for possible future restoration and enhancement of the baylands on the undeveloped portion of this property. Any efforts to restore or enhance wetlands located west of Gnoss Field would have to be balanced with the possible safety concerns that increased activity by birds and other wildlife may have on airport operations.

Mitigation Measure 4.6-4(b) In order to reduce impacts to wildlife habitat and movement opportunities, the County would obtain additional funding for Program **BIO-2.b** *(Conduct Habitat Connectivity Assessment)* and revise the timeframe of its implementation to the medium-term or sooner.

Significance After Mitigation Adoption of Mitigation Measure 4.6-4, together with effective implementation of relevant programs, oversight by regulatory agencies entrusted with enforcement of State and federal regulations addressing the protection and management of wildlife resources, and recommended revisions to the proposed Baylands Corridor would partially mitigate potential adverse impacts to wildlife habitat and movement opportunities associated with the *Draft 2005 CWP Update*.

However, while the relevant policies and programs would serve to identify and protect important wildlife habitat, define necessary restrictions and standards for their preservation, and improve public understanding of sensitive resources in Marin County, they collectively do not fully address or mitigate potential impacts of land uses and development and land use activities on existing natural habitat. Future development and land use activities would result in the conversion of existing habitat to urban and suburban uses, construction of new roadways and other infrastructure improvements, and the expansion of public trail and recreational facilities among other activities, all of which would still contribute to substantial adverse effects on wildlife habitat and movement opportunities in the county. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the policies and programs as part of the *Marin Countywide Plan 2005*, establishing boundaries of the Baylands Corridor, and for ensuring the effective implementation of essential programs. The Marin County Community Development Agency and the Marin County Department of Public Works would share responsibility for ensuring adequate environmental review, avoidance of sensitive resources, and monitoring implementation.

Impact 4.6-5 Conflict with Local Policies or Ordinances

Some aspects of development and land use activities consistent with Draft 2005 CWP Update may conflict with goals, policies and ordinances intended to protect of sensitive resources. However, adequate mitigation would presumably be required when the potential conflicts are determined to be significant and would reduce this to a less-than-significant impact.

Proposed development projects would be evaluated for consistency with the *Draft 2005 CWP Update*, including the Natural Systems & Agriculture Element. While proposed development may adversely affect sensitive biological and wetland resources in some locations, mitigation would be required by the County and trustee agencies where significant impacts are identified. Policies and programs in the Natural Systems & Agriculture Element include conduct of a site assessment, compliance with agency requirements and adequate mitigation where sensitive biological and wetland resources may be

adversely affected. Presumably, any significant impacts would be identified for discretionary projects, and appropriate mitigation required as part of approval.

Several programs in the *Draft 2005 CWP Update* call for reassessment of the effectiveness of resource protection, allow for updating of known information and mapping, and re-evaluation of current ordinances. Program **BIO-1.d** would require re-evaluation of the County's Tree Ordinance to focus on preservation of woodland habitat, not simply individual trees. Program **BIO-1.c** would require updating information on natural resource education and native species protection. The effort to continually update background information and mapping, refine and as necessary expand resource protection policies, and provide for effective evaluation and enforcement would serve to minimize the potential that proposed development projects would be approved which significantly conflict with resource protection policies without adequate mitigation. Because of the consistency with relevant policies and ordinances that would occur as a result of project environmental review, no significant impacts are anticipated.

Mitigation Measure 4.6-5 None required.

Impact 4.6-6 Conflict with Adopted Habitat or Natural Community Conservation Plans
Development and land use activities consistent with Draft 2005 CWP Update would not conflict with any adopted Habitat or Natural Community Conservation Plans. This would be a less-than-significant impact.

Development and land use activities consistent with the *Draft 2005 CWP Update* would not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved conservation plan. No such conservation plans have been adopted encompassing all or portions of Marin County, and therefore, no impact is anticipated. As noted previously, Marin County is participating in the FishNet4C program, which is a county-based, regional salmonid protection and restoration effort intended to meet the requirements of the Federal ESA in protecting anadromous salmonids and their habitats. Mitigation Measure 4.6-1(a) for *Impact 4.6-1 Special Status Species* is recommended to acknowledge the importance of continued County participation in the FishNet4C program, which is essential to improving habitat conditions for listed anadromous fish and other aquatic species.

Mitigation Measure 4.6-6 None Required.

4.7 GEOLOGY

4.7 GEOLOGY

Geology – Environmental Setting

This section addresses the geology and geologic hazards in the unincorporated areas of Marin County. Existing geologic conditions are described in the *Geology, Mineral Resources and Hazardous Materials Technical Background Report*, March 2002, updated November 2005, which is included in included in **Appendix 1** to the Draft EIR. This report is incorporated by reference, and summarized below.

GENERAL GEOLOGIC SETTING

Marin County is located in the central portion of the Coast Ranges, which is characterized by northwest-southeast trending ridges and valleys. This land pattern is typical of the Coast Ranges, which is dominated by one of the most prominent geologic feature within the State of California: the San Andreas Fault Zone (SAFZ). The SAFZ is a junction within the earth's crust where one side is moving relative to the other, separating the Point Reyes Peninsula from the rest of Marin County. Many relatively small earthquakes and the occasional very strong earthquake such as the April 18, 1906 earthquake that caused significant destruction throughout the San Francisco Bay Area characterize this movement. Strong ground shaking from the 1906 earthquake resulted in surface rupture and ground displacement of 13 to 20 feet at some locations between Bolinas Lagoon and Tomales Bay. In addition to the SAFZ, there are many other active faults within the Bay area that are a part of this complex movement of the earth's crust that will continue to move the land and result in significant future earthquakes.

In addition to active faulting and folding of the land, the up and down movement of sea level relative to the land has played a significant role in development of the topography and the marsh flatlands. When sea level was very high about 115,000 years ago, the sea encroached into San Francisco Bay and deposited the Yerba Buena (Old Bay) Mud on valleys and depressions in the land surface at that time. From about 90,000 to 11,000 years ago the sea level dropped significantly resulting in the shoreline being far west of where it is today. This period experienced increased erosion and surfaces of nondeposition due to significantly lower stream base levels. Beginning about 11,000 years ago, the sea level began to rise again rapidly until about 8,000 years ago. Since 8,000 years ago to the present, the shoreline changes have been more gradual. The rate of sediment accumulation in the estuaries eventually surpassed the gradual rate of sea level rise, resulting in growth of mudflats and salt marshes by deposition of Young Bay Mud. As discussed below, the young mud has proven to be a significant hazard.

In Marin County, the long-term movement of faults, especially the San Andreas Fault, and the dynamics of erosion and sedimentation has created geology that is varied and complex, evolving relatively quickly in geologic time. Because of the long-term movement on the San Andreas Fault, the geology on either side of the fault is quite different. East of the SAFZ, bedrock of the Franciscan Complex with unique mélange rocks dominates the geology. West of the SAFZ, the bedrock geology consists of granitic rocks overlain by younger sedimentary rocks. The much younger surficial deposits (i.e., near the surface) located throughout the county, on uplands and in the lowlands, are weaker

materials and generally pose a greater potential hazard than the underlying bedrock. This variety of bedrock and surficial materials has an affect on the location and type of geologic hazards present.

The following geologic description of Marin County provides a general overview of the county's unique geology and geologic hazards. Understanding the nature and extent of these geologic hazards and effectively mitigating their impact will hopefully result in safer communities and minimize damage when they strike.

FAULT RUPTURE

Several faults are present in Marin County, but the San Andreas Fault is the only land fault considered sufficiently active to be zoned under the State Alquist-Priolo Earthquake Fault Zoning Act (See **Map 2-10** [Fault Hazards] in the *Draft 2005 CWP Update*). The last surface ground rupture in Marin County was on April 18, 1906 within the SAFZ. The northwest-southeast trending Hayward Fault, which is also mapped within a State Earthquake Fault Zone, is within the political boundaries of Marin County, but lies offshore in San Pablo Bay. The fact that the San Andreas Fault is the only land based State Zoned fault in the county does not rule out the possibility of fault surface rupture on some of the other known faults or potentially unknown faults. Some mapped faults show signs of displacement within the last 1.6 million years; therefore, surface rupture on some of these faults cannot be ruled out. Additionally, older, potentially active, and inactive faults can move sympathetically during movement and shaking on a nearby active fault. It is conceivable that an earthquake may occur on faults that do not have a trace in the ground surface. Recent research suggests that blind thrust fault(s) may be present beneath Marin County. These faults are not exposed at the surface and due to their buried nature; their existence and damage potential are usually not known until they produce an earthquake.

Exhibit 4.7-1 illustrates the earthquake probabilities for the San Francisco Bay Area. The Working Group on California Earthquake Probabilities (Working Group) concluded that there is a 62 percent probability of at least one Magnitude 6.7 or greater earthquake before 2032.[1] This earthquake is likely to occur on one of the seven major active fault systems in the region. The Working Group determined that the Hayward-Rodgers Creek, San Andreas, and Calaveras fault systems have the highest probabilities of generating this size earthquake before 2032. The San Andreas and the Hayward-Rodgers Creek faults could have the most significant impacts on Marin County because of their proximity to population centers in the City-Centered Corridor and the fact that they have the highest probability of rupture in the San Francisco Bay Area. The Working Group also concluded that an estimated probability of 80 percent exists for a Magnitude 6.0 to Magnitude 6.7 earthquake event in the Bay Area during this same period.

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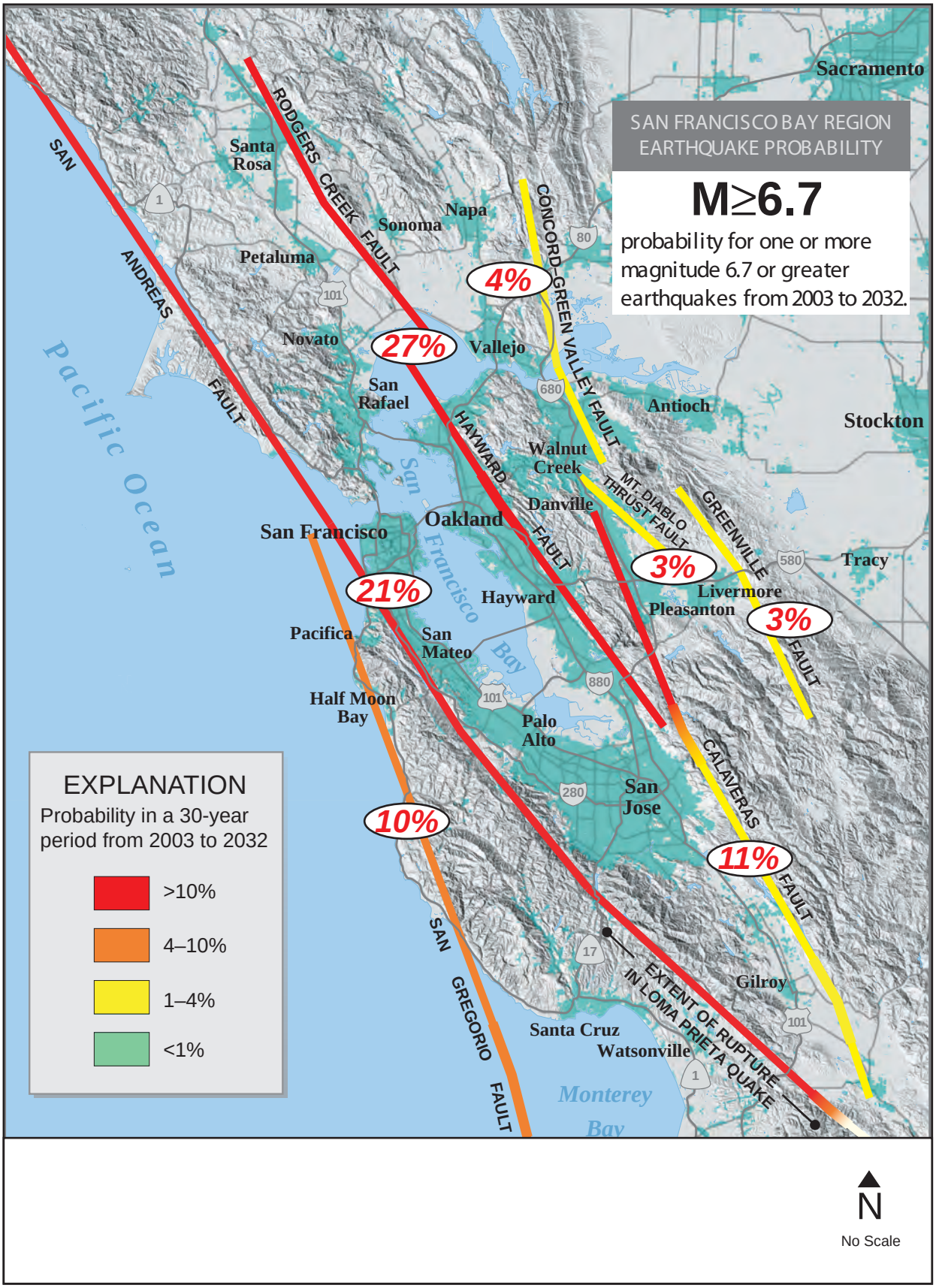
1 *Earthquake Probabilities in the San Francisco Bay Region: 2002 to 2032*, Working Group on California Earthquake Probabilities (WG02), U.S. Geological Survey Open-File Report 03-214, 2003.

Exhibit 4.7-1
Probability of a Magnitude 6.7 Earthquake in the San Francisco Bay Area



Source: Earthquake Probabilities in the San Francisco Bay Region: 2002 to 2032, Working Group on California Earthquake Probabilities (WG02), U.S. Geological Survey Open-File Report 03-214, 2003.

SEISMIC GROUND SHAKING

Ground shaking is the most potentially devastating geologic hazard in Marin County due to the damage it would be capable of causing. This includes damage caused directly by shaking as well as secondary impacts such as ground failure, landsliding, and settlement. Sudden fault movement generates an earthquake, and during fault rupture, seismic waves are sent through the ground. The severity of these waves at a particular location is dependent on three things:

- Magnitude (a measurement of strength) of an earthquake,
- Distance of a particular site from the earthquake epicenter; and
- Characteristics of the bedrock and surficial deposits underlying the site.

Seismic waves will travel through bedrock differently than they will travel through Bay mud or unconsolidated alluvium (See **Map 2-9** [Seismic Shaking Amplification Hazards] in the *Draft 2005 CWP Update*). [2] Structures built on younger, poorly consolidated sediments will typically experience shaking of longer duration and greater surface wave amplitude than those built on bedrock or other relatively more rigid geologic deposits. The severity of ground shaking damage is largely dependent on the type and quality of construction of a structure. In Marin County, the most significant area of potential shaking amplification is the City-Centered Corridor.

The strength of an earthquake is measured using either a scale of intensity or magnitude. Intensity is a qualitative measurement of the sensations and damages produced by an earthquake. **Exhibit 4.7-2** describes a commonly used intensity scale known as the Modified Mercalli Intensity Scale. This intensity scale is subjective and affected by more than just the energy released by an earthquake. Factors affecting the intensity include distance from the epicenter, focal depth of the earthquake, population density and local geology of the area, type of building construction employed, and duration of shaking.

In 1935, Charles F. Richter first developed a quantitative evaluation of the size of an earthquake, known as the Richter magnitude. This method of measurement determines the energy of an earthquake by measuring the amplitude of a wave recorded on a seismograph. Other magnitude scales are used for measuring magnitude; however, the most commonly used scale today is the Moment magnitude scale, which is similar to the Richter magnitude but more accurately measures the size of a larger earthquake. **Exhibit 4.7-3** compares magnitude with the Modified Mercalli intensity scale.

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[2] Alluvium refers to sediment of various grades from silts to boulders, which are transported and then deposited by flowing water.

Exhibit 4.7-2
Modified Mercalli Intensity Scale

Earthquake Intensity (MMI)	***Description***
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration similar to a passing truck. Duration estimated.
IV	During the day, felt indoors by many and outdoors by few. At night, some awakened. Dishes, windows, doors disturbed, and walls make cracking sound. Sensation like a heavy truck striking a building. Standing motorcars rocked noticeably.
V	Felt by nearly everyone, many awakened. Some dishes, windows, etc. broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by people driving motorcars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. People driving motorcars disturbed.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI	Few, if any, masonry structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.

Source: Modified Mercalli Intensity Scale of 1931, H.O. Wood and F. Neumann, Bulletin of the Seismological Society of America, 1931.

Exhibit 4.7-3
Comparison Magnitude with Modified Mercalli Intensity

Magnitude (M)	***Expected Modified Mercalli Maximum Intensity at Epicenter (MMI)***
1.0 – 3.0	I
3.0 – 3.9	II – III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.9	VII – IX
7.0 and higher	VIII or higher

Source: Magnitude / Intensity Comparison, U.S. Geological Survey, accessed April 2006 online at http://earthquake.usgs.gov/learning/topics/mag_vs_int.php

The California Integrated Seismic Network created hypothetical earthquake scenarios (i.e., Shake Maps) for the San Francisco Bay Area. [3] These earthquake scenario events are based on the Working Group on California Earthquake Probabilities probability analysis and the current knowledge of potential shaking effects. These maps are not predictions of earthquakes, but are ground-shaking models of a hypothetical earthquake. These maps are a useful tool for planning and coordinating emergency response. In Marin County, two of the most potentially damaging scenario earthquake events would be a repeat of the 1906 rupture on the San Andreas Fault (Magnitude 7.9) and rupture of the North Hayward-Rodgers Creek Faults (Magnitude 7.1). [4] [5]

Significant structural damage to preexisting residential and commercial buildings, critical facilities and utility lines is likely during a significant strong seismic event in the Bay Area. As shown in **Exhibit 4.7-4**, the Association of Bay Area Governments (ABAG) modeled the number of uninhabitable housing units for future earthquake scenarios. [6] This modeling is based on an extensive statistical analysis of the housing damage that occurred as a result of the 1989 Loma Prieta and 1994 Northridge earthquakes.

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3 Available online at www.cisn.org

4 Rapid Instrumental Intensity Map for SAF_SAS+SAP+SAN+SAO Scenario, Scenario Date March 6, 2003, California Integrated Seismic Network, online at http://www.cisn.org/shakemap/nc/shake/SanAndreas_10_se/intensity.html, 2003.

5 Rapid Instrumental Intensity Map for HRC_HN+RC Scenario, Scenario Date March 6, 2003, California Integrated Seismic Network, http://www.cisn.org/shakemap/nc/shake/SanAndreas_10_se/intensity.html, 2003.

6 *Preventing the Nightmare – Designing a Model Program to Encourage Owners of Homes and Apartments to Do Earthquake Retrofits*, Association of Bay Area Governments, The Problem Section Updated 2003.

Exhibit 4.7-4
Predicted Uninhabitable Housing Units in Marin County and Associated Selected Earthquake Scenario

Earthquake Scenario	***Predicted Number of Uninhabitable Units Following Earthquake Event***
Santa Cruz Mountains San Andreas	297
Peninsula-Golden Gate San Andreas	1,485
Northern Golden Gate San Andreas	2,988
Entire Bay Area San Andreas	3,495
Northern San Gregorio	1,176
South Hayward	1,030
North Hayward	1,653
North and South Hayward	2,125
Rodgers Creek	1,549
Rodgers Creek – North Hayward	2,691
South Maacama	27
West Napa	27
Concord – Green Valley	29
North Calaveras	27
Central Calaveras	27
Mt. Diablo	751
Greenville	27
Monte Vista	16

Source: Association of Bay Area Governments and U.S. Geological Survey, 2003.

SEISMIC RELATED GROUND FAILURE

During strong seismic ground shaking, rock and soil underlying structures are subject to stress that may be greater than their strength, resulting in failure. This may cause *liquefaction*, *dynamic compaction*, and *dynamic displacement*. In addition to ground failures triggered by severe seismic ground shaking, the actual movement of a fault can cause a zone of ground deformation throughout an area affected by the fault rupture. This process is known as *tectonic deformation*. These specific failures are defined in more detail below.

Liquefaction-Related Ground Failure

Liquefaction is the process by which saturated soils, typically sands, become fluid and temporarily lose all strength as a result of seismic ground shaking. This process may result in specific types of ground failure: lateral spreading, flow failure, ground oscillation, and loss of bearing strength. The geologic materials most susceptible to liquefaction include young stream channel deposits as well as beach deposits and artificial fill overlying Bay Muds (See **Map 2-11** [Liquefaction Susceptibility Hazards] in the *Draft 2005 CWP Update*).

Dynamic Compaction

Dynamic compaction typically is caused by the compression of relatively loose, unsaturated sandy soils during seismic shaking. This results in settlement and associated ground cracks and fissures.

Dynamic Displacement

Non-liquefaction ground failures can also occur during strong ground shaking. This occurs when the shaking exceeds the shear resistance of the material. This may result in soil and rock failures in hillsides as well as lurching and differential settlement of artificial fill slopes. Many of these types of failures are classified as *seismically triggered landsliding*.

Tectonic Deformation

Deformation zones from coactive faulting during major earthquakes can result in the ground surface expression of extensile (e.g., opening of cracks) and compressive (e.g., bulging of the ground) deformation. This type of deformation can lead to areas of damage to streets, utilities and buildings on a regional scale.

Landslides

Landslides are the result of several factors including slope stability (i.e., strength of slope materials and slope angle), climate, water content, vegetation, overloading, erosion, earthquakes, and human-induced factors. Changes in these conditions can lead to failure. Therefore, the presence of and / or the potential for landslides must be evaluated for new development in hillside areas.

The likelihood that a substantial number of slope failures will occur at the same time is greatest during strong seismic ground shaking or during intense rainfall events. In Marin County, the most significant landslides are debris flow landslides that occur during intense rainfall events. Landsliding during causative events such as these could cause substantial damage and significantly impact structures, utilities, services, roads and other infrastructure. Over the last four decades, studies show that landslides, especially debris flows triggered by significant rain events, have caused millions of dollars in damage within Marin County.

On undeveloped land, landslides can occur naturally during prolonged rainstorms when soils are saturated. Earthquakes can also trigger landslides, especially under saturated conditions. Development on or near landslides exposes both people and property to these hazards. Unless properly repaired, construction activities, routine use and maintenance, grading, and drainage changes caused by development can reactivate long-dormant or more recent landslides which otherwise would remain stable under static conditions.

Earthmoving activities may change surface and subsurface conditions, alter the shape and stability of a slide mass, and change drainage and groundwater conditions. In addition, residential water use (e.g., over-irrigation of landscaping and contributions from septic systems) may contribute to reactivation of unmitigated, dormant landslides. Over the long-term, these sources of subsurface water sufficiently increase soil moisture levels enough to precipitate landslides during years with above normal rainfall.

While landslides are caused by the dynamics of the factors discussed above, they are usually triggered by the following forces that disrupt slope equilibrium:

- Adding weight (i.e., driving force) to the top of a potential slide area,
- Removing mass (i.e., toe support or resisting force) from the base of a potential slide area,
- Increasing the volume of water to create heightening of pore water pressures within a potential slide area; and
- Vibrations from earthquakes, which also can serve to heighten pore water pressures.

The *Geology, Mineral Resources and Hazardous Materials Technical Background Report* (Technical Background Report) provides a description of the various landslide types and maps the landslide susceptibility of various areas in the county. Exhibit 10 in the Technical Background Report shows a summary distribution of landslides evident in Marin County. This map is a compilation of previous detailed mapping. The method of compilation, resolution, and scale (one inch equals two miles) limits the use of the map for regional considerations and prevents its use during site-specific evaluations. As evident in Exhibit 10, a majority of the upland areas in Marin County are susceptible to landslide hazards. Exhibit 11 in the Technical Background Report shows the principal source areas of debris flow in Marin County.

SUBSIDENCE AND SETTLEMENT

Some geologic deposits and human constructed structural fills can subside and settle when subjected to forces that result in failure. This can lead to subsidence and differential movement of structures overlying these deposits. Subsidence is the vertical displacement of the ground surface, which can occur locally or over a broad region. Subsidence is the result of various geological processes and can be naturally or human induced. On a regional scale, human-induced subsidence generally results from the withdrawal of fluids (e.g., water, oil or gas) from underground reservoirs. More localized human-induced subsidence can be caused by placement of fills and structures on collapsible soils, saturation of collapsible soils by the introduction of water into the subsurface, and mining operations. The introduction of water below the ground's surface can result from pipe breaks, over-irrigation, and septic systems. Naturally induced subsidence can also be related to localized settling caused by seismic shaking.

Areas underlain by young unconsolidated alluvial and colluvial sediments are more susceptible to subsidence and differential settlement. In addition, these young deposits are, in some cases, more susceptible to liquefaction and have the highest potential for ground shaking amplification. In Marin County, the most significant subsidence hazard is the young Bay Muds. The placement of fills and structures on Bay Muds has resulted in human-induced subsidence and seismic shaking has caused naturally induced subsidence of Bay Muds. Subsidence of natural materials over a long period is evident in development in low-lying flatland deposits in valley basins and along the Bay.

SOIL EROSION

Wind and water are the main forces that cause soil erosion. Depending upon how well protected soil is from these forces; the erosion process can be very slow or rapid. Removal of natural or

manufactured protection can result in substantial soil erosion and excessive sedimentation and pollution problems in streams, lakes, and estuaries. In addition, streambank erosion is a natural process that, when unaltered, is in a dynamic equilibrium with the surrounding terrain and climate. Accelerated erosion and increased downstream deposition may occur when this equilibrium is disturbed by construction, diversion of natural drainage, or other means.

Construction activities represent the greatest potential cause of erosion. However, the use of Best Management Practices can readily mitigate erosion by minimizing the exposed area and quickly establishing a protective cover. Practices that provide either immediate permanent or intermittent cover are effective in controlling erosion and runoff. Other practices, such as diversions and terraces, also control erosion and runoff. These practices allow temporary protection until vegetation is established, which provides protection that is more permanent.

In the Inland Rural Corridor, agricultural practices likely play a substantial role in exposing cropland to erosional processes. However, similar to construction, the use of Best Management Practices can minimize cropland erosion.

In Marin County, continuous mass wasting processes cause substantial slope erosion and landslides, particularly debris flows. Throughout the county, debris flows are most prevalent during winter seasons with intense rainfall.

EXPANSIVE SOILS

Most of the soils present in the county have moderate- to high- expansion potential. Such soils generally have high clay content, are cohesive, shrink when dried, and swell when wet. Expansive soils are naturally prone to large volume changes through the absorption of water. Accordingly, soils tend to expand or swell during the winter rainy season and subsequently shrink due to drying or desiccation in summer. In addition, human-induced moisture changes in expansive soils can result from irrigation adjacent to structures. This cyclic volume change can exert large forces on structures; cause damage to concrete slabs, foundations, and retaining walls; rupture utility lines; and crack the interior and exterior wall surface of buildings. Furthermore, expansive soils on hillsides can be an important component of downhill soil creep, causing fences, retaining walls, and posts to rotate downhill.

SEPTIC SUITABILITY OF SOILS

There are approximately 7,000 properties in the county served by on-site septic systems. **Map 2-8** (Parcels with Buildings and Septic Systems) in the *Draft 2005 CWP Update* shows that septic systems are used throughout the county; however, they are most common in the Inland Rural and Coastal Corridors where access to public sewers is typically unavailable. Past management of septic systems within the county may not have provided adequate protection to surface and groundwater resources. [7] Septic systems may have contributed pollutants to Tomales Bay and its tributaries, Richardson Bay, Napa River, and Petaluma River.

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[7] *Final Recommendations for Improving the Management of Onsite Wastewater Systems*, Marin County Septic Systems Technical Advisory Committee (SepTAC), December 2001.

An important septic system design factor is the soil medium that will be used to filter and clarify the effluent before it reaches surface or groundwater. To determine septic suitability, soils must have a certain percolation rate, which is determined by conducting an on-site test. The percolation rate is a measure of a soils ability to absorb water. The type, size, and specific design characteristics of a septic system are dependent on the percolation rate(s) of on-site soils. In addition to percolation rate, several other important factors must be considered when locating a septic system: the depth of groundwater, perched groundwater, and the historic groundwater level; the depth of fractured / unfractured bedrock; steepness of topography; the presence of colluvial and alluvial soils that could become seasonally saturated during times of intense rainfall; the presence of certain soil types that may act as a barrier to effluent flow; and the presence of landslides or other potentially unstable soil conditions.

Determination of the septic suitability of soils is dependant on site-specific conditions and requires a thorough site investigation and analysis of the surface and subsurface characteristics. A septic system may have a limited lifespan or can immediately fail if such analysis is not conducted.

TSUNAMIS AND SEICHES

Tsunamis are long-period waves generated by events that displace large volumes of water: submarine earthquakes, submarine volcanic eruptions, large submarine landslides, and onshore slope failures that fall into bodies of water. *Seiches* are similar to tsunamis and are triggered by the same mechanisms. However, they occur in enclosed and semi-enclosed bodies of water such as bays, inlets, lakes, and reservoirs. Once a tsunami or seiche reaches land, the areal extent of damage is determined by the wave *runup* and the amount of *inundation*. The runup is the rush of water over a beach or structure. As the runup continues inland, it reaches a maximum vertical height above stillwater (i.e., tide level). The horizontal distance that a runup penetrates inland is known as inundation.

The exposure of the Marin County coastline, bay margins, and enclosed bodies of water to tsunamis and seiches varies locally. Exposure depends on several factors: tsunami or seiche source location, source type, onshore and offshore topography, and other factors. Modern tsunami inundation maps do not include the Marin County coastline. However, a map was prepared for the San Francisco and San Mateo County coastlines. The development of tsunami modeling continues for the west coast of the United States, including areas north of the Golden Gate Bridge. An analysis of runup heights for the west coast was produced in 1978.[8] This analysis estimated runup heights above mean sea level (MSL) for 100- and 500-year return period tsunamis. As an example, the study predicts a 100-year tsunami wave runup varying from ten feet above MSL at the mouth of Bolinas Bay to 10.6 feet above MSL at the Stinson Beach State Park boundary. A 500-year tsunami wave runup varies from 17.6 feet above MSL at the mouth of Bolinas Bay to 18.8 feet at the Stinson Beach State Park boundary.

The National Tsunami Hazard Mitigation Program lists several factors affecting communities along the west coast of the United States to tsunami exposure. These factors include:

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8 *Type 16 Flood Insurance Study: Tsunamis Predictions for the West Coast of the Continental United States, Final Report*, James R. Houston and Andrew W. Garcia, Prepared for the Federal Insurance Administration, Department of Housing and Urban Development, Washington, D.C., U.S. Army Corps of Engineers, Waterways Experiment Station 3918, 1978.

- All or parts of the mainland United States are located near active subduction zones (e.g., Cascadia and Alaska-Aleutian) or other well-defined tsunami-producing zones. [9] Local tsunamis generated by these zones will reach the coast quickly (i.e., within five to 30 minutes) depending on the distance to the sources;

- Strong earthquakes, whether accompanied by tsunamis or not, are relatively rare events in most low-lying coastal communities. Large earthquake events are common in geologic time but are rare during a human lifespan. Therefore, some communities have little awareness of earthquake hazards. Yet, even with minimal earthquake activity for some coastal communities, the risk of damage from a major tsunami is considered high;

- Except in Hawaii and a few mainland coastal communities, tsunami awareness is not currently embedded in the culture of coastal communities;

- Coastal communities vary in size, but with some notable exceptions, most communities are relatively small; and

- Many coastal communities are largely recreational, having many short-term and seasonal visitors. This presents a special problem as losses could be very high if a destructive tsunami occurred at a seasonal peak population time.

MINERAL RESOURCES

The California State Department of Conservation Division of Mines and Geology designates eight sites in Marin County as having significant mineral resources for the North Bay region:

1. Ring Mountain, Tiburon

2. Novato Conglomerate – Black Point

3. Novato Conglomerate – Black Pont

4. Franciscan Complex Sandstone – San Pedro Hill

5. Sonoma Volcanics Andesite – Burdell Mountain

6. Franciscan Complex – Borello Quarry

7. Franciscan Complex Serpentinite – Ghilotti Quarry

8. Sonoma Volcanics Andesite – Burdell Mountain Open Space Preserve

Map 3-5 (Location of Mineral Resource Preservation Sites) in the *Draft 2005 CWP Update* shows the location and describes each of the above listed sites. Two sites (i.e., Sites 5 and 7) no longer meet minimum requirements and are exempt from application of State mineral resource policies. Of the

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[9] A *subduction zone* is where two plates of the earth's surface move toward each other, and the oceanic plate plunges beneath the other tectonic plate.

remaining six sites, three (i.e., Sites 2, 3, and 8) are located within incorporated areas. The State designated the Ring Mountain site, as a Scientific Resource Zone, preserving 300 acres as open space. The Marin County Open Space District owns two of the sites (i.e., Sites 2 and 8).

In addition, the State designates four permitted mineral resource sites in Marin County:

- Nicasio Quarry
- Lawson's Landing Quarry
- Martinoni Quarry
- Redwood Landfill Quarry

Map 3-5 (Location of Mineral Resource Preservation Sites) in the *Draft 2005 CWP Update* shows the location of and further describes each site.

In addition to countywide geologic conditions, the *Draft 2005 CWP Update* addresses specific land use designation options and sites. The following section addresses these specific *Draft 2005 CWP Update* components and their relevant geologic and soil hazards setting information.

CITY-CENTERED CORRIDOR HOUSING SITES

As discussed in ***Chapter 3.0 Description of the Proposed Project,*** the *Draft 2005 CWP Update* assumes varying degrees of development on the St. Vincent's and Silveira properties and the San Rafael Rock Quarry. In addition, the *Draft 2005 CWP Update* proposes the establishment of a Housing Overlay Designation (Policy **CD-2.3**) and Housing Bank (Policy **CD-2.2**). The Housing Overlay Designation includes four specific sites: Marinwood Shopping Center, Strawberry Shopping Center, Marin City Shopping Center, and the Fairfax / Oak Manor Shopping Center.

The sites discussed below are constrained by several geologic conditions including steep slopes. Such constraints limit potential development locations. In general, these sites could experience strong seismic ground shaking and many of the designated areas would likely be subject to hazards related to unstable ground: expansive soils, soil erosion, subsidence and settlement, and seismic-related ground failure. Some of the designated sites could experience landslides if located in upland areas, at the toe of upland areas or below areas of debris flow sources. Only site-specific evaluations, utilizing detailed surface mapping and subsurface exploration can adequately identify these hazards. Geological / geotechnical evaluation and design would mitigate such hazards.

The general geologic setting of the four specific sites in the Housing Overlay Designation, in addition to the conditions on the St. Vincent's / Silveira properties and the San Rafael Rock Quarry, are discussed below.

St. Vincent's / Silveira

Previous mapping shows the historic margins of the marshlands on these properties were generally near the unused Northwest Pacific Railway right-of-way.[10] A substantial portion of this largely undeveloped land is underlain by potentially compressible soils due to the presence of Bay Muds and marsh deposits. Hazards associated with these materials include settlement / subsidence, expansive soils, and very strong seismic ground shaking. While the potential for seismic-induced ground failure and seiches is low, potentially liquefiable deposits may be present at locations not explored and may be present beneath the Silveira property.[11] In addition to the hazards posed by these deposits in the low-lying areas, landslide and slope stability issues are of concern in the upland areas located on the west-northwest portion of the St. Vincent's property. Existing landslides and potentially unstable colluvial-filled swales are present on the hills and hillside margins.

Marinwood Shopping Center

This site is relatively level and prior to development of the Marinwood Shopping Center was underlain by recent alluvium.[12] These relatively young deposits likely consist of unconsolidated clays, silts, and sands deposited by Miller Creek. These deposits are susceptible to strong seismic ground shaking, settlement, soil expansion, and possibly seismic-related ground failure. However, grading and site development may have substantially altered the underlying conditions.

San Rafael Rock Quarry

Geologic conditions at this site vary and all of the previously discussed geologic hazards likely exist. At the northwestern portion of the property, the land is primarily apparent marshland underlain by Bay Mud and deposits generally consisting of unconsolidated, highly compressible, peaty, silty clay. A majority of the site is underlain by sandstone bedrock with unconsolidated colluvium along the northwestern margins of the mine quarry and the remaining hillside to the south-southeast. Mining activities have significantly altered this site, generating a significant amount of cut and fill. This site would likely require significant reclamation prior to any development.

Strawberry Shopping Center

This site is relatively level and prior to development of the Strawberry Shopping Center, appears to have been underlain by Bay Mud / marsh deposits and man-made land (i.e., artificial fill placed onto Bay Mud / marsh deposits). Hazards associated with these materials include settlement, strong seismic ground shaking, expansive soils, and possibly seismic-related ground failure. However, grading and site development may have substantially altered the underlying conditions.

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10 *Bay Mud Study, St. Vincent's and Silveira Properties, San Rafael, California*, Miller Pacific Engineering Group, Project No. 157.16, 1992.

11 *Preliminary Geotechnical Exploration, St. Vincent's, CYO property, San Rafael, California*, ENGEO, Inc., Project No. 4219.5.050.01, March 2001.

12 *Geology for Planning, Central and Southeast Marin County, California*, California Department of Conservation, Division of Mines and Geology, Open-File Report 76-2, 1976.

Marin City Shopping Center

This site is relatively level and, prior to development, appears to have been mostly underlain by artificial fill and Bay Mud / marsh deposits. The northern tip of this site may be underlain by sandstone and shale bedrock of the Franciscan mélange. The hazards associated with artificial fill and Bay Mud / marsh deposit materials include settlement, strong seismic ground shaking, expansive soils and possibly seismic-related ground failure. However, grading and site development may have substantially altered the underlying conditions.

Fairfax / Oak Manor

Prior to development, this site was located on a junction of recent alluvium (i.e., at the relatively level south-southwest portion of the site) with sandstone bedrock (i.e., at the north-northeast portion of the site) where the topography ascends from the relatively level area. Landslides exist in the swales and hills on or above the site. However, development on the level portion and, more recently, the ascending slope of this site has likely resulted in some alteration of the underlying conditions, possibly stabilizing landslide prone slopes.

Geology – Significance Criteria

Based on the finding of the Initial Study, the proposed project would have a significant geologic impact. The geologic hazards analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact if it would:

Geologic Hazards

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; and
  - Landslides.
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

Soils and Grading

- Result in substantial soil erosion or the loss of topsoil.

Expansive Soil

- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), [13] creating substantial risks to life or property.

Wastewater Disposal Issues

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Seiche, Tsunami, and Mudflow

- Be at risk of inundation by seiche, tsunami, or mudflow.

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[13] Table 18-1-B of the Uniform Building Code ("Classification of Expansive Soil") simply states the potential expansion as a function of the expansion index of the soil (an Expansion Index of 1-20 has a Very Low potential expansion, 21-50 has Low, 51-90 has Medium, 91-130 has High, and above 130 has Very High potential expansion). The expansion index of the various sites has not been determined, and normally is not determined until site-specific geological investigations are conducted. This would not occur for this project until a project site is selected.

Geology – Impacts and Mitigation Measures

Impact 4.7-1 Surface Fault Rupture

Land uses and development consistent with the Draft 2005 CWP Update would expose people and new structures to the risk of loss, injury, or death involving ground surface rupture of a known active fault. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in land uses and development in West Marin that would be located on the active trace of the San Andreas Earthquake Fault zone. The on-land portion of this State-designated fault zone extends northwesterly from the west end of Stinson Beach and the east end of Bolinas through Olema Valley, Olema, the west portion of Point Reyes Station, and through portions of Inverness. North of Inverness, most of this fault zone is within Tomales Bay. The Earthquake Fault Zone Maps for Marin County show this section of the San Andreas Fault Zone (see **Map 2-10** [Fault Hazards], in the *Draft 2005 CWP Update*). As shown in **Exhibit 4.7-1**, this active fault zone has a high probability of surface rupture.

Surface fault rupture of the San Andreas Fault would affect both existing and new structures in the Coastal Corridor of West Marin within the State-designated Earthquake Fault Zone. The presence of active branches of a fault cannot be determined at the General Plan level without site-specific geological investigation. However, the area within 50 feet of an active fault is presumed to be underlain by active branches of that fault. [14] Therefore, use of the Earthquake Fault Zone maps along with site-specific fault investigations would prevent development and redevelopment of structures for human occupancy on the active trace of the San Andreas Fault.

The proposed Housing Overlay Designation is located in the City-Centered Corridor and would not be affected by known active fault traces. The closest active surface fault trace to East Marin is the Hayward-Rodgers Creek Fault Zone, which, in Marin County, lies offshore in San Pablo Bay. The closest surface traces of this fault zone are located in Contra Costa and Sonoma Counties. In addition, limiting of parcels to the low end of the density range in West Marin would reduce the amount of new development within the San Andreas Earthquake Fault Zone.

Based on expected distribution of growth, new development, specifically housing units, would occur within the State-designated San Andreas Earthquake Fault Zone in West Marin Planning Area. Development within this Earthquake Fault Zone would be impacted by surface fault rupture. The expected distribution of growth suggests that the greatest number of future housing units in the fault zone would be in or near the Bolinas and Stinson Beach communities. A less substantial number of structures would be impacted by surface fault rupture in Olema Valley, Olema, Point Reyes Station, Inverness Park, and Inverness. The hazard in Bolinas and Stinson Beach would be great because a substantial portion of expected growth would be located on or adjacent to portions of the active strand of the San Andreas Fault that ruptured in 1906. All development proposed in this fault zone should be required to have a geologic fault investigation to find or rule out the presence of the San Andreas Fault. This impact is not an expected hazard in any of the other six planning areas.

An important first step in reducing adverse affects of geologic hazards (e.g., surface fault rupture, seismic ground shaking and ground failure, landsliding, subsidence and settlement, soil erosion,

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[14] *Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps*, Department of Conservation, Division of Mines and Geology, Special Publication 42, 1997.

expansive soils, and tsunamis and seiches) is to promote community awareness and preparedness in areas where such hazards exist. The *Draft 2005 CWP Update* contains Policies **EH-1.1** and **EH-1.2** and Programs **EH-1.a**, **EH-1.b**, **EH-1.c**, **EH-1.d**, and **EH-1.e** that would increase public awareness, facilitate preparedness, and continually update hazard related information as it becomes available. In addition, Policies **PS-3.1** and **PS-3.2** and Programs **PS-3.a**, **PS-3.b**, **PS-3.c**, **PS-3.d**, **PS-3.e**, **PS-3.h**, **PS-3.i**, and **PS-3.j** would maintain communication systems and response resources, increase disaster awareness efforts, promote community involvement and structural safety, appropriately locate emergency service facilities and public structures, and develop evacuation plans to ensure effective emergency and disaster preparedness so that, when a disaster does occur, damage would be minimized and the community could recover more quickly.

Policy **EH-2.2** and Programs **EH-2.c** and **EH-2.d** would reduce adverse effects of surface fault rupture by requiring new development to comply with the Alquist-Priolo Earthquake Fault Zoning Act. Compliance would prohibit specified types of structures for human occupancy in State-designated Earthquake Fault Zones.

In addition, the Marin County Code includes provisions to reduce impacts associated with surface fault rupture. For new subdivisions, Marin County Code Sections 20.20.090 and 20.20.097 may require a preliminary soils report and geologic investigation, respectively. Preliminary soils and geologic investigation reports, typically, would report the presence of an Earthquake Fault Zone. For any grading permit, per County Code Section 23.08.050, the director of Public Works may require a Soils Investigation Report and / or Geologic Report. These reports, typically, would discuss the presence of surface fault rupture, if present.

Implementation of programs **EH-2.c** and **EH-2.d** would be necessary to reduce this impact substantially. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, both of these programs are of high priority, have current funding, are ongoing, and therefore could be relied upon to reduce this impact. [15] [16]

However, while implementation of the above policies and programs would reduce the adverse affects of surface fault rupture as well as other geologic hazards analyzed in this section, surface fault rupture could still affect structures that meet only the minimum requirements of the Alquist-Priolo Earthquake Fault Zone Act. Additional planning would also be required to reduce damage to structures that cross an active fault trace.

Therefore, this would be a significant impact and the project would make a cumulatively significant contribution to a cumulative surface fault rupture impact. The following mitigation measure would be required.

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[15] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[16] As described in **Figure 2-8** Environmental Hazards Program Implementation in the *Draft 2005 CWP Update*.

Mitigation Measure 4.7-1 In order to reduce this impact to a less-than-significant level, it would be necessary to revise Policy **EH-2.2** *(Comply with the Alquist-Priolo Act)* and Program **EH-2.d** *(Limit Building Sites in Alquist-Priolo Zones)* to require that any development and redevelopment within the San Andreas Earthquake Fault Zones be properly evaluated and sited. In addition, a new program would be implemented to develop strategies to reduce the impact of surface fault rupture on critical public lifelines and access (i.e., evacuation) routes.

Mitigation Measure 4.7-1(a) Revise Policy **EH-2.2** *(Comply with the Alquist-Priolo Act*) and Program **EH-2.d** *(Limit Building Sites in Alquist-Priolo Zones)* of the *Draft 2005 CWP Update* as follows:

> **Policy EH-2.2**; *Comply with the Alquist-Priolo Act*. Continue to implement and enforce the Alquist-Priolo Earthquake Fault Zoning Act. ~~prohibit specified types of any structures for human occupancy in State-designated active fault areas.~~
>
> **Program EH-2.d**; *Limit Building Sites in Alquist-Priolo Zones*. Prohibit new building sites in an~~y~~ Alquist-Priolo Earthquake Fault Z~~z~~one, unless a geotechnical report prepared by a ~~certified engineering~~ professional geologist establishes that the ~~and sufficient and suitable land area for~~ development ~~pursuant to~~ will comply with all applicable State and County earthquake standards and regulations.

Mitigation Measure 4.7-1(b) Add a new program to the *Draft 2005 CWP Update* in order to reduce adverse effects of surface fault rupture to critical public lifelines and access (i.e., evacuation) routes that cross an active fault trace.

> **Program EH-2.(new)** *Reliability of Lifelines and Access (Evacuation) Routes*. In cooperation with utility system providers, emergency management agencies, and others, assist in the development of strategies to reduce adverse effects of geologic hazards, especially fault surface rupture and landslides to critical public lifelines and access (i.e., evacuation) routes in an emergency.

Mitigation Measure 4.7-1(c) Continue to implement County ordinances requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify the presence of surface fault rupture.

Significance After Mitigation Mitigation Measure 4.7-1, combined with the hazard awareness and emergency preparedness policies and programs of the *Draft 2005 CWP Update* described above, would minimize the exposure of people and development to the adverse effects of surface fault rupture within an Alquist-Priolo Earthquake Fault Zone. These policies and programs would reduce the number of new structures built on an active fault trace, and prepare the County for damage to lifelines and roads crossing an active fault. In addition, these programs, if implemented, would provide multi-hazard pre-disaster mitigation and community preparedness.

However, while these measures would reduce the exposure of people and structures to the adverse effects of surface fault rupture for minor to moderate events to a less-than significant-level, they would not do so for severe events. Structures exempted in the Alquist-Priolo Fault Zone Act, and any lifelines or access (evacuation) routes that cross the San Andreas Fault Zone would still be exposed to this impact. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised policy and program and the new program described in Mitigation Measure 4.7-1 as part of

Marin Countywide Plan 2005. The Marin County Community Development Agency and the Division of Building and Safety would share responsibility for implementing these policies and programs.

Impact 4.7-2 Seismic Ground Shaking

Land uses and development consistent with the Draft 2005 CWP Update would expose people, new development and redevelopment to substantial adverse seismic effects, including the risk of loss, injury, or death involving strong seismic ground shaking. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would expose people and structures to strong seismic ground shaking due to rupture of active faults in the San Francisco Bay area. The probability of at least one earthquake with a moment magnitude greater than 6.7 before 2032 is 62 percent. Seismic ground shaking could result in substantial structural damage to buildings, including collapse. In addition, such shaking could cause substantial cosmetic damages to buildings and appurtenances. During a strong earthquake, nonstructural elements in a building can fall or be thrown and harm occupants.

As discussed in the environmental setting, the severity of seismic ground shaking depends on the magnitude of the earthquake, the distance of a particular site from an earthquake, and the characteristics of the rock and soil underlying a site. Future land uses and development within the unincorporated area would be subject to seismic ground shaking. However, the buildings most susceptible to stronger shaking would be those closest to the earthquake source and buildings underlain by surficial deposits prone to substantial shaking amplification. In Marin County, buildings located near the San Andreas Fault zone and buildings underlain by water-saturated mud and artificial fill could experience the strongest seismic ground shaking.

The deposits that will experience the strongest shaking amplification underlie a significant portion of the City-Centered Corridor (see **Map 2-9** [Seismic Shaking Amplification Hazards] in the *Draft 2005 CWP Update*). Some of the parcels in the proposed Housing Overlay Designation and St. Vincent's / Silveira properties are located on surficial deposits that would experience increased shaking amplification during a seismic event. However, even those structures built in the City-Center Corridor on ground with a low shaking amplification hazard could experience substantial seismic ground shaking if an earthquake is both close and strong enough.

The Marin County Code includes ordinances that would reduce hazards associated with seismic ground shaking. Section 19.04.010, Codes Adopted, states that the County has adopted the 2001 edition of the California Building Code (CBC). Adoption of this Code would ensure that new construction would be based on the seismic design requirements in the CBC. Section 19.04.090, Gas Shut-off Devices, would require installation of seismic shut off devices for new construction or where gas piping is new, additional or altered. Section 19.04.091, Anchoring of Liquid Petroleum Gas Tank, requires liquid petroleum gas tanks to be anchored to prevent overturning in seismic events. For any grading permit, per County Code Section 23.08.050, the director of Public Works may require a Soils Investigation Report and / or Geologic Report. These reports, typically, would discuss the impact of seismic ground shaking on proposed grading

New buildings would be constructed utilizing earthquake resistant design as required by the Marin County Code. However, the Marin County Code only requires a minimum standard as the guidelines would prevent collapse, but would not necessarily prevent substantial damage to structures, especially from extreme seismic ground shaking. In addition, existing older buildings, especially those built prior to the 1970s that have not been retrofitted, would be the most susceptible to seismic ground shaking and collapse; and therefore, the greatest hazard to people. **Exhibit 4.7-4** lists the predicted

number of uninhabitable units following a specific earthquake event. This estimate is based on the existing housing stock.

Seismic ground shaking is inevitable and, in some cases, would be strong enough to damage new structures. Older buildings not retrofitted could collapse. Requiring new development and redevelopment be designed with exceptional shaking resistance and existing, more vulnerable buildings to be retrofitted and strengthened would reduce adverse effects substantially. A recently published loss estimate of a repeat scenario of the 1906 San Francisco earthquake shows that less than 3.5 percent of the building stock (i.e., by square footage) in the San Francisco Bay area would account for 50 percent of all deaths at night and more than 40 percent of all deaths during the day. The seismically vulnerable buildings that account for this death toll would be soft-story wood, nonductile concrete, and unreinforced masonry (URM) buildings. [17] In unincorporated Marin County, all URM buildings have been retrofitted. Inventorying and retrofitting soft-story wood frame and nonductile concrete buildings would substantially reduce the amount of collapse, injuries, and deaths during a strong seismic ground shaking event.

In addition to structures, nonstructural damages and hazards from seismic ground shaking pose substantial risk as they could cause furniture and objects to fall or be thrown. Additionally, they could cause gas and water lines to rupture which would cause fire and flooding hazards. Unreinforced chimneys, porches, and other nonstructural elements of a building could be collapse hazards.

Based on expected distribution of growth, any new development in the County would be impacted by seismic ground shaking. The severity of the ground shaking impact is dependent on the distance of a structure to the earthquake source, the magnitude of an earthquake, and the underlying deposits. If the deposits are considered to be prone to significant or strong amplification it will be expected that for any given earthquake event the ground shaking will be greatest where the soils amplify the seismic waves. The majority of the expected distribution of growth, residential and non-residential, would not be underlain by deposits prone to significant or strong amplification; however, amplification will be a significant threat in some cases.

In the Novato Planning Area, new development in Bel Marin Keys, east end of Black Point Land Use Area, and non-residential development south of Gnoss Field Airport, would be underlain by artificial fill over marsh deposits. These deposits are susceptible to strong amplification.

In the Las Gallinas Valley Planning Area, most new development would not have significant seismic shaking amplification. The area with the most number of potential housing units exposed to strong amplification would be between North San Pedro Road and the South Fork of Gallinas Creek. Portions of this area are underlain by artificial fill over marsh deposits and susceptible to strong amplification.

In the San Rafael Planning Area, most new development would not be underlain by deposits prone to amplification. However, some housing units in Bayside and California Park would experience strong amplification due to underlying artificial fill over marsh deposits.

In the Upper Ross Valley Planning Area, seismic shaking amplification would not be expected to pose a substantial hazard to new development.

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[17] *When the Big One Strikes Again-Estimated Losses due to a Repeat of the 1906 San Francisco Earthquake*, Charles A. Kircher, Hope A. Seligson, Jawhar Bouabid, Guy C. Morrow, Earthquake Spectra, April 2006.

In the Lower Ross Valley Planning Area, the majority of new development would not experience significant seismic shaking amplification. Some new housing units along Corte Madera Creek would experience strong seismic amplification due to the presence of underlying artificial fill over marsh deposits.

In the Richardson Bay Planning Area, the majority of new development would not experience significant seismic shaking amplification. However, new development underlain by artificial fill over marsh deposits at locations such as Paradise Cay, Strawberry Point, and some areas in Marin City close to Richardson Bay would experience significant seismic shaking amplification.

In the West Marin Planning area, expected new development would be located in areas underlain by deposits susceptible to significant amplification. Locations with the expected greatest number of units would be on the Stinson Beach Sea Drift sand spit, which is underlain by beach sand, and the south portion of Dillon Beach, which is underlain by recent dune sands deposits.

The *Draft 2005 CWP Update* contains policies and programs that would reduce the adverse effects of seismic ground shaking. Policy **EH-2.3** and Programs **EH-2.e**, **PS-3.f** and **PS-3.g** would require retrofit of County buildings, promote structural safety (e.g., require automatic gas shut-off), and locate emergency services appropriately.

While adoption and implementation of the above policies and programs would substantially reduce impacts related to seismic ground shaking, they would only address high occupancy and County structures. Additional measures would be necessary to ensure the seismic safety of all new structures, to retrofit County and critical facilities, and to promote structural and nonstructural safety (e.g., securing building features not attached to structural elements). [18] Furthermore, it would be necessary to minimize injury or loss life after an earthquake by implementing a post-earthquake building assessment program. This would be essential to minimize severe damage and collapse of the existing building stock and to ensure buildings that are damaged during an earthquake would be assessed and identified (i.e., as safe or hazardous) properly to prevent additional death or injury from aftershocks.

In addition, implementation of Programs **EH-2.e**, **PS-3.f**, and **PS-3.g** would be necessary. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Programs **PS-3.f**, and **PS-3.g** could be relied upon to reduce this impact as they have existing funding, are ongoing (i.e., **PS-3.f**), or would be implemented immediately (i.e., **PS-3.g**). [19] However, given the potential funding and timeframe of implementation for Program **EH-2.e**, it cannot be certain that this program would be implemented in a timely manner. [20]

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[18] *Critical facilities* are those structures critical to the operation of a community and the key installations of the economic sector. Examples include hospitals, roads and railways, airstrips, fuel storage depots, food storage facilities, water supply systems, and police stations.

[19] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[20] As described in **Figure 4-12** Public Safety Program Implementation in the *Draft 2005 CWP Update*.

Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative seismic ground shaking impact. The following mitigation would be required.

Mitigation Measure 4.7-2 In order to reduce seismic ground shaking impacts substantially, the County would revise the following policy and programs related to seismic safety, retrofit, and the location of emergency service facilities and create a new program to systematically assess damaged and collapsed buildings after a damaging earthquake. In addition, the County would obtain funding and revise the timeframe of implementation of Program **EH-2.e** *(Retrofit County Buildings)*, to the medium-term or sooner.

Mitigation Measure 4.7-2(a) Revise Policy **EH-2.3** *(Ensure Safety of New Structures)* and Programs **EH-2.e** *(Retrofit County Buildings)*, **PS-3.f** *(Promote Structural Safety)*, and **PS-3.g** *(Locate Emergency Services Facilities Appropriately)* to ensure seismic safety of all new structures, to address the proper location and retrofit of County buildings and essential critical facilities, and to promote structural and nonstructural safety (e.g., proper securing of nonstructural items within buildings).

> **Policy EH-2.3;** *Ensure Seismic Safety of New Structures.* ~~Require that structures to be occupied by large groups, such as offices, restaurants, hotels, senior housing and multi-family housing are designed to be as safe as technically feasible in locations subject to ground shaking or other geologic hazards.~~ Design and construct all new buildings to be earthquake resistant. The minimum level of design necessary would be in accordance with seismic provisions and criteria contained in the most recent version of the State and County Codes. Construction would require effective oversight and enforcement to ensure adherence to the earthquake design criteria.
>
> **Program EH-2.e;** *Retrofit County Buildings and Critical Facilities.* Identify and remedy any County owned structures and critical facilities in need of seismic retrofit or other geotechnical / structural improvements, including ~~by~~ eliminating any potentially hazardous features, and / or relocating services if necessary.
>
> **Program PS-3.f;** *Promote Structural and Nonstructural Safety*. Provide and inform the public of the available educational guides promoting structural and nonstructural earthquake safety. Encourage installation of automatic natural gas shut-off valves in buildings. Encourage retrofit of older buildings and securing nonstructural elements of a building to prevent the falling or throwing of objects. ~~Encourage retrofitting seismically vulnerable buildings.~~
>
> **Program PS-3.g;** *Locate Emergency Services Facilities Appropriately*. Locate and design emergency buildings and vital utilities, communication systems and other public facilities so that they remain operational during and after an emergency or disaster. Encourage that these structures and facilities are designed to be earthquake proof to ensure continuous operation even during extreme seismic ground shaking.

Mitigation Measure 4.7-2(b) Add a new program to the *Draft 2005 CWP Update* that would create a process for systematic assessment of damaged and collapsed buildings immediately following a significant earthquake in order to determine recovery needs. This should begin with evaluation of essential service buildings and facilities and then continue with other structures.

> **Program EH-2.(new);** *Post-earthquake Damage Assessment.* Undertake immediate damage assessment of essential service buildings and facilities and then other buildings as part of the County's emergency response plan in response to a damaging earthquake.

Mitigation Measure 4.7-2(c) Obtain funding for the revised Program **EH-2.e** *(Retrofit County Buildings and Critical Facilities)* and revise the time frame of its implementation to the medium-term or sooner .

Mitigation Measure 4.7-2(d) Continue to implement County ordinances to ensure new construction utilize California Building Code seismic design requirements, seismic shut off devices, and anchoring of liquid petroleum gas tanks as well as require geological assessment (e.g., Soils Investigation and Geologic / Geotechnical reports) for grading permits to determine the effects of seismic ground shaking on proposed grading.

Significance After Mitigation Mitigation Measure 4.7-2(a) would minimize adverse effects of seismic ground shaking on future development, redevelopment, County buildings, and critical facilities and ensure the eventual retrofit of seismically vulnerable County buildings. Implementation of the revised policy, programs, and the new program would greatly reduce the exposure of people and structures to injury and damage associated with building collapse from seismic ground shaking. However, due to the various ages and types of construction and the minimum requirements in current building codes, some buildings would still be damaged, especially during severe seismic ground shaking.

Mitigation Measure 4.7-2(b) would allow a quick assessment of infrastructure and critical facility damage following a damaging earthquake and help direct resources to appropriate locations. Such measures could identify hazardous conditions and prevent or substantially reduce the potential for additional damage, injury or death from earthquake aftershocks that are common after a large earthquake.

Mitigation Measure 4.7-2 would ensure a reduced level of risk compared to existing conditions and reduce adverse effects of mild to moderate seismic ground shaking to a less-than-significant level. Nevertheless, for severe seismic ground shaking this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised policy, programs, and the new program described in Mitigation Measure 4.7-2 as part of *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Division of Building and Safety would share responsibility for implementing these policies and programs during the review and permitting process.

Impact 4.7-3 Seismic-Related Ground Failure

Land uses and development consistent with the Draft 2005 CWP Update would expose people and structures to substantial adverse seismic effects, including the risk of loss, injury, or death from seismic-related ground failures. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in damage to or destruction of new development and redevelopment by one or more of the various types of seismic-related ground failure: liquefaction-related ground failure, dynamic compaction, dynamic displacement, or tectonic deformation. During a moderate to severe seismic event, Marin County could locally experience some or all of the seismic-related ground failures listed above.

Lateral spreading, lurching, differential settlement, and flow failures typically fall under types of ground failures that can occur should the soils underneath a site experience liquefaction and in some cases, non-liquefaction failure in weak natural deposits and man-made structural fills. These types of failure can result in substantial damage to overlying structures. In addition, seismically triggered

landslides are common during strong ground shaking and can have devastating affects. A fault rupture underneath Marin County could result in a zone of tectonic deformation of the ground causing damages to streets, utilities, and buildings.

These types of ground failures would cause damage to infrastructure, damage or collapse buildings, and result in damage to nonstructural building elements and appurtenances. In addition, seismically triggered ground failures would create substantial obstacles for emergency responders in the event of an earthquake. Ground failures would cause roads to fail or cover roads with debris blocking access and evacuation routes. This would likely occur in the Coastal Corridor where many of the roads traverse steep terrain and often affected by landsliding. However, ground failures could occur anywhere in Marin County. Existing development underlain by surficial deposits with a high to very high liquefaction potential (see **Map 2-11** [Liquefaction Susceptibility Hazards] in the *Draft 2005 CWP Update*) could be adversely affected by ground failures created by liquefaction.

For future development and redevelopment, site-specific geotechnical and engineering geology investigations could be prepared in order to evaluate the potential for liquefaction-related ground failure, dynamic compaction, and dynamic displacement. In most cases, these types of failures could be mitigated using current standard-of-care investigations and current design and construction methodologies. However, the extent of tectonic deformation cannot be determined until after an earthquake event. This type of failure would most likely occur in a region relatively near the location of fault rupture.

Based on the expected distribution of growth, some new development would be located in areas susceptible to seismic-related ground failures. In general, flat land areas underlain by deposits susceptible to liquefaction would experience this type of ground failure and hillside areas will be susceptible to earthquake-induced landslides. Landslides are discussed in *Impact 4.7-4 Landsliding*. This impact section focuses on the liquefaction of susceptible land areas.

In the Novato Planning Area, new development in Bel Marin Keys would be located on deposits with very high liquefaction susceptibility. Some new development at the east end of Black Point Land Use Area, Ignacio, and non-residential development, south of Gnoss Field Airport, would be underlain by artificial fill over marsh deposits. These deposits are highly susceptible to liquefaction.

In the Las Gallinas Valley Planning Area, much of the expected new development in flatland areas, would be underlain by alluvium, which has a moderate to high liquefaction susceptibility. The area with the most number of potential housing units exposed to very-high liquefaction susceptibility would be the area between North San Pedro Road and the South Fork of Gallinas Creek. Portions of this area are underlain by artificial fill over marsh deposits.

In the San Rafael Planning Area, most new development would not be underlain by deposits prone to liquefaction. However, some housing units in Bayside and California Park would be located in areas prone to very-high liquefaction susceptibility.

In the Upper Ross Valley Planning Area, high liquefaction susceptibility is present in the flatland areas underlain by alluvium. These areas are generally near Saint Francis Drake Boulevard and Butterfield Road that trend along the two main alluvial valleys in this planning area.

In the Lower Ross Valley Planning Area, the majority of new development would not experience substantial liquefaction since most housing units would be located in areas underlain by bedrock. However, some new housing units along Corte Madera creek and the Corte Madera creek alluvial plain would be underlain by deposits with very-high liquefaction susceptibility.

In the Richardson Bay Planning Area, the majority of new development would not experience substantial liquefaction. However, new development at locations such as Paradise Cay, the northern portion of Strawberry, and some areas in Marin City and Tamalpais Valley would be underlain by artificial fill over marsh deposits that have high- to very-high liquefaction susceptibility.

In the West Marin Planning area, expected new development would be located in areas underlain by deposits with substantial liquefaction. The Stinson Beach Sea Drift sand spit and the south portion of Dillon Beach, where the greatest number of units would be expected, would be impacted by this hazard as it is underlain by beach sand and recent dune sands, respectively.

Maps of the surficial deposits that underlay many of the Housing Overlay Designation sites and the St. Vincent's / Silveira properties show them as potentially liquefiable and could result in liquefaction-induced ground failure. In addition, dynamic compaction and displacement could occur at any of these sites. Furthermore, any site location in Marin County could experience the effects of tectonic deformation.

The Marin County Code includes provisions to reduce impacts associated with seismic related ground failure. For new subdivisions, Marin County Code Sections 20.20.090 and 20.20.097 may require a preliminary soils report and geologic investigation, respectively. Preliminary soils and geologic investigation reports, typically, would report the presence of soils that may be prone to seismic-related ground failure. For any grading permit, per County Code Section 23.08.050, the director of Public Works may require a Soils Investigation Report and / or Geologic Report. These reports, typically, would discuss the potential for seismic related ground failure.

The *Draft 2005 CWP Update* contains policies and programs to reduce adverse effects of seismic-related ground failure. Policy **EH-2.1** and Programs **EH-2.f**, **EH-2.g**, **EH-2.h**, **EH-2.i** and **EH-2.j** would require that new development avoid or be limited on parcels subject to geologic hazards related to unstable ground and specifically address landsliding (i.e., Program **EH-2.f**) and compressible soils (i.e., Program **EH-2.g**). However, these relatively general policies and programs would not substantially reduce adverse effects of seismic-related ground failure as they do not specifically address this topic. Rather, they pertain to land underlain by deposits that could lead to seismically induced ground failure.

Policy **EH-2.1** and Programs **EH-2.a**, **EH-2.b**, **EH-2.f**, **EH-2.g**, **EH-2.h**, **EH-2.i**, and **EH-2.j** would reduce adverse effects of seismic-related ground failure as they would minimize grading and require avoidance of hazard areas, preparation of geotechnical reports, construction certification, avoidance of landslides and compressible soils, and consultation with qualified professionals. However, in order to reduce this impact substantially, Programs **EH-2.a** and **EH-2.b** would need to be both revised and implemented. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Programs **EH-2.a** and **EH-2.b** could be relied upon to reduce this impact as they have existing funding and are ongoing.[21] [22] However, Program **EH-2.a** would need to be

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[21] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

revised to reflect that no State Seismic Hazards maps exist for Marin County.[23] Program **EH-2.b** would need to be revised to ensure construction oversight by a geotechnical engineer and / or an engineering geologist, as deemed necessary, would provide additional protection when correcting slope instability or mitigating other geologic hazard conditions.

An additional program would also be necessary so that the County would continue to create Geologic Hazard Area Maps that utilize updated information as it becomes available to determine the need for geologic and geotechnical reports for a proposed development or redevelopment.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative seismic-related ground failure impact. The following mitigation would be required.

Mitigation Measure 4.7-3 In order to reduce the exposure of people and structures to seismic-related ground failure to a less-than-significant level, the County would revise Programs **EH-2.a** *(Require Geotechnical Reports)* and **EH-2.b** *(Require Construction Certification)* and add a new program upon adoption of the *Draft 2005 CWP Update*.

Mitigation Measure 4.7-3(a) Revise Programs **EH-2.a** *(Require Geotechnical Reports)* and **EH-2.b** *(Require Construction Certification)* of the *Draft 2005 CWP Update* as follows:

> **Program EH-2.a;** *Require Geotechnical Reports*. Continue to require any applicant for land division, master plan, development approval, or new construction in a geologic hazard area to submit a geotechnical report prepared by a State-certified ~~engineering geologist (unless waived), in conformance with the State Seismic Hazards Mapping Act (PRC Div. 2, Chapter 7.8), that~~ Engineering Geologist or a Registered Geotechnical Engineer that:
>
> - Evaluates soil, slope, and other geologic hazard conditions;
> - Commits to appropriate and comprehensive mitigation measures sufficient to reduce risks to acceptable levels, including post-construction site monitoring, if applicable; and
> - Addresses ~~on-site structural engineering,~~ the impact of the project on adjacent lands, and potential impacts of off-site conditions.
>
> ~~When available, post and disseminate information from Seismic Hazard Zone maps in conformance with the Act.~~
>
> **Program EH-2.b;** *Require Construction Observation and Certification.* Require any work or construction oversight undertaken to correct slope instability or mitigate other geologic hazard conditions ~~to~~ be supervised and certified by a geotechnical engineer and / or~~, when necessary,~~ an engineering geologist, as deemed necessary.

Mitigation Measure 4.7-3(b) Add a new program to the *Draft 2005 CWP Update* that would continue to create Geologic Hazard Area maps based on the most up to date geologic and geotechnical

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22 As described in **Figure 2-8** Environmental Hazards Program Implementation in the *Draft 2005 CWP Update*.

23 Additional information about the State Seismic Hazards Maps is available through the California Geological Survey website at http://www.consrv.ca.gov/CGS/shzp/article10.htm.

information as it becomes available. This would be incorporated into County GIS data so that updates can be implemented as new information is obtained.

> **Program EH-2.(new)**; *Geologic Hazard Areas*. Continue to create Geologic Hazard Area maps that utilize updated information as it becomes available. These maps should be used to determine the need for geologic and geotechnical reports for a proposed development or redevelopment.

Mitigation Measure 4.7-3(c) Continue to implement County ordinances requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with seismic-related ground failure.

Significance After Mitigation Mitigation Measure 4.7-3 would minimize the exposure of persons or structures to adverse effects of seismic-related ground failure for minor and moderate events to a less-than-significant level. However, implementation of these policies and programs would not eliminate all structural damage, injuries, or death from seismic-related ground failures, especially for severe seismic events. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised programs and the new program as described in Mitigation Measure 4.7-3 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Division of Building and Safety would share responsibility for implementing these programs.

Impact 4.7-4 Landsliding

Land uses and development consistent with the Draft 2005 CWP Update would expose people and structures to adverse effects of landsliding, including the risk of loss, injury, or death from slow or rapid gravity driven earth movement. This hazard is prevalent in the hillsides of Marin County. Therefore, this would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would expose people and or structures to landsliding. Landslides are prevalent throughout Marin County and have caused substantial damage and loss of property and in some cases, injury and death. Historically, landsliding commonly occurs during periods of intense rainfall. Landslides are often triggered when the soil's pore pressure (i.e., water pressure in the ground) reaches a critical level. Some landslides are slow moving, but many are rapid moving debris and mud flows that can cause substantial loss, injury and death. A significant number of landslides could occur at the same time during a strong earthquake. Typically, these landslides are located on unstable slopes or are preexisting landslides that are seismically triggered and move as earthquake waves move through the ground. In addition to these more common triggers, landslides can be caused by erosion, or human-induced causes such as improper grading, broken water lines, overwatering, or improper drainage control.

Landsliding is so prevalent and widespread in Marin County that this hazard could not be completely eliminated. Many existing roads in hillside areas would continue to be affected by this hazard and in many cases; they require constant upkeep and maintenance. Many existing communities are currently affected by this hazard or would be in the future. Development on or at the bottom of slopes where landslides may occur could result in loss, injury, and possibly death because the hazard was not properly evaluated and mitigated. Landslide deposits and source areas for debris flows are located on or near some of the parcels in the Housing Overlay Designation and are prevalent on the hillside areas of the St. Vincent's / Silveira properties.

Based upon the expected distribution of development consistent with the *Draft 2005 CWP Update*, new development would occur within areas impacted by landslides in all planning areas. Landslides

and locations of potential debris-flows are present throughout Marin County. New development located on or at the base of hillside areas could be impacted by this hazard.

It would be possible to substantially reduce this impact to future development and redevelopment through site-specific geological and geotechnical investigations. In most cases, landslides can be mitigated using geological / geotechnical investigations and current design and construction methodologies.

The Marin County Code includes ordinances that would reduce hazards associated with landsliding. Section 19.04.041, Stability Report, would require that any new building constructed within an area rated "3" and "4" on existing County slope stability maps include a report "attesting to the suitability and geological feasibility of placing a building on the site…." Section.04.042, Storm Damage to Property, would require evaluation of buildings damaged / destroyed by landslides or mud flows, if the building is to be constructed, reconstructed, or repaired. Section 24.04.640, Slopes, would require that slopes be no steeper than is safe for the subject material and would limit slope steepness. This would help to reduce potentially unstable slopes that result in landslides.

For new subdivisions, Marin County Code Sections 20.20.090 and 20.20.097 may require a preliminary soils report and geologic investigation, respectively. Preliminary soils and geologic investigation reports, typically, would report the presence of landslides. For any grading permit, per Marin County Code Section 23.08.050, the director of Public Works may require a Soils Investigation Report and / or Geologic Report. These reports, typically, would discuss the presence of or potential for landslides.

Policy **EH-2.1** and Program **EH-2.f** would continue to prohibit or minimize development in landslide areas and on preexisting landslides, except in cases where this hazard could be mitigated. Avoidance would be effective in some cases, especially on massive landslides that could not be repaired in an economically feasible manner. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Program **EH-2.f** could be relied upon to reduce this impact as it has existing funding and would be ongoing.

However, this policy and program, when combined, would not prevent or reduce the on-going problems associated with landslides. Historically, periods of intense rainfall have caused debris flows throughout the county. In many cases, they begin in areas that are far away from the communities they damage. As these conditions would continue in Marin County, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative landsliding impact. The following mitigation would be required.

Mitigation Measure 4.7-4(a) In order to reduce adverse effects from the exposure of people and structures to landslides to a less-than-significant level, the County would adopt and implement revised programs (i.e., Programs **EH-2.a** [*Require Geotechnical Reports*] and **EH-2.b** [*Require Construction Observation and Certification*]) and the new program (i.e., **EH-2.(new)** [*Geologic Hazard Areas*]) in Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*.

Mitigation Measure 4.7-4(b) Continue to implement County ordinances requiring a Stability Report for new construction in specified areas on County slope stability maps, assessment of storm related landslide damage, limits to slope steepness. In addition, continue to implement County ordinances requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with landsliding.

Significance After Mitigation Mitigation Measure 4.7-4 and Program **EH-2.f** would combine to minimize adverse effects to people and structures exposed to landsliding. If effectively implemented and enforced, these programs could reduce the impact to a less-than-significant level. However, implementation of these policies and programs would not eliminate source areas of debris flows and landslides in Marin County, especially during prolonged or intense rainfall events. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the policy and programs of Mitigation Measure 4.7-4 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Division of Building and Safety would share responsibility for implementing these programs.

Impact 4.7-5 Subsidence and Settlement

Land uses and development consistent with the Draft 2005 CWP Update would expose structures to ground subsidence and settlement. Damage to structures and improvements could be substantial as deposits prone to subsidence and settlement are present throughout the Marin County, especially in the flatland areas adjacent to the bay. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would expose structures to ground subsidence and settlement. Regional and sometimes local scale subsidence is caused by the withdrawal of water or oil from the ground or from the collapse of surface or near surface soils and rocks over subterranean voids such as mines or caves. These causes of subsidence do not typically occur in Marin County and therefore would not likely affect future land uses and development. However, localized settlement hazards are anticipated in marginal and low-lying flatland deposits in and at the edges of valley basins and along the bay. The most susceptible areas are underlain by young, unconsolidated alluvial and colluvial sediments (i.e., Holcene deposits approximately 11,000 years old) and estuarine muds, especially younger bay muds. In addition, settlement problems could also occur as a result of placing structures on man-made fill deposits.

Localized subsidence and settlement in Marin County is commonly caused by induced loading (i.e., adding weight) on settlement-prone soils from grading and construction activities. Problems associated with subsidence of younger bay muds have been known for some time. Continued human-induced subsidence caused by the placement of fill and structures on bay muds could result in substantial damage to new development. In addition, strong seismic ground shaking from regional earthquakes could induce subsidence. Bay mud could also undergo substantial long-term settlement under sustained loads. The upper layer of younger bay mud is unconsolidated and in a semi-fluid state and therefore sensitive to seismic shaking or increase in loading.

It would be possible to reduce substantially this impact to future development and redevelopment through site-specific geological and geotechnical investigations. In most cases, subsidence and settlement can be mitigated using geological / geotechnical investigations and current design and construction methodologies.

Based on the expected distribution of growth, some new development would occur within areas impacted by subsidence and settlement. This hazard is present in both flatland and hillside areas in all of the planning areas. In addition, residential and nonresidential structures built on artificial fill overlying marine and marsh deposits that are present in all planning areas would also be susceptible to this hazard unless the proper site-specific evaluation and mitigation is performed.

Current planning maps show that deposits prone to subsidence and settlement underlie many of the parcels proposed in the Housing Overlay Designation. Many of these parcels have already been developed and this impact may have already been mitigated properly if the developed parcels had geotechnical / geologic investigations performed prior to development; and, if necessary construction methods were used to mitigate any site-specific geologic hazards. The St. Vincent's / Silveira property is underlain by deposits prone to subsidence and settlement and would require geotechnical design measures to mitigate this hazard.

Subsidence is addressed in Marin County Code Sections 24.04.590, Minimum Elevations, 24.04.600 Ultimate Subsidence, 24.04.605, Adjustable Foundations, and 24.04.610 Elevation Datum. These ordinances would provide guidelines for subsidence evaluations of land that are or could be prone to subsidence. For new subdivisions, Marin County Code Sections 20.20.090 and 20.20.097 may require a preliminary soils report and geologic investigation, respectively. Preliminary soils and geologic investigation reports, typically, would report the presence of soils prone to settlement. For any grading permit, per County Code Section 23.08.050, the director of Public Works may require a Soils Investigation Report and / or Geologic Report. These reports, typically, would report presence of soils prone to settlement.

Policy **EH-2.1** and Program **EH-2.g** would require that a geotechnical report delineate the presence and extent of compressible soils that would be susceptible to subsidence and settlement and require mitigating measures. Such measures would ensure that development and redevelopment consistent with the *Draft 2005 CWP Update* would avoid or minimize exposure to subsidence and settlement. However, based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Program **EH-2.g** could not be relied upon to reduce this impact as its timeframe of implementation is greater than five years.

Without implementation of this program and the revised policy, programs, and the new program in Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*, exposure of people and structures to the adverse effects of subsidence and settlement would not be reduced to a less-than-significant level. Therefore, this would be a significant project impact. However, because impacts associated with subsidence and settlement are typically limited to the proximity of development there would not be a significant cumulative subsidence and settlement impact. The following mitigation measure would be required.

Mitigation Measure 4.7-5(a) In order to reduce adverse effects from the exposure of people and structures to subsidence and settlement to a less-than-significant level, the County would adopt and implement the revised programs (i.e., Programs **EH-2.a** [*Require Geotechnical Reports*] and **EH-2.b** [*Require Construction Observation and Certification*]) and the new program (i.e., **EH-2.(new)** [*Geologic Hazard Areas*]) in Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*.

Mitigation Measure 4.7-5(b) Revise the timeframe of implementation of Program **EH-2.g** to the medium-term or sooner.

Mitigation Measure 4.7-5(c) Continue to implement County ordinances that provide guidelines for subsidence evaluations of land that are or could be prone to subsidence as well as requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with subsidence and settlement.

Significance After Mitigation Mitigation Measure 4.7-5 would combine to reduce adverse effects to people and structures exposed to subsidence and settlement to a less-than-significant level.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the programs described in Mitigation Measure 4.7-5 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Division of Building and Safety would share responsibility for implementing these programs.

Impact 4.7-6 Expansive Soils

Land use and development consistent with the Draft 2005 CWP Update would expose structures to substantial adverse effects of expansive soils, including the risk of damage and possible loss of structures and property improvements. This hazard is prevalent in Marin County, especially in the flatland areas adjacent to the bay. Therefore, this would be a significant impact.

Expansive soils are widely distributed throughout Marin County and implementation of the *Draft 2005 CWP Update* would likely expose development and redevelopment to adverse effects of expansive soils. These soils contain clay minerals that will swell and increase in volume when they become wet and shrink when they dry out. In addition, expansive soils are responsible for surficial creep on steep slopes and shallow slope failures in hillside areas. If not designed properly, light structures, roads and pavements could be damaged by the seasonal shrinking and swelling of expansive soils and result in substantial cracks and differential movement.

The adverse effects of expansive soils can be avoided through proper subsoil preparation and drainage and foundation design. For new development, a geotechnical engineer can recommend site-specific design criteria; notably increasing the minimum embedment depth of footings, higher design loads on retaining walls, creep loads, increasing reinforcement in footings, etc. [24] [25] Design requirements such as those found in the Marin County Code or more conservative design parameters can be implemented on a case-by-case basis. Even though expansive soils are usually considered in design of new structures, the presence and extent of expansive soils at a particular site would be an important part of any site investigation and should be evaluated in a geologic and / or geotechnical report. This would include soil sampling and testing to determine how expansive soils are at a particular site. It would be possible to reduce this impact substantially to future development and redevelopment through site-specific geological and / or geotechnical investigations. In most cases, expansive soils can be mitigated using geological and / or geotechnical investigations and current design and construction methodologies.

Current planning maps show that expansive soils underlie some of the parcels proposed in the Housing Overlay Designation and portions of the St. Vincent's / Silveira properties. Many of these parcels have already been developed and this hazard may have been mitigated properly. Portions of the St. Vincent's / Silveira properties underlain by expansive soils would require geotechnical design measures to mitigate this hazard.

Based on the expected distribution of growth, new development would occur within areas impacted by expansive soils. Moderate- to highly-expansive soils are present in every planning area.

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[24] *Footings* are the base of or lowest portion of the foundation walls.

[25] *Creep load* refers to a design parameter associated with containing the imperceptibly slow down-slope movement of soil as a result of gravity.

Marin County Code Section 19.04.101, Codes Adopted, adopts the 2001 edition of the California Building Code (CBC). The CBC provides soil classification guidelines for expansive soils. If a structure would be located on expansive soils as defined by the CBC criteria, then special design considerations would be required. For new subdivisions, Marin County Code Sections 20.20.090 and 20.20.097 may require a preliminary soils report and geologic investigation, respectively. Preliminary soils and geologic investigation reports, typically, would report the presence of expansive soils. For any grading permit, per County Code Section 23.08.050, the director of Public Works may require a Soils Investigation Report and / or Geologic Report. These reports, typically, would report the presence of expansive soils.

Although the *Draft 2005 CWP Update* contains no policies or programs specific to this hazard, adverse effects of expansive soils would be addressed by proper geotechnical investigation and report as required by Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*. Absent this mitigation measure, this would be a significant project impact. However, because impacts associated with expansive soils are site-specific and typically limited to the proximity of development there would not be a significant cumulative expansive soils impact. Therefore, the following mitigation would be required.

Mitigation Measure 4.7-6(a) In order to reduce adverse effects from the exposure of structures to expansive soils to a less-than-significant level, the County would adopt and implement the revised programs (i.e., Programs **EH-2.a** [*Require Geotechnical Reports*] and **EH-2.b** [*Require Construction Observation and Certification*]) and the new program (i.e., **EH-2.(new)** [*Geologic Hazard Areas*]) in Mitigation Measure 4.7-3 of *Impact 4.7-3 Seismic-Related Ground Failure*.

Mitigation Measure 4.7-6(b) Continue to implement County ordinances that provide soil classification guidelines and design considerations for development in areas of expansive soils as well as requiring geological assessment (e.g., Preliminary Soils, Soils Investigation, and Geologic / Geotechnical reports) for new subdivisions and grading permits to identify hazards associated with expansive soils.

Significance After Mitigation Mitigation Measure 4.7-6would reduce adverse effects to structures exposed to expansive soils to a less-than-significant level.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the programs contained in Mitigation Measure 4.7-6 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Division of Building and Safety would share responsibility for implementing these programs.

Impact 4.7-7 Septic Suitability of Soils

Land uses and development consistent with the Draft 2005 CWP Update would require the use of on-site waste disposal systems such as septic tank systems or other alternative wastewater disposal systems. Some soils are incapable of adequately supporting these systems. Therefore, their use would cause damage to improvements and would adversely affect surface and groundwater resources. This would be a significant impact.

As described in the environmental setting section, a significant number of existing properties utilize on-site septic systems in Marin County. Implementation of the *Draft 2005 CWP Update* would result in additional development and redevelopment that would utilize septic systems in areas where soils are not suitable for wastewater treatment. The suitability of a property for on-site disposal would depend on many variables other than soil type: topography, type and thickness of appropriate soils, percolation rate, depth to bedrock, and other limiting factors.

In typical septic systems, a structure's wastewater enters a septic tank where some solids and organic material are removed. The wastewater continues into the second treatment component (i.e., absorption field) where soils filter and treat the effluent. Soil can be an effective treatment medium for wastewater as bacteria, other microorganisms, and the soil itself can purify the wastewater before it reaches the water table. The wastewater must past through the soil slowly enough to allow adequate time for this process to occur. In general, at least three feet of aerated (i.e., unsaturated) and suitably textured soil are required between the point where wastewater enters the soil and the limiting layer. [26] [27] This would allow the necessary filtration and purification required to comply with water quality standards.

An assessment of soils in Marin County for septic tank absorption field suitability indicates that there are no favorable soils in Marin County and soils contain *moderate* to *severe* limitations. [28] Moderate is indicated if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance are required to overcome or minimize limitations. Severe is indicated if soils properties or site features are so unfavorable that special design, significant increases in construction costs, and increased maintenance are required. Possible limitations include slow percolation, shallow depth to bedrock, steep slope, wetness or flooding potential, a poor filter (e.g., seeps to fast) and cemented pan (i.e., hardened soil). [29] Therefore, because the soils in Marin County are not well suited for septic systems, effective onsite wastewater management is essential and special planning, design and maintenance are required for proper disposal.

Based on expected distribution of growth, new development would occur within areas not serviced by sewer lines and therefore would need to rely on on-site disposal systems. Based on **Map 2-8** (Parcels with Buildings and Septic Systems) of the *Draft 2005 CWP Update*, the majority of new development that would require septic systems would be in the West Marin Planning Area.

Parcels of the proposed Housing Overlay Designation and the St. Vincent's / Silveira properties would be located in the City-Centered Corridor and would have access to sewer systems. Therefore, development in these areas would not require septic systems and adverse effects related to malfunctioning systems such as impaired water quality would be avoided.

The *Draft 2005 CWP Update* contains policies and programs that would reduce adverse affects associated the septic suitability of soils and malfunctioning septic systems. Policies **PFS-3.1** and **PFS-3.2** and Programs **PFS-3.c**, **PFS-3.d**, **PFS-3.e**, **WR-2.c**, **WR-2.d**, **WR-2.e**, **WR-2.f**, **WR-2.h**, and **WR-2.i** would update and enforce septic standards, implement and maintain disposal alternatives, monitor and maintain septic systems, relocate septic systems away from sensitive sites and establish a Countywide septic inspection, monitoring and maintenance district that would provide a management framework for reducing onsite wastewater impacts. These programs would minimize and avoid the installation of septic systems in marginal and poor soils in Marin County.

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[26] *Iowa 2003 Onsite Sewage Design and Reference Manual*, March 2003.

[27] *Limiting layer* means bedrock, seasonally high groundwater level, or any layer of soil where the percolation rate is minimal.

[28] *Soil Survey of Marin County California*, Kashiwagi, J.H., 1985.

[29] *Soil Survey of Marin County California*, Kashiwagi, J.H., 1985.

In order to reduce the impact associated with the installation of septic systems in marginal and poor soils in Marin County to a less-than-significant level, the programs discussed above would need to be implemented in a timely manner. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Programs **PFS-3.c**, **PFS-3.d**, **PFS-3.e**, **WR-2.c**, **WR-2.d**, **WR-2.f**, **WR-2.h**, and **WR-2.i** could be relied upon to reduce this impact as these programs have existing budget, are ongoing, or would be implemented within five years.[30] However, given that Program **WR-2.e** would require additional funding, it cannot be certain that this program would be implemented in a timely manner.[31]

Without implementation of this program, adverse effects due to the use of septic systems in unsuitable soils would not be reduced to a less-than-significant level as no-cost inspections of septic systems in high-priority areas would not be provided. This would be a significant project impact. However, because impacts associated with septic suitability of soils would be limited to where septic systems are used, primarily in the unincorporated area (i.e., West Marin Planning Area); there would not be a significant cumulative impact. The following mitigation would be required.

Mitigation Measure 4.7-7 In order to reduce adverse effects from septic system use in unsuitable soils to a less-than-significant level, the County would obtain funding for Program **WR-2.e** *(Continue Providing High-Priority Inspections)* in order to continue no-cost inspections of septic systems in high priority areas.

Significance After Mitigation Mitigation Measure 4.7-7, in addition to other programs discussed in the impact analysis above, would reduce adverse effects from septic system use in unsuitable soils by providing a countywide management plan. Therefore, this would be reduced to a less-than-significant impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the program in Mitigation Measure 4.7-7 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and Environmental Health Services would share responsibility for implementing this program.

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30 As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

31 As described in **Figure 2-6** Water Resource Program Implementation in the *Draft 2005 CWP Update*.

Impact 4.7-8 Tsunamis and Seiches

Land use and development consistent with the Draft 2005 CWP Update would expose people and structures in some low-lying areas of Marin County to substantial adverse effects of tsunamis and seiches, including the risk of loss, injury, or death from this hazard. Seiches could occur within enclosed bodies of water and would cause damage to property. Tsunamis along the coastal corridor would cause significant damage, injury and death. This would be a significant impact.

Tsunamis are a threat to all coastal communities along the west coast of the United States. Implementation of the *Draft 2005 CWP Update* could result in new land uses and development in close proximity to the Pacific Ocean and San Francisco Bay and therefore would expose people and structures to the risk of tsunamis and seiches generated primarily by high-magnitude earthquakes.

In Marin County, the most destructive tsunamis would damage or destroy any communities, structures, access routes, and utilities in low-lying areas within the Coastal Corridor. Many structures in coastal communities are located above low-lying areas and many homes are located above likely tsunami inundation runup elevations. However, the low-lying areas of the coastal communities, including, Dillon Beach, Bolinas, Muir Beach, and Stinson Beach could be adversely affected by a tsunami. A substantial number of homes in Stinson Beach face a high level of risk as they are located on the low-lying sandspit between Bolinas Lagoon and Bolinas Bay. Existing and new development could be devastated without adequate emergency preparedness. However, even if this community were prepared for evacuation, buildings in low-lying areas could be destroyed. In addition to these unincorporated communities, the Coastal Corridor has many recreational use areas that could expose visitors to this hazard.

As described in the environmental setting, outdated models for Marin County indicate tsunami runup along the Pacific Ocean coastline between approximately ten and 19 feet NGVD. Newer modeling has been prepared for the coastlines of adjacent San Francisco and San Mateo Counties. The models for these counties report a maximum runup contour of 42 feet above sea level. [32] Based, on the most current research, this maximum runup was determined to be reasonable. Accordingly, all land below the 42-foot contour elevation could be inundated by tsunami runup during a worst-case scenario. [33]

Within San Francisco Bay, tsunami wave heights would be less than those along the Pacific Ocean coastline. The 100-year and 500-year wave runup heights vary along the San Francisco Bay coastline. [34] The wave runup height for the 100-year recurrence interval is between approximately five and eight feet NGVD at Richardson Bay and Point Diablo, respectively. The wave runup height for the 500-year recurrence interval is between approximately eight and 16 feet NGVD at Richardson Bay and Point Diablo, respectively.

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[32] *Tsunami Evacuation Planning Map for San Francisco and San Mateo Counties*, California Office of Emergency Services, Coastal Region, June 2004.

[33] These maps were produced by the Marin County Office of Emergency Services and are intended for local jurisdictional, coastal planning uses only. They are not an official State of California map for land use planning or real estate disclosure requirements.

[34] *Type 16 Flood Insurance Study: Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound*, Technical Report H-75-17, U.S. Army Engineer Waterway Experiment Station, Vicksburg, MI. November 1975.

Low-lying shoreline parcels along Richardson and San Francisco Bays could be inundated during a tsunami. The FEMA-designated 100-year flood elevation along the San Francisco Bay margin is 6.0 feet NGVD. Predicted wave runup heights from a 100-year tsunami would exceed the 6.0-foot. elevation in many areas throughout Marin County. The 500-year tsunami event would exceed the FEMA 100-year flood elevation (i.e., 6.0 feet NGVD) by approximately two to 10 feet. Therefore, shoreline properties and residential structures would be damaged during a tsunami with attendant risk to human life. The probability a 100-year tsunami would occur in a given year is one percent while the probability for the 500-year tsunami is 0.2 percent.

The proposed Baylands Corridor of the *Draft 2005 CWP Update* would protect baylands and large adjacent upland areas that provide significant habitat connectivity and buffering of the baylands (See **Exhibit 3.0-3**). Aside from habitat protection, designation of a Baylands Corridor would protect lands that serve as a buffer to absorb a seiche wave. This would be important in low-lying areas, especially in along the Pacific Ocean and San Francisco Bay margin. The remaining lands adjacent to San Francisco Bay, from Point San Pedro to northern Novato and around portions of Richardson Bay provide a buffer area that protects people and property from a seiche. Given rising sea levels, a Baylands Corridor would provide additional protection from extreme high tides and a seiche wave. Considering the location of the low-lying areas in the county (e.g., Richardson Bay and north of Point San Pedro), all three Baylands Corridor options would provide the same level of protection from a tsunami. The 500-year wave runup height at Point San Pedro is 8.3 feet NGVD, which coincides approximately with the location of the railroad tracks at the St. Vincent's / Silveira properties.

Exhibits 3.0-14, **3.0-15**, **3.0-17**, and **3.0-18** describe and illustrate the expected distribution of growth by planning area. As shown, new development would occur within areas susceptible to tsunamis and seiches. This hazard would be the greatest for housing units located near the shoreline. Communities in the West Marin Planning Area (i.e., Stinson Beach, Dillon Beach, Bolinas, and Muir Beach) would be most exposed to this hazard because of their proximity to the Pacific Ocean. These communities would likely experience the largest run-up heights of anywhere in the county. New housing units near the shoreline along Tomales Bay, Bolinas Lagoon, and San Pablo Bay would also be adversely affected by this hazard.

The *Draft 2005 CWP Update* contains programs that, if adopted and implemented, would reduce the potential impacts associated with tsunamis and seiches. These policies and programs would focus primarily on improving the built environment, public education, community preparedness, and informed land use planning.

Policy **EH-2.4** and Program **EH-2.k** would require that County staff consider tsunami wave runup and inundation during coastal planning and review of discretionary projects. This policy and its implementing programs would require County staff to consult wave runup and inundation maps, when available, and ensure that the inundation hazard from tsunamis would be avoided or minimized. Program **EH-3.b** would require County zoning overlay maps be updated to show flood, tsunami, and inundation hazard areas along the Pacific Ocean; the San Francisco, San Pablo, and Tomales Bays; the Bayfront Conservation Zone; and the Coastal Zone.

Program **EH-3.d** would educate owners of property in areas with inundation or flooding potential regarding those hazards when they seek development review or other related County services. Public education and awareness would be a key element to reduce potential injury and loss of life in the event of a tsunami.

Implementation of programs **EH-2.k**, **EH-3.a**, **EH-3.b**, **EH-3.d**, and **EH-3.g** would be necessary to reduce this impact to a less-than-significant level. Based on criteria described in ***Section 4.0***

Environmental Setting, Impacts, and Mitigation Measures, these programs could be relied upon to reduce this impact as they have existing budget, are of high priority, are ongoing, or would be implemented within five years. [35]

However, while these policies and programs would reduce the exposure of people and structures to the adverse effects of tsunamis and seiches, additional measures would be required to avoid development in areas of inundation and provide public education and community preparedness, especially in the Coastal Corridor. Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative tsunami and seiches impact. The following mitigation would be required.

Mitigation Measure 4.7-8 In order to reduce impacts associated with tsunamis and seiches to a less-than-significant level, the County would revise Policy **EH-2.4** *(Protect Coastal Areas from Tsunamis)* to address tsunami wave runup and inundation impacts when reviewing proposed development along coastal areas of Marin County when inundation maps become available. In addition the County would revise Programs **EH-3.a** *(Regulate Development in Flood and Inundation Areas)* and **EH-3.g** *(Locate Critical Facilities Safely)* to continue to require that new development / or improvements be more resistant to damage and that critical facilities be located outside of tsunami hazard areas. In addition, it would be necessary for the County to participate in the National Weather Service's *TsunamiReady* program, which promotes tsunami hazard preparation in coastal communities.

Mitigation Measure 4.7-8(a) Revise Policy **EH-2.4** *(Protect Coastal Areas from Tsunamis)* and Programs **EH-3.a** *(Regulate Development in Flood and Inundation Areas)* and **EH-3.g** *(Locate Critical Facilities Safely)* as follows.

> **Policy EH-2.4;** *Protect Coastal Areas from Tsunamis*. ~~Consider~~ When inundation maps become available, address tsunami wave runup and inundation impacts when reviewing proposed development along coastal areas of Marin County.
>
> **Program EH-3.a:** *Regulate Development in Flood and Inundation Areas*. Continue to require all improvements in Bayfront, Floodplain, Tidelands, and Coastal High Hazard Zones to be designed to ~~withstand impacts~~ be more resistant to damage from flooding, tsunamis, seiches, and related waterborne debris, and to be located so that buildings and features such as docks, decking, floats, and vessels would be more resistant to damage. ~~do not become dislodged.~~
>
> **Program EH-3.g;** *Locate Critical Facilities Safely*. Amend the Development Code to prohibit placement of public safety structures within tsunami inundation or flood-prone areas.

Mitigation Measure 4.7-8(b) Add a new program to the *Draft 2005 CWP Update* that would require participation by Marin County in the National Weather Service's *TsunamiReady* program to create public awareness and community preparedness in hazard areas. Certification would be accomplished by satisfying criteria including 1) establishing an emergency operations center; 2) creating multiple

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[35] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

ways of receiving National Weather Service tsunami warnings; 3) the ability to disseminate a tsunami warning; 4) having a tsunami hazard plan; and 5) creating a community awareness program.

> **Program EH-2.(new)**; *Make Marin County TsunamiReady*. Become a National Weather Service *TsunamiReady* community in order to promote public awareness, community preparedness, and facilitate quick recovery in the event of a tsunami.

Significance After Mitigation Mitigation Measure 4.7-8 would substantially reduce the exposure of people and structures to minor and moderate tsunami and seiche events in Marin County through public education, community preparedness, more damage resistant structures, and informed land use planning. However, people and development (i.e., structures, critical facilities, lifelines, and emergency access) in low-lying areas would experience substantial damage, loss, injury, or death in the event of a severe event. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the policy and programs of Mitigation Measure 4.7-8 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency, the Division of Building and Safety, and Office of Emergency Services would share responsibility for implementing these programs.

4.8 AGRICULTURE

4.8 AGRICULTURE

Agriculture – Environmental Setting

This section addresses the recent history and present state of agriculture in Marin County. Specific topics include the effects of residential development to the economic viability of agriculture, conversions of agricultural land, and other Marin agricultural production. Current County, State, and federal regulatory oversight are explained. Some topics discussed in this section overlap with other sections of this EIR, including ***Section 4.1 Land Use, Population, and Housing***. The background report, *Marin County Agriculture Economic Analysis*, November 2003, contains additional information regarding Marin County agriculture. This background report is included in **Appendix 1** to the Draft EIR, incorporated by reference, and summarized below.

AGRICULTURAL PRODUCTION

Marin's topography is one of rolling hills, coastal bluffs, and flat interior valleys. While the hilly terrain and lack of both prime soils and reliable water supplies are not conducive to row crops and other intensive agriculture, areas of rich alluvial soils can produce diverse vegetable and specialty crops. Foggy, moist conditions keep the coastal grasslands of West Marin green most of the year. These areas are most suitable for grazing, dairy, beef cattle, and sheep.

As control of California passed from Spain to Mexico in the early 1820s, Mexicans settled in Marin, the socioeconomic center of which was the San Rafael mission. Settlers raised thousands of longhorn cattle for hide and tallow production. The cattle ran wild along with herds of native tule elk, which were rounded up yearly by Mexican and Miwok vaqueros. After the mission was closed in 1834, the land was divided up into vast areas known as ranchos. During the Gold Rush of 1849, longhorn cattle were herded to the gold country. Ranchers introduced American cattle stock during the post-Gold Rush era. As a result, the dairy industry flourished in Marin and California's residents bought one-quarter of their butter from Marin County farmers. The coastal towns of Bolinas and Tomales were shipping ports for agricultural products such as potatoes, grains, clams, and dairy products that were then shipped to San Francisco markets. Ross Landing in Kentfield was one of Marin's busiest ports until the introduction of trains in the 1880s. Local milk producers established the California Cooperative Creamery in 1913 to process and distribute milk, butter, and cheese. By 1903, most ranches on the Point Reyes Peninsula were independently owned. Today, six dairy ranchers continue their operations under occupancy leases and use permits issued by Point Reyes National Seashore. [1]

Exhibit 4.8-1 summarizes Marin County agricultural production and provides crop values for 2002-2004. The 2004 gross value of all Marin County agricultural production was $54,897,462, an increase of 11 percent of the 2003 total. [2] Milk and milk products have been Marin County's dominant

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1 *Facts about Agriculture in Marin County*, Ellie Rilla, U.C. Cooperative Extension, January 2005 revision.

2 *Marin County Livestock and Agricultural Crop Report 2004*, Marin County Department of Agriculture, April 1, 2005.

agricultural product for more than 125 years and accounted for more than 60 percent of the county's total crop value in 2004. Livestock and poultry represented 20 percent of the total county crop value in 2004, which has dropped three percent since 2002. Field, fruit and vegetable crops accounted for 13 percent of the total value and have dropped in value since 2002 by $456,976. Aquaculture and nursery crops provided five percent and one percent of the remaining total. Aquaculture values have gained $456,053 during the last three years while nursery crop values have dropped by $62,500.

Exhibit 4.8-1
Marin County Total Agricultural Production Value

Commodity	2002 [a] (Dollars)	2003 [a] (Dollars)	2004 [a] (Dollars)	Percent of Total (2004)	Net Change (2002-2004)	Percent Change (2002-2004)
Livestock Products	23,782,019	25,137,035	33,244,138	61	9,462,119	+8
Livestock & Poultry	10,104,389	12,836,770	11,126,083	20	1,021,694	-3
Field, Fruit & Vegetable Crops	7,467,729	7,524,398	7,010,753	13	-456,976	-4
Aquaculture	2,397,845	2,492,235	2,853,898	5	456,053	0
Nursery Crops	725,090	684,716	662,590	1	-62,500	-1
Total	***44,477,072***	***48,675,154***	***54,897,462***	***100.0***	***10,420,390***	***8***

a Values represent gross returns to the producer and do not indicate actual net profits.

Source: *Marin County Livestock and Agricultural Crop Reports, 2002, 2004.* Marin County Department of Agriculture, April 2003, April 2005.

Farmland Classification and Farmland Conversion

As of 2004, Marin County contained approximately 156,396 acres, approximately 41 percent of the county, of agricultural resources as designated by the State.[3] Of that total, the State classified approximately 58 percent, or 89,938 acres, as *grazing land* and approximately 18 percent, or 66,458, acres as *important farmlands* (using California Department of Conservation [CDC] definitions described below). Grazing land includes land where existing vegetation is suitable for grazing or browsing, whether grown naturally or though management. Important farmland categories represent the agricultural lands most suitable for cultivating crops, and include *Prime Farmland*, *Farmland of Statewide Importance*, *Unique Farmland*, and *Farmland of Local Importance*. These four types of important farmland, plus grazing land, constitute the agricultural resources mapped by the State.

- ***Prime Farmland*** – Lands with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. The land must be cropped and be supported by a developed irrigation water supply that is dependable and of adequate quality during the

[3] California Farmland Conversion Report, Marin County, 2002-2004, prepared by the staff of the Farmland Mapping and Monitoring Program, California Department of Conservation, 2004. These maps depict actual conditions; they are updated every two years, using a computer mapping system, aerial photos, public review, and field reconnaissance. They do not reflect land use plan designation.

growing season. Land must have been used for production of irrigated crops at some time during the two update cycles prior to the mapping date.

- ***Farmland of Statewide Importance*** – Lands similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. These lands have the same reliable source of adequate quality irrigation water available during the growing season. Land must have been used for production of irrigated crops at some time during the two update cycles prior to the mapping date.
- ***Unique Farmland*** – Less quality soils used for production of the state's leading agricultural crops. These lands are usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones of California. Land must have been cropped at some time during the four years prior to the mapping date.
- ***Farmland of Local Importance*** – Land that is not irrigated, but is cultivated; or has the potential for cultivation.
- ***Grazing Land*** – Lands of at least 40 acres on which the existing vegetation is suited to the grazing of livestock.
- ***Urban and Built-Up Land*** – Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a ten-acre parcel.
- ***Other Land*** – Lands which do not meet the criteria of any other category.

Exhibit 4.8-2 shows the conversion of agriculturally designated land to Urban and Built-Up and Other lands. Marin County has lost 7,024 acres of Important Farmland and 4,459 of grazing land since 1984. Urban and Built-Up land has increased by 4,197 acres in the same period. The Point Reyes National Seashore and the Golden Gate National Recreational Area, both national parks, as well as other federally or State protected areas are classified as "Other Land", which increased by 6,700 acres during the 20-year period.

Exhibit 4.8-2
Marin County Agricultural Land Use Conversion

Year	*Important Farmland* [a]	*Grazing Land*	*Total Marin County Agricultural Land* [b]	*Urban and Built-Up Land*	*Other Land* [c]
1984	73,482	94,397	167,879	37,706	128,944
1994	68,511	92,031	160,542	39,640	134,112
2004	66,458	89,938	156,396	41,903	135,644
Total	***-7,024***	***-4,459***	***-11,483***	***+4,197***	***+6,700***

a Prime Farmland plus Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance
b Important Farmland plus Grazing Land
c Acreage increase in Other Land categories was due to formation of the Point Reyes National Seashore and the Golden Gate National Recreational Area and other protected areas.

Source: Land Use Conversion Tables for Marin County 1984-2004, Farmland Mapping and Monitoring Program, California Department of Conservation. Figures were generated from the most current version of the GIS data.

FARM SIZES AND THE ECONOMIC VIABILITY OF AGRICULTURE

Approximately 50 percent, or 167,000 acres, of Marin County are farms or ranches. Of the 276 agricultural operations, 72 are considered large farms with an annual gross income of $100,000 or more. There are 204 small or mini-farms with annual gross production of less than $100,000. The average size of a farm in Marin County is 588 acres, and the majority of the farms are third-and-fourth-generation family owned operations. [4]

The Marin Countywide Plan update included the preparation of an agricultural economic analysis report. [5] This report analyzed economic issues facing agriculture in Marin County and focused on the impacts of estate development (i.e., large homes) on agricultural lands. The report found that such development results in land ownership costs that exceed the income generated by agricultural operations. In the long term, such costs threaten the economic viability of agricultural operations.

Marin County ranches larger than 60 acres account for 85 percent of the privately owned, agriculturally designated land. Of this land, 14 percent is assessed at values over $2,000 per acre. Three ranches are assessed at over $14,000 per acre. While these ranches represent only five percent of the privately owned, agriculturally designated land, they account for 59 percent of the total assessed value. The 86 percent of ranches larger than 60 acres that range in value from $55 to $2,000 per acre have estimated costs well below average lease rates for grazing land.

The following summarizes Marin County's important livestock and crop products. The background report, *Marin County Agriculture Economic Analysis*, November 2003, contains additional information regarding economic issues of farms and ranches.

Dairies

Marin County is the 15th largest milk-producing county in the state and contains 29 dairies and 16,481 head of cattle. Marin County dairies produced $8,005,291 of milk in 2004. Livestock products, which include milk and wool, accounted for more than 60 percent of the total crop value in 2004. Although the number of milk cows has been steadily decreasing, the value of milk increased by 24 percent in 2004 due to strong consumer demand. Marin County's dairies can benefit from value added products, such as cheese and yogurt, but face challenges such as the cost and availability of pasturelands. [6]

Livestock and Poultry

Livestock and poultry is the second largest agriculture industry in Marin County, valued at $11,126,083 in 2004. A total of 159 beef cattle, cow / calf and sheep grazing operations produce livestock, replacement heifers for dairies, and breeding stock. A breeding farm near Tomales is part of a Sonoma-Marin operation that supplies half of the worldwide demand for fertile turkey eggs for hatching. Two Marin County ranches are finding a niche in the higher priced grass-fed beef market.

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4 *Facts about Agriculture in Marin County*, Ellie Rilla, U.C. Cooperative Extension, January 2005 revision.

5 Technical background report: *Marin County Agricultural Economic Analysis*, Strong Associates, November 2003.

6 Technical background report: *Marin County Agricultural Economic Analysis*, Strong Associates, November 2003.

Field, Fruit, and Vegetable Crops

There were 6,645 acres of hay, silage, fruits and vegetables, and grapes in Marin County during 2004. Of those, 34 organic operations produced fruit, vegetables and pasture on approximately 5,200 acres in Marin County.[7] Eight commercial grape growers produced approximately 116 tons on 74 acres during 2004. While the value and total tonnage of wine grapes has increased, values for the remainder of field, fruit, and vegetable crops decreased in 2004.

Aquaculture

Second only to Humboldt Bay in shellfish production (e.g., oysters, clams, and mussels) in California, aquaculture in Marin County grossed nearly $3 million in 2004. In 2002, 11 growers used 1,287 acres of bay bottom in Tomales Bay and Drakes Estero to grow approximately 850,000 pounds of shellfish worth about $2.3 million.[8] Many local restaurants want fresh oysters and mussels for their customers who often travel from San Francisco for this fresh seafood. Marin County has 70 miles of open coastline and 40 miles of San Francisco Bay frontage. Salmon, rockfish, halibut, striped bass, sturgeon, lingcod, herring, and others attract sport fishing and commercial boats for food or sport. However, their populations have declined due to habitat loss and over-fishing. Pacific herring are processed in Tomales Bay for their roe (i.e., eggs), which was valued at just over $1 million in 1995-96.[9]

Nursery Crops

A total of 37 acres of roses, iris, heather, and plants native to the area, among other nursery crops are grown in Marin County. In 2004, the nursery crop total value was $662,590, comprising one percent of the total crop value in the county.[10]

URBAN / RURAL CONFLICTS

Urban / rural conflicts occur at the interface of agricultural and non-agricultural uses. Development introduces new residents who are exposed to and / or interfere with agricultural operations. Depending on the types of nearby agricultural operations, visitor's and resident's complaints typically involve dust, odors, noise, presence of pests, manure, or spray drift where agricultural chemicals are applied. Agriculturists' complaints generally include trespass, vandalism, and theft. Even when people move to an area expressly for its rural character, these conflicts can occur because of their expectations, urban values, and essentially residential (i.e., not agricultural) activities.

Marin County has undertaken several actions to reduce urban / rural conflicts including the 1995 enactment of a Right to Farm ordinance.[11] The purpose of the ordinance is to reduce the costs (i.e.,

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7 *Facts about Agriculture in Marin County,* Ellie Rilla, U.C. Cooperative Extension, January 2005 revision.

8 *Grown in Marin,* University of California, Division of Agriculture and Natural Resources, January 2006, http://groups.ucanr.org/GIM/Overview_of_Agriculture/.

9 *Facts about Agriculture in Marin County,* Ellie Rilla, U.C. Cooperative Extension, January 2005 revision.

10 *Marin County Livestock and Agricultural Crop Report 2004,* Marin County Department of Agriculture, April 1, 2005.

incurred generally as a result of lawsuits) for Marin County agricultural operations by limiting the circumstances under which agricultural operations may be considered a nuisance. [12]

AGRICULTURAL PRESERVATION

Despite the efforts to protect agriculture in Marin County, the pressure for development on agricultural land is increasing. This is due, in part, to the fact that many of the factors that make a piece of property ideal for farming also make it attractive for development.

Accordingly, programs exist to assist Marin County farmers who wish to continue agricultural production. The most common methods include the use of the Land Conservation or Williamson Act, which was developed in 1965 in response to rapid conversion of agricultural lands into housing developments and commercial enterprises in post-World War II California. Under the Williamson Act, a property owner enters into a contract with the County to restrict the property's land use designation to agriculture for a period of not less than ten years. The landowner is taxed on the agricultural value of the land, as opposed to the market value of the property. Local governments receive partial reimbursement of lost property tax revenues from the State under the Open Space Act of 1971. In 1998, the Williamson Act was amended to provide for the establishment of Farmland Security Zones. Landowners receive an additional 35 percent reduction in the lands value for tax purposes for a commitment to the program for 20 years.

Marin Agricultural Land Trust (MALT) is a nonprofit organization created in 1980 by a coalition of local ranchers and environmentalists. MALT acts as a private conservation alternative to the sale, subdivision, or development of farmland by acquiring conservation easements in voluntary transactions with landowners. More than 35,000 acres on 53 Marin farms and ranches have been protected in this manner.

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[11] Marin County Code, Chapter 23.03.

[12] Marin County Code, http://municipalcodes.lexisnexis.com/codes/marincounty/.

4.8 Agriculture – Significance Criteria

The agricultural analysis uses criteria from the *State CEQA Guidelines*. In addition to the significance criteria suggested by the *State CEQA Guidelines*, conversion of County designated agricultural land to non-agricultural use are considered a significant impact for purposes of this EIR. According to these criteria, the project would have a significant impact to agricultural resources if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Department, to non-agricultural uses;

- Convert parcels designated Agriculture (i.e., AG1, AG2, or AG33), Agriculture Conservation (i.e., AGC1, AGC2, AGC3), or Coastal Agriculture (C-AG) on the Land Use Plan Map to a non-agricultural land use designation;

- Involve other changes in the existing environment, which due to their location or nature, could result in conversion of farmland, to non-agricultural use.

- Conflict with existing zoning for agricultural use, or a Williamson Act contract.

Agriculture – Impacts and Mitigation Measures [13]

Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses
Implementation of the Draft 2005 CWP Update would result in conversion of both County and State designated farmlands to non-agricultural uses. While these changes primarily would reflect existing State and federal ownership of these lands as part of their respective park and recreational areas, conversion would still occur. Therefore, this would be a significant impact.

A major impact to agriculture is the loss of productive land due to its conversion to other uses. The major cause of this conversion in Marin County and throughout the region has historically been that agricultural lands were subject to speculation for subdivision into suburban housing. In recent years, however, the major cause has changed to high value residential estate development on agricultural land. [14] This trend has increased land prices beyond what agricultural revenues can support and is a disincentive to continued agricultural operations. Other chronic economic conditions such as low profit margins make agriculture a difficult business.

Agricultural activities are most likely to be economically viable in Marin when land ownership costs and taxes are kept low because of very limited residential development and the use of protective agricultural easements. [15] For example, grazing land under a Williamson Act contract without residential improvements generates more income from agricultural leases than the estimated cost of land ownership. However, adding high value residential estate development drives land ownership costs (i.e., usually by large orders of magnitude) beyond farmers' and ranchers' ability to cover taxes, insurance, and maintenance. Unless residential development is limited to sizes reasonably related to agricultural production, estate development would continue to convert agricultural lands to non-agricultural use. [16]

In addition to economic considerations, stricter local, State, and federal environmental regulations can be at cross-purposes with the County's goal to protect and support agriculture. For example, a dairy or row crops in close proximity to a creek would be subject to water quality standards and setbacks could require additional measures to prevent livestock waste from reaching the creek or result in the loss of some productive land to riparian setbacks. As described in ***Section 4.5 Hydrology, Water Quality, and Flood Hazards***, runoff from agricultural lands can carry pathogens that impair water quality in Tomales Bay. Environmental health regulations prohibit shellfish harvesting during periods of rainfall to protect public health.

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13 The impacts of continuing agricultural operations on the natural environment are discussed in other sections of the EIR, for example see *Impact 4.5-1 Water Quality Standards* and *Impact 4.6-1 Special Status Species*,

14 *Marin County Agricultural Economic Analysis*, Strong Associates, November 2003.

15 *Marin County Agricultural Economic Analysis*, Strong Associates, November 2003.

16 *Marin County Agricultural Economic Analysis*, Strong Associates, November 2003.

Continued conversion of agricultural lands would have a number of adverse economic and environmental effects on Marin County. Agriculture contributes a substantial net surplus to the County general fund (approximately $1.3 million annually) as well as property taxes (approximately $10.3 million annually) that funds education and other County services. [17] Conversion to residential or other non-agricultural uses could also require substantial costs if it required extensions of public services.

In addition, preserving agricultural lands maintains the aesthetic quality of Marin County's rural character. Marin County residents value this resource as it improves the quality of life through the contrast of its visual and aesthetic properties with those of urban congestion.

Summary of Agricultural Land Use Changes [18]

Implementation of the *Draft 2005 CWP Update* would change existing County land use designations from agricultural to non-agricultural land use designations. These include lands designated by the County as Agriculture 1 (AG1), Agriculture 2 (AG2), Agriculture 3 (AG3), Agriculture and Conservation 1 (AGC1), Agriculture and Conservation 2 (AGC2), and Agriculture and Conservation 3 (AGC3). In coastal areas, agriculturally designated lands are denoted with a 'C' (e.g., C-AG1). These land use designations would change primarily to the open space (OS) land use designation. Conversely, some lands designated Open Space would be changed to an agricultural designation. In addition, some of the parcels that would be changed from an agricultural designation to open space are currently designated by the State as Farmland of Statewide Importance, Farmland of Local Importance, or Grazing Land.

These changes would occur in the Novato, Las Gallinas, Lower Ross Valley, and the West Marin Planning Areas. No changes would occur in the San Rafael Basin, Upper Ross Valley, or Richardson Bay Planning Areas. With the exception of changes that would occur at the St. Vincent's / Silveira properties, these changes to land use designations would not convert agricultural land to residential or other non-agricultural uses. Instead, they would reflect existing non-agricultural uses or the acquisition of agricultural land by State and federal governments for inclusion in their respective parks and recreational areas. **Exhibit 4.8-3** summarizes the changes to agriculturally designated lands for each of the seven planning areas. [19]

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[17] *Marin County Agricultural Economic Analysis*, Strong Associates, November 2003.

[18] GIS Data for changes to State classified important farmlands used in this section was provided by the Marin County Community Development Agency.

[19] **Appendix 2-D** contains the complete list of changes to the Land Use Map for each of the seven planning areas.

Exhibit 4.8-3
Summary of Changes to Agricultural Land Use Designations

Planning Area	***County Designated Agricultural Land***		***State Classified Important Farmlands***		
	AG to OS (acres)	***OS to AG (acres)***	***AG to OS (acres)***	***OS to AG (acres)***	***AG to Urban (acres)***
Novato	2,664	505	1,885 (Farmland of Local Importance), 264 (Grazing Land)	63 (Farmland of Local Importance), 420 (Grazing Land)	0
Las Gallinas	4	0	0.65 (Grazing Land)	0	54 (Farmland of Local Importance)
San Rafael	0	0	0	0	0
Upper Ross Valley	0	0	0	0	0
Lower Ross Valley	0	0	9.3 (Farmland of Local Importance)	0	0
Tamalpais	0	0	0	0	0
West Marin	3,274	432	129 (Farmland of Statewide Importance) 820 (Farmland of Local Importance), 952 (Grazing Land)	432 (Grazing Lands)	0
Total	***5,942***	***937***	***129 (Farmland of Statewide Importance), 2,714 (Farmland of Local Importance) 1,217 (Grazing Land)***	***63 (Farmland of Local Importance), 852 (Grazing Lands)***	***54 (Farmland of Local Importance)***

Source: Nichols Berman and the Marin County Community Development Agency June 2006.

The following discussion describes how conversion of both County designated agricultural lands and farmlands classified by the State as Farmland of Statewide Importance, Farmland of Local Importance, and Grazing Lands would occur.

Novato Planning Area

In the Novato Planning Area, a total of 2,664 acres would change from a County designated agricultural land use (AG) to the open space (OS) designation. The State currently designates approximately 1,885 acres of these lands as Farmlands of Local Importance and 264 acres as Grazing Land. Conversely, 505 acres would change from the OS to the AG land use designation. The State currently classifies approximately 63 of these 505 acres as Farmlands of Local Importance and 420

acres as Grazing Land. Breakout figures of the individual changes to the land use maps shown in **Appendix 2-D** are provided below.

For the North Novato Land Use Policy Map 1.1a, 707 acres currently designated AG1 would be changed to OS to reflect ownership by the State as part of the Olompali State Park (see change A). The current use of this property is open space and trails. The State classifies approximately 102 acres of these lands as Farmlands of Local Importance and 257 acres as Grazing Lands. In addition, 191 acres would change from AG1 to OS designation at the request of the Marin Audubon Society who purchased the land in order to protect it as open space (see change C). This property has existing wetlands and no formal agriculture exists on this site. The State classifies 109 acres as Farmland of Local Importance and less than one acre of Grazing Land. In addition, a technical correction would change 505 acres from OS to AG1 designation as the land use map incorrectly shows privately owned agricultural lands as part of the Olompali State Park (see change B).

For the North Novato Land Use Policy Map 1.1b, 70 acres of wetlands designated AG1 and AGC1 would be changed to OS (see changes E and F). Currently owned by the California Department of Fish and Game, these lands would be maintained as undeveloped open space. The State classifies approximately 65 acres of these lands as Farmland of Local Importance and 4 acres as Grazing Land. In addition, a technical correction would change 693 acres of marshland designated AGC3 to no designation to reflect the fact that parcels do not exist in that area (see change A). [20]

For the Black Point Land Use Policy Map 1.5, approximately 165 acres currently designated AG1 would change to OS at the request of the Marin Audubon Society who purchased the land in order to protect the existing habitat. These are parcels are mostly wetlands near the Deer Island Open Space Preserve. The State classifies nearly all of this land as Farmland of Local Importance.

For the Bel Marin Keys Land Use Policy Map 1.6, 1,531 acres of State-owned land designated AGC3 would be changed to OS and preserved as wetlands (see change A). The current use of these lands is predominantly agricultural operations with some open space. The State designates approximately 1,443 acres of the lands as Farmland of Local Importance.

Las Gallinas Planning Area

In the Las Gallinas Planning Area, less than four acres would change from a County designated agricultural land use (AG) to a non-agricultural designation. However, proposed development of the St. Vincent's / Silveira properties could convert some land currently in agricultural production to residential or other non-agricultural use, as discussed below. Breakout figures of the individual changes to the land use maps shown in **Appendix 2-D** are provided below.

For the Lucas Valley Environs Land Use Policy Map 2.1, approximately 0.65 acres of land would change from AG3 to Public Facilities (PF) designation (see change B). Currently owned by the Marin Municipal Water District, this parcel contains a water storage tank. This change would be a technical correction to reflect more accurate mapping of the parcel. This land is classified by the State as Grazing Land.

For the Marinwood Land Use Policy Map 2.3, three acres would change from AG3 to Planned Residential (PR) designation (see change A). This change would reflect the current zoning and

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[20] Note: these lands are not included in **Exhibit 4.8-3**.

use / ownership by the Carmelite Monastery. The State does not classify this land under any of its farmland designations.

For the St.Vincent's / Silveira Land Use Policy Map 2.4, State classified Farmland of Local Importance could be converted to residential or other non-agricultural use. As described in ***Section 4.1 Land Use, Population, and Housing***, implementation of the *Draft 2005 CWP Update* would allow residential development on an additional five percent (i.e., 54 acres) of approximately 1,080 acres of the site's developable area. These properties currently have various land use designations, including Tidelands, Public Facilities, and the interim designation of Urban and Conservation Reserve (UCR). While the County does not specifically designate this land as agricultural (i.e., AG1, AG2, AG3, AGC1, AGC2, or AGC3), the State classifies the majority of these properties as Farmland of Local Importance. Therefore, site development could convert up to 54 acres of Farmland of Local Importance to residential or other non-agricultural use. This number of acres would be the same under all three options as **Policy SV-2.4** would limit development to five percent of the properties. Only the density of units would vary to accommodate the proposed number of units under each option.

Implementation of the *Draft 2005 CWP Update* would change the land use designation for the St. Vincent's / Silveira properties from the interim UCR to Planned District: Agriculture and Environmental Resource Area (PD: AG and ERA). Existing agricultural and non-agricultural (e.g., St. Vincent's church and school) development occupy 35.7 acres and 15.8 acres of these properties, respectively. While agricultural development would remain at its current level, acreage for residential uses could increase to 69.8 acres. In addition to the conversion of agricultural land, such development could result in land use incompatibilities between residential use and agricultural operations. *Impact 4.1-3 Land Use Conflicts between Agricultural and Residential / Urban Uses* discusses this issue in detail.

Lower Ross Valley Planning Area

For the San Quentin Land Use Policy Map 5.3, approximately 9.3 acres of State classified Farmland of Local Importance would be converted from various existing County land use designations (all non-agricultural) to Public Facility (PF), Planned District (PD), and Transit Village Area (TVA) as part of the proposed San Quentin Vision Plan (see change A). However, redevelopment of the San Quentin peninsula is unlikely to occur as the State has proposed construction of a new Condemned Inmate Center on prison grounds and transfer of ownership to the County is therefore uncertain.

West Marin Planning Area

In the West Marin Planning Area, approximately 3,274 acres would change from a County designated agricultural land use (AG1, AG2, AG3, AGC1, AGC2 or AGC3) to the open space (OS) designation. Of these lands, the State currently classifies approximately 129 acres as Farmland of Statewide Importance, 820 acres as Farmlands of Local Importance, and 952 acres as Grazing Land. Conversely, 432 acres would change from open space to an agricultural land use designation. The State currently classifies these 432 acres as Grazing Land. Breakout figures of the individual changes to the land use maps shown in **Appendix 2-D** are provided below.

For the East Shore Land Use Policy Map 7.3.1, approximately 49 acres currently designated Coastal Agriculture 3 (C-AG3) would be changed to Coastal Open Space (C-OS) to reflect ownership by the federal government as part of the Golden Gate National Recreation Area (see change C). Of these lands, the State classifies approximately 38 acres as Farmland of Local Importance and the remaining 11 acres as Grazing Lands. This land is undeveloped.

For the East Shore Land Use Policy Map 7.3.2, approximately 231 acres currently designated C-AG1 would be changed to C-OS to reflect ownership by the State as part of the Tomales Bay State Park (see change D). Of these lands, the State classifies approximately 203 acres as Farmland of Local Importance and the remaining 28 acres as Grazing Lands. This land is vacant with no existing agricultural use.

For the Northwest Marin County Land Use Policy Map 7.4.2, approximately 1,601 acres currently designated C-AG1 and AG3 would be changed to C-OS and OS to reflect federal ownership as part of the Golden Gate National Recreation Area (see changes A and B). [21] Some of these parcels may have an existing agricultural contract associated with them and at least one parcel has some structures on it, although it is unclear if they support grazing. [22] Of these lands, the State classifies approximately 888 acres as Farmland of Local Importance and 1,190 acres as Grazing Lands. In addition, approximately 538 acres currently designated as AG1 would be changed to OS and C-OS to reflect federal ownership as part of the Point Reyes National Seashore (see changes C and D). These parcels have some existing structures and a use permit for an antenna facility although no existing agricultural use is apparent. [23] Of these lands, the State classifies approximately 26 acres as Grazing Lands. Conversely, 432 acres would be changed from OS to AG3. All of this land is classified by the State as Grazing Land.

For the Point Reyes Station Land Use Policy Map 7.5, approximately 338 acres currently designated C-AG1 would be changed to C-OS to reflect federal ownership as part of the Golden Gate National Recreation Area (see changes A and B). Of these lands, the State classifies approximately 129 acres as Farmland of Statewide Importance, 114 acres as Farmland of Local Importance, and 82 acres as Grazing Lands. A wetland area exists on these parcels and a portion is currently in agricultural production.

For the Inverness Land Use Policy Map 7.6, approximately 139 acres currently designated as C-AG1 would be changed to C-OS to reflect federal ownership as part of the Point Reyes National Seashore (see change F). Of these lands, the State classifies approximately 122 acres as Grazing Lands. This land is undeveloped and a portion is a wetland area.

For the Olema Land Use Policy Map 7.7, approximately 43 acres currently designated C-AG3 would be changed to C-OS to reflect federal ownership as part of the Golden Gate National Recreation Area (see change C). The State classifies all of this land as Farmland of Local Importance. This land has existing structures on it but it is not clear whether they support any agricultural or grazing activities. [24]

Finally, for the Bolinas Land Use Policy Map 7.11, approximately 415 acres currently designated C-AG2 and C-AG1 would be changed to C-OS to reflect acquisition by the National Park Service (see

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[21] Note for change B of the Northwest Marin County Land Use Policy Map 7.4.2, of the 945 acres that would be changed, 513 would go from AG to OS and 432 would change from OS to AG.

[22] Nichols Berman communication with Kristin Drumm, Planner, Marin County Community Development Agency, June 2006.

[23] Nichols Berman communication with Kristin Drumm, Planner, Marin County Community Development Agency, June 2006.

[24] Nichols Berman communication with Kristin Drumm, Planner, Marin County Community Development Agency, June 2006.

changes A and B). The State classifies approximately 381 acres of this land as Farmland of Local Importance. While most of this property is undeveloped, a portion of it is in agricultural production.

Agricultural Processing, Retail Sales, and Visitor-Serving Uses

As discussed in *Impact 4.1-4 Agricultural Processing, Retail Sales, and Visitor-Serving Uses*, the Development Code and the *Draft 2005 CWP Update* would permit and encourage the development of agricultural processing, retail sales, and visitor-serving uses to improve the economic viability of Marin County's farms, dairies, and ranches. While the development of these uses would have beneficial economic impacts and would help protect against future loss of the county's agricultural base, they would still remove land from agricultural production. While relatively few agricultural processing, retail sales, and visitor-serving facilities have been approved in recent years, given the potential for development of these uses permitted by the Development Code, a substantial number of acres could be converted to these uses. Quantifying the number of acres, however, would be speculative.

Policy Analysis of the Draft 2005 CWP Update

The *Draft 2005 CWP Update* contains goals that would strive to preserve existing agricultural land and promote the long-term viability of agricultural operations. Goal **AG-1** would aim to preserve agricultural lands by maintaining parcels large enough to sustain agricultural production, by preserving agricultural resources (e.g., important soils and water sources), and by prohibiting uses that are incompatible with long-term agricultural production. If adopted and implemented, the following policies and programs associated with these goals would reduce the amount of agricultural land converted to non-agricultural uses.

Policy **AG-1.1** and Programs **AG-1.a** and **AG-1.b** would limit residential development and building size in order to maintain agricultural production as the principal use on agricultural lands. Program **AG-1.a** would consider four options, discussed below, to limit the size of dwelling unit and non-agricultural accessory structures in order to avoid the development of large residential estates that could increase land ownership costs beyond revenues that agricultural operations can generate.

Option 1 would limit the total floor area of all dwelling units and non-agricultural accessory structures on a parcel to an aggregate of 6,000 square feet and would limit total floor area for any single dwelling unit on a parcel to 3,000 square feet. Such limits would ensure that residential development would not diminish current or future agricultural use of the property or convert it to primarily residential use. Some structures such as agricultural worker housing, garage space, agricultural accessory structures, and home-office space used in connection with the agricultural operation on the property would be excluded from these limits.

Larger residences (i.e., those up to 6,000 square feet) could be allowed under Option 1 if evidence of a bona fide commercial agricultural operation on the property were submitted to the County to show that the long-term agricultural use of the property would be preserved. In making its determination, the County could require preparation of an Agricultural Production and Stewardship Plan as provided for in Program **AG-1.b** that would be used to demonstrate that existing agricultural infrastructure is adequate (or would be enhanced) to support agricultural production appropriate to the site and that sound land stewardship (e.g., organic certification or habitat restoration) practices would be continued or implemented. Agricultural Production and Stewardship Plans would need to be prepared by a qualified professional to provide evidence that at least 90 percent of the useable land would remain in agricultural production as well as identify stewardship activities to be undertaken to protect agricultural and natural resources. In addition, Option 1 would provide for the dedication or sale of

perpetual agricultural conservation easements, which could be voluntarily offered to ensure continued agricultural production.

Under ***Option 2*** all dwelling units and accessory structures not used as the primary place of residence by the property owner(s), family members, and agricultural employees would be limited to 2,500 square feet, but the primary place of residence of the property owner(s), family members or lessees who are directly engaged in the production of agricultural commodities for commercial purposes on the property, building and structures accessory to such residences, and agricultural worker housing would be excluded from floor area limits.

Similar to Option 1, larger residences (up to 6,000 square feet) could be allowed under Option 2 if evidence of a bona fide commercial agricultural operation on the property were submitted to the County to show that long-term agricultural use of the property would be preserved. In making its determination, the County could require preparation of an Agricultural Production and Stewardship Plan to demonstrate that the long-term agricultural use of the property would be preserved.

Under ***Option 3***, the County would amend the Development Code to establish limits for residential development on contiguous parcels subject to a Williamson Act or Farmland Security Contract. This option could allow up to three existing or new dwelling units (not including agricultural worker housing) per parcel(s) provided they complied with the following standards: (1) the property would be used for the production of an agricultural commodity for commercial purposes; (2) the three dwelling units would be either the primary place of residence for the owner(s) or family members of the parcel(s), the residence of a ranch manager for the parcel(s), or the residence of a person(s) employed in commercial agriculture; (3) the dwelling units would comply with the density requirements of the Countywide Plan and the zoning district; (4) the total floor area for up to three dwelling units on a parcel(s) would be limited to 6,000 square feet; (5) the total floor area for any single dwelling unit on a parcel would be limited to 4,000 square feet; (6) the dwelling units would comply with the County standards for clustering of non-agricultural buildings on agriculturally zoned lands. Additionally, existing dwelling units not previously authorized by the County could be legalized within a prescribed period by an amnesty program establishing minimum requirements for public health and safety.

Under Option 3, new dwelling units could be exempt from Design Review if the total building area would not exceed 3,500 square feet would comply with the development standards for the governing zoning district. The Design Review exemption would be contingent upon the property owner(s) demonstrating that the project complies with the County's Single Family Residential Design Guidelines, and policies and standards for Stream Conservation Areas, wetlands, visually prominent ridgelines, and protection of special status species. An Agricultural Production and Stewardship Plan could also be required to demonstrate that the property is being used for commercial agricultural production and to justify the development of additional worker housing.

Under ***Option 4***, the County would convene a working group to prepare criteria and / or standards for establishing limitations on the size of residential development on agriculturally zoned lands. Such limitations would be considered for adoption through a future update of the Marin County Development Code.

Of these four options, Option 1 would likely convert the least amount of agricultural land to non-agricultural uses. This option would place the most restrictive size limits on all new residential development for all agricultural lands. In contrast, Option 2 would exempt new primary residences from size limits and Option 3 would only apply to parcels under a Williamson Act or Farmland Security Contract. Option 4 would delay implementation of residential size limits, the adequacy of which to minimize conversion of agricultural land would be speculative.

Policy **AG-1.3** would preserve agricultural zoning in order to maintain very low-density development in the Inland Rural and Coastal Corridors. Maintaining low densities in agricultural areas would support land-extensive agricultural production and discourage conversion to non-agricultural uses. As described in ***Section 4.1 Land Use, Population, and Housing***, related Policy **CD-1.3** would reduce the development density for a number of parcels in West Marin and reallocate the units to the City-Centered Corridor.

Program **AG-1.g** would revise agricultural zoning districts to create a more uniform approach to preservation of agricultural lands by applying consistent development standards (e.g., clustering of structures) and limiting incompatible uses in agricultural areas. Implementation of this program would consolidate suitable agricultural lands in the Inland Rural Corridor into a strengthened agricultural zoning district similar to the Agricultural Production Zoning District and create compatible zoning districts to accommodate lands currently zoned for, but not suited for, agriculture as a principal use. This program would help ensure that land -intensive and -extensive agricultural production would continue to occur on State classified important farmlands by designating by these lands as Agricultural Production Zoning.

This program, in conjunction with Program **AG-1.h** would also provide for an Agricultural Residential Planned District Zoning (ARP), which would protect potential and historical agriculture, especially in green belt areas and in the City-Centered Corridor, but also allow residential and compatible commercial uses in areas that are transitional between residential and agricultural production uses. Finally, this program would also provide for a Residential Agricultural Zoning District (RAZ) to accommodate typical rural uses including small-scale row crop production, 4H projects, and associated uses, along with residential uses and compatible commercial uses.

Similarly, Policy **AG-1.4** would minimize the conversion of agricultural lands by reducing the intrusion of residential uses into areas of agricultural production. This policy would apply non-agricultural zoning only in areas where conflict with agricultural uses would be limited and would ensure that development standards preserve and enhance nearby agricultural uses.

Policy **AG-1.2** and Programs **AG-1.d** and **AG-1.e** would facilitate agricultural conservation easements, land conservation and farmland security zone contracts, and transfer of development rights when used to preserve agricultural lands and resources. Similarly, Policy **AG-1.8** would encourage private and public owners of lands that have traditionally been used for agriculture to keep land in agricultural use by continuing existing agricultural uses, developing compatible new agricultural uses, and / or leasing lands to agricultural operators. Program **AG-1.c** would encourage merger of parcels on lands protected by agricultural conservation easements to create larger and more economically viable agricultural operations. Program **AG-1.f** would evaluate the potential for the Transfer of Development Rights program to achieve effective protection of agricultural lands and the viability of existing agricultural operations.

Policy **AG-1.5** would limit subdivision, and therefore, conversion of agricultural lands within the Coastal, Inland Rural, and Baylands Corridors by requiring project applicants demonstrate that long-term productivity on each parcel created would be enhanced as a result of subdivision and subsequent development. Review of discretionary projects would ensure that planning constraints such as topography, soil, water availability, and the capacity to sustain viable agricultural operations would be considered.

Policies **AG-1.6**, **AG-1.7**, and Program **AG-1.k** would limit non-agricultural development in the Agricultural Production Zone and agricultural lands to allow only residential and accessory uses ancillary to and compatible with agricultural production. This policy, in conjunction with Program

AG-1.a described above would require dwellings and other non-agricultural development to be limited in size and clustered or grouped together in building envelopes covering up to five percent of the property depending on the size of the property and agricultural and environmental constraints.

Policy **AG-1.9** and Program **AG-1.m** would encourage continuation of agricultural operations and uses in the pastoral zones of the Point Reyes National Seashore and the Golden Gate National Recreation Area through long-term tenure agreements (i.e., leases) with agricultural operators. As previously described, a relatively large amount of acres in the West Marin Planning Area that are currently designated by the County and State as agricultural lands would be redesignated as open space to recognize ownership by the State and federal government as part of their respective park and recreational areas.

Policies **AG-1.10** and **AG-1.11** would protect State classified agricultural lands (e.g., Prime Farmland and Farmland of Statewide Importance) as well as rangeland forage. These policies would discourage or prohibit non-agricultural buildings, impermeable surfaces, or other non-agricultural uses on these important soils.

A number of policies and programs related to water conservation and irrigation planning would help keep agricultural operations economically viable and thus prevent these lands from being converted to non-agricultural uses. Policy **AG-1.12** and Programs **AG-1.p** and **AG-1.q** would support sustainable water supplies; encourage water conservation, re-use, and development of other potential small-scale water sources; and support irrigation alternatives.

In addition to these measures specific to land use planning, the *Draft 2005 CWP Update* contains Goals **AG-2** and **AG-3** that would aim to enhance both the viability of Marin County farms, ranches and agricultural industries and promote locally grown and consumed food. The primary focus of these policies and programs would be to promote organic agriculture and specialty products that could yield high higher profits for farmers and ranchers thereby keeping agricultural operations economically viable and preventing the conversions of these lands to other uses.

Policies **AG-2.1**, **AG-2.2**, and **AG-2.5** and Programs **AG-2.a** and **AG-2.b** would promote local organic farm certification, support sustainable (i.e., local, organic, and grass-fed) agriculture, and promote the marketing of organic products. These programs would develop incentives to encourage farmers and ranchers to transition from conventional farming practices to organic, grass-fed, or other ecologically sound techniques as well as work with University of California Cooperative Extension and Marin County Agriculture Commissioner's staff to assist producers with development, diversification, and marketing of Marin's sustainable agricultural products.

Policies **AG-2.3** and **AG-2.6** would support small-scale diversification and crop production. Diversification and small crop production would complement existing traditional uses and help ensure the continued economic viability of the county's agricultural industry as well as contribute to local food security

Policies **AG-2.10**, **AG-3.1**, and **AG-3.3** would support local food production, increase knowledge of agriculture, enhance food security education. These policies would raise the level of public awareness and understanding of Marin County agriculture, including its ecological, economic, open space, and cultural value; and its importance to local food security as well as increase consumer appreciation of, and access to, locally produced and organic food and agricultural products. Programs **AG-2.j**, **AG-2.k**, **AG-2.l**, and **AG-2.m** would be used to implement the policies and would provide for a number of educational programs to promote sales of local agricultural products: use of the Community Food Bank; support for sustainable agriculture education (e.g., Food for Thought curricula) in local schools,

and the College of Marin; support for organizations and agencies that carry out educational programs, and increased public awareness of agricultural areas with placement of appropriate directional signs in an effort to inform residents and visitors of the importance of agriculture in Marin.

Programs **AG-2.c**, **AG-2.d**, and **AG-2.e** would require the County to develop additional materials and methods to allow planners to aid Marin County's agricultural producers. These would include the preparation of criteria and standards to identify compatible agricultural activities and applicable development code requirements, to simplify and expedite the permitting process for bona fide agricultural enterprises, and to educate County staff regarding the needs, benefits, and operational aspects of production agriculture.

Conclusion

The policies and programs of the *Draft 2005 CWP Update* would direct future land uses and development primarily into the City-Centered Corridor and existing unincorporated communities. In addition, the *Draft 2005 CWP Update* would largely prevent the extension of public services (e.g., wastewater treatment) into existing agricultural areas thereby reducing development pressure to these lands. Proposed size limitations for residential development on agricultural lands would help balance land ownership costs with revenues generated by agricultural operations. Additionally, policies and programs of the *Draft 2005 CWP Update* would continue to promote the economic viability of agriculture in Marin County. As a result, of this urban centered growth strategy and the policies described in the Built Environment and the Natural Systems and Agriculture Elements of the *Draft 2005 CWP Update*, substantial agricultural resource areas would be protected in unincorporated Marin County. However, conversion of agricultural land to non-agricultural uses would still occur.

As discussed above, implementation of the *Draft 2005 CWP Update* would result in the redesignation of 5,942 acres in the unincorporated area of Marin County from an agricultural designation (either Agricultural or Agriculture and Conservation) to a non-agricultural designation, primarily Open Space, while 937 acres would change from an Open Space designation to an Agricultural designation. Therefore, net conversion to the Open Space designation would be 5,005 acres. Some of these parcels with a Countywide Plan agricultural land use designation that change to an Open Space designation are also classified by the State as Farmland of Statewide Importance (129 acres). The State also classifies some of these lands as Farmland of Local Importance (2,714 acres) or Grazing Land (1,217 acres).

As previously described, nearly all of the changes to the land use maps would be to recognize existing open-space use or habitat protection, primarily due to State and federal ownership of these lands as part of their respective park and recreational areas, including the 129 acres of Farmland of Statewide Importance. Federal legislation provides authority to lease or permit lands for agricultural use on federal lands (e.g., the Golden Gate National Recreation Area and Point Reyes National Seashore). Accordingly, Marin County does not have jurisdiction over the federal government's continuation of existing agricultural leases. Nevertheless, while the *Draft 2005 CWP Update* does not directly call for conversion of these lands to a non-agricultural designation, and measures to reduce or avoid this conversion are beyond the County's jurisdiction, such conversion would still represent a significant effect.

Of the lands that would be committed to non-agricultural uses, only the proposed development of an additional five percent (approximately 54 acres) of the St. Vincent's / Silveira properties would convert State classified Farmland of Local Importance to an urban (residential) use. However, conversion of Farmland of Local Importance is not considered a significant effect.

The Development Code and the *Draft 2005 CWP Update* would permit and encourage the development of agricultural processing, retail sales, and visitor-serving uses that would remove land from agricultural production. Although quantifying such conversions would be speculative, a substantial number of acres of County or State designated agricultural lands could be converted to these uses as previously discussed.

Changes to agricultural land use designations to reflect acquisition by State and federal agencies and conversion of agricultural land to agricultural processing, retail sales, and visitor serving uses would convert County and State designated agricultural lands to non-agricultural uses. This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative conversion of agricultural lands impact. The following mitigation would be required.

Mitigation Measure 4.8-1 Implement Mitigation Measure 4.1-4(a) and 4.1-4(b) for *Impact 4.1-4 Agricultural Processing, Retail Sales, and Visitor-Serving Uses.*

As described changes to agricultural land use designations would be to recognize acquisition of these lands by State and federal agencies, there is no mitigation available to reduce or avoid the conversion of these lands as they are beyond the County's jurisdiction. However, implementation of the *Draft 2005 CWP Update* and provisions of the Development Code would facilitate the conversion of agricultural land to agricultural processing, retail sales, and visitor-serving uses. Therefore, it would be necessary to limit such development while balancing the needed value added services to agricultural producers that improve the economic viability of Marin County agriculture. Such measures are outlined in Mitigation Measure 4.1-4 of *Impact 4.1-4 Agricultural Processing, Retail Sales, and Visitor-Serving Uses*.

Significance After Mitigation While Mitigation Measure 4.8-1 would reduce the amount of agricultural processing, retail sales, and visitor-serving development on agricultural lands and therefore, the conversion of State and County designated agricultural lands, conversion would still occur. Such conversion, however small, would still represent a significant impact. Furthermore, there is no mitigation available for the conversion of State and County designated agricultural lands to open space uses. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised policies as described in Mitigation Measure 4.1-4 as part of the *Marin Countywide Plan 2005*.

Impact 4.8-2 Conflicts with Williamson Act Contracts

Implementation of the Draft 2005 CWP Update would change the land use designation of parcels under Williamson Act contracts from an agricultural designation (e.g., AG1, AG2, AG3) and zoning to an Open Space (e.g., OS) designation. Such changes would recognize acquisition of these lands by the National Park Service as part of the Point Reyes National Seashore. Continued use of these lands as open space would be compatible with the provisions of the Williamson Act. Therefore, this would be a less-than-significant impact.

As described in *Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses*, the *Draft 2005 CWP Update* would change the land use designation of approximately 5,942 acres with an existing agricultural designation (e.g., AG1, AG2, AG3) to an open space designation (e.g., OS). The majority of these changes, approximately 3,274 acres, would occur in the West Marin Planning Area in order to recognize acquisition of these lands by the National Park Service for inclusion in the Golden Gate National Recreation Area or the Point Reyes National Seashore. Of the lands changing from an agricultural designation to an open space designation, four of the parcels are currently under

Williamson Act contracts. Open Space is a compatible use for agricultural preserves (i.e., lands under Williamson Act contracts) in Marin County. [25]

Exhibit 4.8-4 lists the parcel number, location, existing zoning and number of acres for the parcels changing designation. These four parcels comprise a total of 737 acres. The National Park Service acquired these parcels as part of the Point Reyes National Seashore. These parcels have 10-year contracts that will expire by 2009. [26]

Exhibit 4.8-4
Parcels under Williamson Act Contracts Changing Land Use Designation

Parcel No. / Location	*Existing Land Use Designation and Zoning*	*Draft 2005 CWP Update Land Use Designation*	*Acres*
119-040-26 / Point Reyes Station	C-AG1 C-APZ-60 zoning	C-OS	364
119-040-28 / Inverness	C-AG1 C-APZ-60 zoning	C-OS	167
188-170-61 / Bolinas	C-AG1 C-APZ-60 zoning	C-OS	191
188-170-62 / Bolinas	C-AG1 C-APZ-60 zoning	C-OS	15
		Total	***737***

Source: Marin County Community Development Agency, October 2006.

Presumably, agricultural operations will cease once the Williamson Act contracts expire. [27] The National Park Service will not likely renew these contracts. For example, the first two parcels listed in **Exhibit 4.8-4** are part of the Giacomini Dairy in Point Reyes Station, which was sold to the National Park Service. The agricultural lease has or will soon expire and the dairy has removed most of the livestock from the property.

The change to an open space designation and zoning as well as the continued use of the land as open space even if agricultural operations were to cease, would still be compatible with the intent of the Williamson Act *to preserve agricultural and open space lands by discouraging premature and*

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25 The County of Marin Board of Supervisors adopted resolution 71-38 on February 16, 1971. For further information see *Williamson Act Contract Properties Administrative Policies*, Marin County Community Development Agency, no date, available online at http://www.co.marin.ca.us/depts/CD/Forms/00000058.pdf

26 Nichols·Berman communication with Kristin Drumm, Planner, Marin County Community Development Agency, October 2006.

27 *Ibid.*

unnecessary conversion to urban uses. [28] However, Policy **AG-1.9** and Program **AG-1.m** would still encourage continuation of agricultural operations and uses in the pastoral zones of the Point Reyes National Seashore through long-term tenure agreements (i.e., leases) with agricultural operators.

As changes to agricultural land use designation and zoning would be to recognize acquisition by the National Park Service, the resultant change to the compatible use of open space would not conflict with Williamson Act contracts. This would be a less-than-significant impact and would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.8-2 None required.

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[28] *Williamson Act Questions and Answers*, State of California, Department of Conservation, Division of Land Resource Protection, available online at http://www.conservation.ca.gov/DLRP/lca/pubs/WA%20fact%20sheet%2006.pdf

4.9 WATER SUPPLY AND DEMAND

4.9 WATER SUPPLY AND DEMAND

This section describes existing and future environmental conditions related to water supply and demand, identifies potential impacts from implementing the proposed project, and presents mitigation measures required to reduce significant adverse impacts to a less-than-significant level.

The *Hydrology and Water Quality Background Report*, August 2000, updated November 2005 provides some background information regarding water supply and groundwater. This background report is included in **Appendix 1** to the Draft EIR and incorporated by reference.

Water Supply and Demand – Environmental Setting

WATER SUPPLY

Marin County's water supplies include surface water, groundwater, recycled water and imported water. Surface water is the main source for urban areas in the eastern portion of the county while groundwater is the primary supply for unincorporated areas. Imported water is from the Sonoma County Water Agency (SCWA) who serves over 570,000 residents in Sonoma and Marin counties. SCWA direct customers are eight cities and special districts in Sonoma and northern Marin counties. [1] The Marin Municipal Water District (MMWD) and the North Marin Water District (NMWD) are the principal entities managing and delivering water to residential and commercial consumers. MMWD serves southern and central Marin County, while NMWD serves the City of Novato and the Point Reyes area of West Marin.

Small community water districts provide water to users in western Marin County. These water districts include Bolinas Community Public Utility District (BCPUD), Stinson Beach County Water District (SBCWD), Inverness Public Utility District (IPUD), and Muir Beach Community Services District (MBCSD). The community of Dillon Beach is served by two small independent water companies: the California Water Service Company (formerly Coast Springs Water Company) and the Estero Mutual Water System. SBCWD, MBCSD, and the Dillon Beach area primarily use groundwater for their water supplies while IPUD and BCPUD rely mainly on surface water.

Areas beyond the current municipal and community water service areas (herein termed "unserved areas") rely on either individual groundwater wells, surface water, or small spring-based systems. [2]

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1 Sonoma County Water Agency website, http://www.scwa.ca.gov/, September 5, 2006.

2 Exhibit 2 of the *Hydrology and Water Quality Background Report* is a map of areas outside of existing water district service areas.

Existing and Future Sources

A brief discussion of Marin County's water supply sources follows.

Climate

Marin County has a mild Mediterranean climate with long dry summers and rainy winters. Average precipitation ranges from 30 to 61 inches per year depending largely on topography. Coastal fog is common, especially in late summer when it brings low evapotranspiration rates and considerable fog drip. Annual precipitation can vary greatly from year to year, which affects the available water supply. For example, during the severe drought of the 1970s, rainfall in Marin County amounted to only 55 percent of average in 1976 and 48 percent of average in 1977. At the end of the drought, MMWD had less than 45 percent of normal reservoir storage. [3]

Groundwater

Several groundwater basins exist within Marin County. These include the Ross Valley, San Rafael Valley, Novato Valley, Petaluma Valley, Sand Point Area, and Wilson Grove Formation Highlands groundwater basins. Further discussions of groundwater availability in these basins and outside of these basins occur in the *Water Supplier and Water Supply Systems* sections below.

In general, available groundwater supplies are limited in Marin County due to low yields, seawater intrusion along the coast and San Pablo Bay, and the fact that limited supplies are already tapped for private domestic and irrigation use. Spring-based systems are often susceptible to severe capacity declines during extended periods of drought, but proven perennial springs can provide sufficient supply for single residences. Most of the unserved area is underlain by poorly permeable rock with limited storage capacity or thin deposits of alluvium or colluvium, which have insufficient saturated thickness to yield substantial quantities of water to wells. Well yields in these areas range from 0.1 to 10 gallons per minute (gpm), with the majority of wells yielding less than five gpm. With the exception of the Point Reyes peninsula, which is permanently dedicated to parkland and public open space, Bolinas Point, and Novato Valley, only limited areas in alluvial valleys are projected to yield in excess of ten gpm (typically, 10-100 gpm). A few of these small areas of greater yield are located in the Lagunitas Valley, where NMWD maintains and operates its small well field for the West Marin service area. Here, the District pumps at rates of 250-300 gpm, well above the general projections. This indicates that individual wells can be developed with significantly higher yields than the predicted range. In most cases, such high yielding wells tap deeper aquifers, at correspondingly higher costs.

Marin County Environmental Health Services, which has permitting authority for wells, provided the database of known wells. [4] This database was reviewed to estimate the number of private wells in the various water agency service areas and unincorporated areas. The number of entries in the database can only approximate the number of wells. Some wells may have been installed without being recorded in the database and some wells in the database are currently inactive or abandoned without

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3 *Impact of Severe Drought in Marin County, California*, California Department of Water Resources (DWR), Bulletin 206, November 1979.

4 *Water Well List*, database from Scott Callow of Marin County Environmental Health Services, April 3, 2006.

being replaced. Nonetheless, the database provides a general estimate. In some of the smaller water agencies in rural Marin, the number of private wells within the service area is noteworthy, for example, indicating a privately-supplied water demand that is comparable to a significant portion of the agency's water supply and demand. This is discussed for relevant agencies for the following reasons. First, private wells may be considered as a means of reducing the water demand on a local water agency. Alternatively, private wells may represent competition for limited water supply. Private wells also represent future potential connections, because wells eventually fail, possibly prompting the well owner to connect to the water system. The particular situation in a small water agency depends on the number, location, and status of private wells.

Groundwater recharge is from infiltrating rainfall and stream percolation. In general, significant groundwater recharge areas are coincident with portions of the delineated groundwater basins and with alluvial deposits along streams in the unserved areas.

To assess the potential for contamination of Marin County's groundwater, a review was conducted of the State Water Resources Control Board GeoTracker database and geographic information system (GIS) that provides online access to environmental data. [5] The database tracks regulatory data about leaking underground fuel tanks (LUFT), Department of Defense (DoD), Spills-Leaks-Investigations-Cleanups (SLIC) and Landfill sites where contaminants have been released in the Novato Valley, Petaluma Valley, Ross Valley, and San Rafael Valley groundwater basins. The Marin County database lists over 100 sites; the majority of these are related to gas stations, transportation facilities, and auto repair shops and located in the urban corridor. Note that groundwater contamination may not have occurred at all these sites. Other impacts to water supply quality could result from intrusion of brackish water into coastal basins and impacts from animal wastes from factory farms and septic tanks. While releases have occurred, no large groundwater contamination plumes reportedly exist in Marin County. Water purveyors' water quality reports do not indicate contamination from industry or animal or human wastes and the majority of current private and public drinking water sources are outside of the urban corridor. [6] Existing and proposed County and city / town requirements regarding industrial operations, construction, and septic tanks, regulatory oversight, and water quality sampling and reporting are expected to identify future water supply quality issues before substantial adverse changes to the water supply occurs.

Surface Water

Surface water is the primary source of Marin County's water supply. Marin County encompasses roughly 480 square miles of baylands, alluvial valleys, and uplands that drain to the western margins of Central San Francisco Bay and San Pablo Bay, as well as the Pacific Ocean. The Coastal Range separates the watershed lands that drain east and south to the bay from lands on the west-facing slopes that drain to the Pacific Ocean. Elevations range from sea level at the bay and ocean to more than 2,500 feet at Mt. Tamalpais.

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5 State Water Resources Control Board GeoTracker Database, http://geotracker.swrcb.ca.gov/, accessed October 20, 2006.

6 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006; *Point Reyes Area Annual Water Quality Report*, North Marin Water District, April 2005; *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006; *Consumer Confidence Report*, Bolinas Community Public Utility District, 2005; *Drilling, Construction, and Testing of Alder Grove No.3 Well*, Todd Engineers, Report to Stinson Beach County Water District, October 2003; *Twenty Year Plan for Water System Capital Improvement, 1997-2016*, report to Muir Beach Community Services District, Hyde & Associates and Associated Business & Community Consultants, Inc., 1996.

Mean annual rainfall ranges from 18 inches at Point San Pedro to over 50 inches along the Mt. Tamalpais ridgeline. Most rainfall occurs during the wet winter season, which typically extends from November through March. Significant runoff events occur in response to prolonged rainfall of two to three days' duration, punctuated by short periods of intense rainfall.

Recycled Water

Recycled water is provided by the Novato Sanitary District (NSD) in the NMWD-Novato service area and by three wastewater agencies in the MMWD service area: Las Gallinas Valley Sanitary District (LGVSD), Sewerage Agency of Southern Marin, and Richardson Bay Sanitary District. Of these, the largest recycled water producer currently is the NSD (2,400 AFY), followed by LGVSD (650 AFY).

Recycled water use occurs mainly in central Marin County within NMWD's and MMWD's service areas. Secondarily treated water is used for pasture irrigation on NMWD's land and tertiary treated water is used for irrigation, toilet flushing, car washes, cooling towers, and laundries. Recycling in Marin County is constrained by a number of factors, including the relative lack of large users of non-potable water (e.g., parks) within close proximity to wastewater treatment facilities. The County's many water efficiency and conservation measures have decreased water use. However, water recycling has become less feasible as a result of these measures because potential customers use less water. In addition, saltwater intrudes into the sewer collection systems of most of the local sanitation agencies, degrading the source water and increasing costs of treatment. Nonetheless, use of recycled water has many benefits including:

- Reducing peak water demands;
- Reducing use of SCWA imported water;
- Reducing wastewater discharges to the bay and the associated water quality impacts; and
- Supply of recycled water is not affected during droughts.

Both NSD and LGVSD are actively planning upgrades to their respective water recycling facilities and expansion of recycled water use.

Imported Russian River Water

NMWD and MMWD import water through an agreement with SCWA that provides water principally from the Russian River. SCWA has four water rights permits (#12947A, 129498, 12950, and 16595) to store water in Lake Mendocino (122,500 AFY) and Lake Sonoma (245,000 AFY) and to divert and redivert 180 cubic feet per second of water from the Russian River, up to 75,000 AFY.[7] SCWA has applied to increase the Russian River rediversion right from 75,000 AFY to 101,000 AFY.

SCWA supplements the Russian River supply with water from three groundwater wells in the Santa Rosa Plain. SCWA's transmission system consists of wells, water collectors, pumps, pipelines and tanks. The SCWA Russian River diversion facilities are in the Wohler and Mirabel areas. Water is carried from the diversion facilities via the Santa Rosa aqueduct and the Russian River–Cotati Intertie to the Petaluma and North Marin aqueducts. NMWD owns and operates the 9.4-mile long, 30-inch

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7 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

diameter North Marin pipeline that transports water from SCWA's Petaluma aqueduct to Novato. The North Marin aqueduct runs from the Kastania Pump Station near Petaluma to NMWD's distribution system north of San Marin Avenue.[8] Water from SCWA is treated before it is pumped to NMWD and MMWD.

The agreement between NMWD, MMWD, and SCWA has recently been amended. The previous Eleventh Amended Agreement for Water Supply (amended in 2001) included specific maximum delivery limits and also provided for financing, construction, and operations of new diversions facilities, transmission lines, storage tanks, booster pumps, wells, and other facilities.[9] MMWD has no average daily flow rate set in the agreement but is guaranteed access to surplus capacity.[10] A Restructured Agreement, which supercedes the Eleventh Amended Agreement, has recently been signed by all parties and does not change NMWD's water allocations. It does include additional components regarding conservation, recycling, and environmental restoration activities.[11]

Maximum allocations were based on the premise that SCWA's water right rediversions will be increased from 75,000 AFY to 101,000 AFY and that new facilities will be constructed.[12] However, maximum water allocations to NMWD and MMWD are limited as SCWA's proposed expansion of its water supply has resulted in litigation, endangered species impacts, water rights proceedings, and the prospect of millions of dollars in infrastructure upgrades and environmental mitigations.[13] Consequently, SCWA has declared a temporary impairment of its transmission system and allocations have been reduced. An EIR for the water project was successfully challenged and a new EIR is being prepared and is expected to be available at the end of 2006.[14]

Interim water use has been guided by a memorandum of understanding regarding water transmission system capacity allocation during temporary impairment (impairment MOU) that became effective in March 2001 and expired in September 2005. Currently, an extended temporary impairment MOU is in effect for the summer months of 2006 through 2008. Specific details on the amounts of water available to NMWD and MMWD during the temporary impairment are discussed in the following *Water Suppliers and Water Supply Systems* sections.

SCWA's infrastructure projects include a radial collector well along the Russian River that is currently being constructed to provide standby production capacity. Additional proposed improvements include five transmission pipelines, three to five storage tanks, and two booster pump stations. SCWA is also

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8 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

9 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

10 *Summary of Memorandum of Understanding Regarding Water Transmission System Capacity Allocation During Temporary Impairmen*t, John Olaf Nelson, June 21, 2005.

11 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

12 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

13 Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies (BACWA), December 2, 2005.

14 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

preparing a *Water Supply and Transmission System Natural Hazard Reliability Assessment* to assess the vulnerability of its water supply system. [15]

Potential Desalinization

MMWD is investigating the use of desalinated water from the San Francisco Bay. A pilot plant, constructed at the Marin Rod & Gun Club in San Rafael, was operated for ten months beginning in June 2005 to test equipment, conduct environmental studies and demonstrate the technology to Marin stakeholders. The plant was dismantled at the end of April 2006. A Draft EIR is being prepared for the proposed full-scale facility, which would be constructed in two phases: a ten million gallons per day (mgd) first phase; and if needed, a second five mgd phase. [16]

WATER SUPPLIERS AND WATER SUPPLY SYSTEMS

The following sections describe Marin County water suppliers and their sources of supply and the sources of supply for the area outside established water service areas. Current and future water supplies are described. Future supplies are extended to 2030 or build out. It is important to note here that only supplies that are currently available and being used are included in the total water supply available to each service area. Potential other future supplies that are unsecured or uncertain are discussed for completeness, but have not been included in the future water supply total. An exception to this is the proposed increase in SCWA water to NMWD as discussed in the NMWD section below. In several instances, water suppliers have water rights to more water than they are taking mainly due to lack of available surface water. Only the water available and taken in the past have been considered here as the water supply from that source.

North Marin Water District

The North Marin Water District (NMWD) was formed in 1948 to provide water to Novato and surrounding areas. NMWD serves a population of about 56,000 in Novato in addition to approximately 1,750 residents in West Marin. The NMWD Novato service area is approximately 75 square miles, while the West Marin service area is approximately 24 square miles. The two service areas have separate sources of supply and are not interconnected. Accordingly, they are discussed separately in the following supply and demand sections.

NMWD-Novato Service Area Supply

The NMWD-Novato service area has two sources of water supply: Stafford Lake and imported water from Sonoma County Water Agency (SCWA). A third source, tertiary treated recycled water, is expected to become available in 2007. [17] These supply sources are further discussed in the next sections (*Surface Water*, *Imported Water*, and *Recycled Water*) and shown on **Exhibit 4.9-1.**

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15 *Public Draft Bay Area Integrated Regional Water Management Plan* (IRWMP), RMC and Jones & Stokes, September 2006.

16 Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies (BACWA), December 2, 2005.

17 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

Exhibit 4.9-1
NMWD-Novato Service Area Annual Water Supply Source Information

Water Supply Source	*Acre Feet / Year*	*Entitlement*	*Right*	*Contract*	*Ever Used*
Local Surface Water (Stafford Lake)	1,700		X		Yes
Groundwater	0				No
Imported (Sonoma County Water Agency)	10,060	X			Yes
Wholesaler	0				No
Recycled - Tertiary	0				Future supply ~ 2007
Transfer / Exchange	0				No
Desalination	0				No
Other (raw water for irrigation)[a]	250				Yes

a Untreated water pumped from Stafford Lake used for irrigation of Stafford Lake Park and Indian Valley Golf Course, value not included in 1,700 AF safe yield.

Source: NMWD

The following sections discuss NMWD-Novato service area's current and future water supply sources: surface water, imported water, and recycled water. For completeness, a brief discussion of other possible sources (groundwater, desalination, and transfers and exchanges) is also included. **Exhibit 4.9-2** presents current and projected water supplies for a normal year for NMWD-Novato through 2030 in five-year increments. These are discussed below.

Exhibit 4.9-2
NMWD-Novato Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	***2005***	***2010***	***2015***	***2020***	***2025***	***2030***
Local Surface Water (Stafford Lake)	0	1,700	1,700	1,700	1,700	1,700
Groundwater	0	0	0	0	0	0
Imported (Sonoma County Water Agency)	10,060	10,954	11,785	12,297	12,566	12,724
Wholesaler	0	0	0	0	0	0
Recycled - Tertiary	0	430	690	800	910	1,020
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Other (raw water for irrigation) [a]	250	250	250	250	250	250
Total	***10,310***	***13,334***	***14,425***	***15,047***	***15,426***	***15,694***

a Untreated water pumped from Stafford Lake used for irrigation of Stafford Lake Park and Indian Valley Golf Course, value not included in 1,700 AF safe yield.

Source: NMWD

Surface Water Stafford Lake, located four miles west of downtown Novato, provides about 20 percent of the NMWD-Novato service area total annual water supply. Runoff from 8.3 square miles of the upper reaches of the Novato Creek watershed is stored in the lake. It has a storage capacity of 4,450 acre feet (AF) at a water surface elevation of 196 feet above mean sea level (MSL) and a surface area of 230 acres. [18] The lake's historical annual yield is 2,000 AF and the safe long-term annual yield has been determined to be 1,700 AF. [19] As indicated in **Exhibit 4.9-2**, current and projected Stafford Lake water supply has been estimated at its safe long-term yield of 1,700 acre feet per year (AFY). In 2005, no Stafford Lake water was used because of the rehabilitation of the Stafford Treatment Plant with the exception of 250 AF of raw water used for local irrigation. [20]

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18 *Letter to Marin Co. Community Development Agency from Chris DeGabriele, General Manager of NMWD*, August 16, 2005.

19 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

20 Todd Engineers communication with Carmela Chandrasekera, North Marin Water District, April 12, 2006.

Water can be produced from the lake throughout most of the year but emphasis is placed on summer months to decrease peak SCWA deliveries and maximize SCWA water transmission system capacity for other users. [21] Stafford Lake water is drawn through an intake tower and sent to the 6.3 million gallon per day Stafford Treatment Plant located just below the Stafford Lake Dam. The treatment plant is currently being upgraded to improve quality and efficiency. [22]

NMWD holds two Novato Creek water rights. License 9831 was issued in 1970 and allows 2.9 cubic feet per second (cfs) to be directly diverted and a maximum of 4,000 AF to be diverted to storage in Stafford Lake between October 1 and April 30. Under this license, the total amount of direct diversion and diversion to storage in a water year (October 1 and September 30) is 4,490 AF. Under Water Right Permit 18800, issued in 1983, NMWD can directly divert up to 9.75 cfs between October 1 and April 30 and divert up to 4,400 AF to storage between November 1 and April 1. Although total storage is limited to 4,400 AF under both the License and Permit, a maximum of 8,454 AF can be diverted during any water year. [23]

The NMWD-Novato service area overlies the Novato Creek watershed and the lower half of San Antonio Creek watershed. The Novato Creek watershed has a total area of 49.3 square miles. Mean annual precipitation is 26.47 inches resulting in a mean annual rainfall volume of 69,674 AF. The San Antonio Creek watershed has a total area of 32.0 square miles and, with a mean annual precipitation of 22.16 inches, the resulting mean annual rainfall volume is 38,058 AF. The NMWD Draft 2005 UWMP [24] estimates average annual rainfall at 29.6 inches for the NMWD-Novato service area.

Imported Water Most of NMWD's water supply (about 80 percent) is obtained through an agreement with SCWA that provides water principally from the Russian River. This agreement and related legal issues were described in the previous section. The Eleventh Amended Agreement for Water Supply (amended in 2001) allocated 14,100 AFY to NMWD and a 19.9 mgd average during any one month. Maximum allocations were based on the premise that SCWA's water right diversions will be increased from 75,000 AFY to 101,000 AFY and that new facilities will be constructed. [25] However, SCWA's proposed expansion of its water supply has not yet occurred due to legal and environmental issues and SCWA has declared a temporary impairment of its transmission system. NMWD and other public agencies receiving water from SCWA agreed to a memorandum of understanding regarding water transmission system capacity allocation during temporary impairment (impairment MOU) that became effective in March 2001 and expired in September 2005. The impairment MOU allocated summer month (June through September) water deliveries at specified rates through the North Marin aqueduct. Apportionment of these deliveries to NMWD and Marin Municipal Water District (MMWD) is governed by an intertie agreement between the two water districts. Between 2001 and 2005, the summer month allocation to the North Marin aqueduct ranged from 16.9 mgd (2002) to 21.4 mgd (2003). The current temporary impairment MOU includes a peak

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[21] *Letter to Marin County Community Development Agency from Chris DeGabriele, General Manager of NMWD,* August 16, 2005.

[22] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

[23] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

[24] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

[25] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

demand allocation of 15.7 mgd to the North Marin Aqueduct for the summer months of 2006 through 2008. Current and projected imported SCWA water supply is shown in **Exhibit 4.9-2** for 2005 through 2030.[26] In very dry years, a maximum of 250 AF of water could be sent to MMWD to convey to NMWD's West Marin service area. This is discussed in more detail in the West Marin supply section below.

NMWD water quality has consistently been within acceptable regulatory limits.[27]

Recycled Water The Novato Sanitary District (NSD) operates two wastewater treatment plants (Novato and Ignacio) in the NMWD-Novato service area. In winter months, secondary treated effluent is discharged to intertidal mud flats of San Pablo Bay through the NSD outfall. In summer months, secondary treated effluent is collected in storage ponds and used to irrigate pasture land owned by NMWD.[28] NSD treated about 7,570 AF of wastewater in 2005 and 2,400 AF of this was recycled through agricultural irrigation in 2005. The volume of secondary treated effluent used for irrigation is anticipated to increase to 2,600 AF by 2030.[29]

In 2004, NMWD and NSD entered into an Interagency Agreement for production and distribution of recycled water; a Master Plan is underway to identify and implement additional recycled water projects.[30] The Interagency Agreement describes the recycling facilities and lays out the delivery quantity and quality, payment, and termination provisions.[31] Recycled water users will include the Stone Tree Golf Course at Black Point, NSD, and the Novato District Station No. 2.[32] The 0.5 mgd recycled water facility will treat secondary effluent to meet Title 22 requirements for unrestricted bodily contact (tertiary treatment).[33] The project is moving forward with construction as permitting, planning and environmental studies, construction design, and acquisition rights of way are completed. The project is scheduled to be online and delivering irrigation water to Stone Tree golf course's irrigation pond by the summer of 2007.[34] Other potential recycled water users include development on Hamilton Air Force Base and other users along U.S. 101. As indicated in **Exhibit 4.9-2**, it is

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26 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

27 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

28 *Wastewater and Recycled Water Functional Area Document, Bay Area Integrated Regional Water Management Plan*, Bay Area Clean Water Agencies, March 3, 2006.

29 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

30 *Letter to Marin County Community Development Agency from Chris DeGabriele, General Manager of NMWD*, August 16, 2005.

31 *Inter Agency Agreement for Recycled Water Between Novato Sanitary District and North Marin Water District*, December 2004.

32 North Marin Water District website, www.nmwd.com, September 5, 2006.

33 *Wastewater and Recycled Water Functional Area Document*, Bay Area Integrated Regional Water Management Plan, Bay Area Clean Water Agencies, March 3, 2006.

34 North Marin Water District website, www.nmwd.com, September 5, 2006.

anticipated that recycled water use will increase gradually. It is projected that by 2030 approximately 1,020 AF of tertiary treated effluent will be used for urban landscape irrigation.[35] Note that the recycled volumes in **Exhibit 4.9-2** reflect only tertiary treated effluent and not the use of secondary treated effluent for NMWD pastureland irrigation.

Other Potential Sources for the Novato Service Area

Groundwater NMWD does not own or operate any wells within the Novato service area but private wells do exist. The groundwater supply is limited as there is high potential for saltwater intrusion in the area and well yields are low.[36] NMWD overlies the northern portion of the Novato Valley Groundwater Basin and a small portion of southeastern Petaluma Valley Groundwater Basin.

The Novato Valley Groundwater Basin has a surface area of 32 square miles.[37] The Novato Valley occupies a structural depression in the Coast Ranges just west of San Pablo Bay and north of San Rafael. The Mendocino Range forms the western and southern boundaries and San Antonio Creek is the northern boundary. Average annual rainfall ranges from less than 28 inches near the bay to over 40 inches in the western and southern upland areas.[38] Streams drain to San Pablo Bay and are tidally influenced in the lower reaches. Groundwater is generally semiconfined and occurs in alluvial deposits consisting of clay, silt, and sand with discontinuous lenses of gravel. These deposits range in thickness between 60 feet near the City of Novato to more than 200 feet near the bay. Available information indicates that wells typically tap water bearing deposits between depths of 55 to 90 feet. Wells in sand and gravel layers 25 to 50 feet deep yield an average of 50 gpm.[39] Recharge is from direct infiltration of precipitation on the basin floor and through stream percolation. Soils in this area are predominantly Reyes silty clays with low permeability.[40] Groundwater is typically calcium bicarbonate type away from the bay and sodium chloride type in the tidal areas of the alluvium. Tidal influences near the bay result in intrusion of brackish water into the groundwater and a resulting degradation of its quality.[41] Only a small portion of the 72 square mile Petaluma Valley Groundwater

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35 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

36 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

37 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

38 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

39 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

40 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

41 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

Basin lies in the NMWD-Novato service area. Seawater intrusion affects groundwater quality in the southeastern portions of the Petaluma Valley Groundwater Basin. [42]

Marin County's database of private drinking and irrigation wells lists 51 wells that have been drilled in Novato. Most appear to be drilled in the mid to late 1970s, presumably in response to the severe drought. There are 33 wells listed for domestic and irrigation uses: 16 for domestic and irrigation use, 17 for domestic use only, and 18 for irrigation use only. Information on the amount of pumping from or status of private wells is not readily available to assess whether private wells present particular issues in the NMWD-Novato service area.

Desalination NMWD is not pursuing the use of desalinated water at this time. [43]

Transfer or Exchange Although NMWD does not currently transfer or exchange water, it does convey (wheel) MMWD's SCWA/Russian River water supply through NMWD's North Marin aqueduct. In return, MMWD pays NMWD $10/AF for use of the pipeline. MMWD SCWA deliveries have averaged approximately 8,203 AFY over the last five years. [44] As indicated above and further discussed below, a maximum of 250 AF of SCWA water could be sent to MMWD to convey to NMWD's West Marin service area in very dry years. *NMWD - West Marin Service Area Supply*

West Marin communities of Point Reyes Station, Olema, Inverness Park, and Paradise Ranch Estates are supplied water from NMWD's Point Reyes water system. The Point Reyes water system is one interconnected supply and distribution system and is completely separated from NWWD water facilities in the Novato service area. The Point Reyes water system also serves the Point Reyes National Seashore Headquarters at Bear Valley, Silver Hills, the U.S. Coast Guard Housing Facility in Point Reyes Station, and two West Marin dairies. The Point Reyes Water System has been undergoing gradual expansion and improvements since the original system, serving Point Reyes Station and Inverness Park, was acquired by NMWD in 1971.

The NMWD-West Marin service area extends non-contiguously to the east and south of Tomales Bay and includes small portions of a number of watersheds: Lagunitas Creek, Tomales Bay, Tomales Bay East Shore, Tomales Bay West Shore, Walker Creek, and Stemple Creek. Mean annual precipitation on these watershed ranges from 27.04 inches (Tomales Bay East Shore) to 39.82 inches (Lagunitas Creek).

Water is supplied mainly from groundwater with a smaller amount transferred from NMWD's Novato service area via MMWD in very dry years as seen in **Exhibits 4.9-3** and **4.9-4**. These are further discussed below.

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42 *Evaluation of Ground Water Resources Sonoma County Volume 3: Petaluma Valley, Bulletin 118-4*, California Department of Water Resources, June 1982.

43 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

44 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

Exhibit 4.9-3
NMWD West Marin Service Area Annual Water Supply Source Information

Water Supply Source	Acre Feet / Year	Entitlement	Right	Contract	Ever Used
Local Surface Water	0				No
Groundwater	372		X		Yes
Imported	0				No
Wholesaler	0				No
Reclaimed	0				No
Transfer / Exchange	250				Yes
Desalination	0				No

Source: NMWD

Exhibit 4.9-4
NMWD West Marin Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	2005	2010	2015	2020	2025	2030
Local Surface Water	0	0	0	0	0	0
Groundwater	372	372	372	372	372	372
Imported	0	0	0	0	0	0
Wholesaler	0	0	0	0	0	0
Reclaimed	0	0	0	0	0	0
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***372***	***372***	***372***	***372***	***372***	***372***

Source: NMWD

Groundwater The source of water for the Point Reyes system is primarily drawn from two wells adjacent to Lagunitas Creek in Lagunitas Valley. The two wells are located on U.S. Coast Guard property in Point Reyes Station and pump at a rate of 250 to 300 gpm. These so-called Coast Guard wells are in the tidal reach of Lagunitas Creek on an elevated gravel bench about 50 feet north of the creek and 15 feet above the streambed. The wells are screened in a gravel formation between depths of 20 to 60 feet and extend to bedrock. [45]

Water supply to the wells is drawn from a gravel aquifer adjacent to Lagunitas Creek. Although the Lagunitas Valley is not considered a California Department of Water Resources (DWR) Bulletin 118-defined groundwater basin, yields of these NMWD wells indicate that a viable groundwater supply is present and safe yields may be in excess of 300 AFY. The aquifer's water supply is dependent primarily on the amount of water flowing in the creek. Stream flow in the creek is regulated by

[45] *North Marin Water District – Emergency Operations Plan*, North Marin Water District, revised June 2004.

releases from MMWD storage reservoirs as required by the State Water Resources Control Board (SWRCB) Order WR 95-17. Annual runoff to Tomales Bay from Lagunitas Creek, after upstream water diversions, averages 63,900 AFY while system withdrawals, based on average daily consumption in fiscal year 2001, amounted to 372 AFY, or approximately 0.6 percent of average annual stream flow.

NMWD holds a pre-1914 water right (5 gpm to 300 gpm) and two water rights permits (0.699 cfs and 0.961 cfs) on Lagunitas Creek as indicated in License Reports and SWRCB Order WR 95-17.

NMWD-West Marin service area water system includes 13 storage tanks ranging in size from 10,000 to 300,000 gallons. Five of these had been identified in 2001 as needing replacement. [46] Three have since been replaced and replacement of the two others is budgeted for Fiscal Years 2008 and 2010. [47]

NMWD-West Marin service area water treatment facilities are near the Coast Guard wells and have a reported capacity of 700 gpm. Treatment capacity has not been a problem in the past. A treatment capacity of 550 gpm is needed to serve existing demand; however, at build out, a capacity of 850 gpm would be needed. [48]

The water requires treatment to remove iron and manganese, which have in the past exceeded secondary (aesthetic, non-health related) standards. Water is moderately hard and no contaminants have been detected with the exception of occasional increases in salt concentrations. [49] The well supply is excellent in terms of providing ample flow with minimal drawdown. However, during times of low creek flow and/or high tides, seawater can be drawn into the wells and water supply. This happened during the 1976-77 drought, and in the winters of 1980-81 and 1986-87. Notices are sent out to the public when chlorides exceed 100 milligram per liter (mg/l); as a matter of perspective, the secondary public health standard is 250 mg/l. It can take several months before aquifer salinity returns to normal (about 24 mg/l) even with adequate freshwater percolation. [50] A salinity intrusion avoidance-pumping plan has been developed to lessen water quality impacts. Stream flow at the nearby Gallagher gage, tides levels, and creek water quality are monitored and the well pumps are turned off under certain scenarios. There are four scenarios that depend upon flow at Gallagher gage: 1) greater than 15 cfs, 2) between 10 and 15 cfs, 3) between 5 and 10 cfs, and 4) less than 5 cfs. No special measurements are needed under Scenario 1 while chloride concentrations are measured under Scenarios 2, 3 and 4 and the pumps are adjusted or turned off at certain times if chloride concentrations exceed 500 mg/L. [51]

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46 *North Marin Water District, West Marin Long Range Plan,* Brelje & Race, October 2001.

47 North Marin Water District, e-mail to Todd Engineers from Carmela Chandrasekera, October 4, 2006.

48 *North Marin Water District, West Marin Long Range Plan,* Brelje & Race, October 2001.

49 *Point Reyes Area Annual Water Quality Report,* North Marin Water District, April 2005.

50 *North Marin Water District – Emergency Operations Plan,* North Marin Water District, revised June 2004.

51 *North Marin Water District – Emergency Operations Plan,* North Marin Water District, revised June 2004.

NMWD constructed a new water supply well adjacent to Lagunitas Creek on the Gallagher Ranch to address potential salinity intrusion. This well is over one mile upstream from the Coast Guard well site and has a capacity of 170 gpm. The well is not yet connected to the West Marin distribution system and salinity levels continue to be monitored to determine if the high capital costs of a pipeline would be worthwhile. [52]

A July 2000 storage capacity study for NMWD's West Marin service area indicated that the 550 gpm pumping capacity is adequate to meet existing needs. [53] If standby redundancy were desired, an additional 250 gpm would be needed. At build out, an additional 300 gpm would be needed to meet demands adequately and, if standby redundancy were desired, an additional 550 gpm would be needed. Therefore, a total capacity of 850 gpm would be needed at build out with an additional 550 gpm for standby redundancy. [54]

Preliminary review of Marin County's database of private drinking and irrigation wells indicates that only 14 wells are in Point Reyes and four are in Olema. Three of the wells are used for irrigation while the remaining wells are domestic wells.

Other Potential Sources for the West Marin Service Area

Transfer / Exchange The State Water Resources Control Board (SWRCB) has ordered NMWD to use alternative sources of supply during dry periods because NMWD's water rights are junior to others from Lagunitas Creek. Order WR 95-17 requires NMWD to use an alternate source of water during low flow months, usually July through October, of dry years. NMWD can utilize an emergency water exchange program with MMWD that was established in the *1993 Intertie Agreement* to satisfy the requirements of the SWRCB. The Intertie Agreement lays out water delivery provisions such as delivery of NMWD or MMWD surplus water and Russian River water, water quality, future transfers and compatibility, payment, and operation and maintenance. [55] In very dry years under the agreement, stored water can be released by MMWD into Lagunitas Creek from Kent Lake in exchange for an equal amount of water delivered to MMWD during the winter from the NMWD-Novato water system. The intertie agreement includes this provision because, although NMWD has adequate water in the Novato service area to handle both systems' needs, it does not have a pipeline to transport the water to West Marin. Therefore, it utilizes MMWD's storage and transport facilities and receives the necessary water via Lagunitas Creek. NMWD then repays MMWD with Novato water derived from the Russian River. The existing intertie agreement between the two water districts runs through 2014 and provides for a maximum of 250 AF to be exchanged annually. Since this exchange is not a regular occurrence it has not been included in NMWD-West Marin's water supply (**Exhibit 4.9-4**).

NMWD has also entered into an agreement with the Giacomini Ranch in Point Reyes Station and acquired a portion of the property's appropriated water rights license (No. 4324B) to satisfy requirements of the SWRCB further. The recently acquired senior water right can be relied upon as the West Marin source of water during dry years. NMWD is currently in the process of perfecting

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52 *North Marin Water District, West Marin Long Range Plan,* Brelje & Race, October 2001.

53 *North Marin Water District, West Marin Long Range Plan,* Brelje & Race, October 2001.

54 *North Marin Water District, West Marin Long Range Plan,* Brelje & Race, October 2001.

55 *Intertie Agreement between North Marin Water District and Marin Municipal Water District*, March 11, 1993.

both the place and purpose of use for this water with the SWRCB. This source of water has not been included in the total water supply for NWMD-West Marin as it has not been perfected.

In addition, the NMWD West Marin service area and the neighboring Inverness Public Utility District (IPUD) have an emergency water agreement that allows for the transfer of water between the two district's water systems through an intertie in the event of an emergency. During a water supply availability or distribution catastrophe, up to 40 gpm of water can be sent from either the NMWD West Marin or the IPUD water systems to the other system on a temporary basis. A catastrophic event is considered an acute problem and may include pipeline or treatment plant failure, extraordinary fire, supply contamination, or interruption caused by natural and manmade disasters. This emergency agreement is not intended to provide either system with a sustainable supply of water during a significant drought or to provide for any portion of regular customer water demand. [56] The agreement expires June 30, 2014. [57] As this is for emergency use only, it has not been included in water supply total for NMWD-West Marin (**Exhibit 4.9-4**).

The water supplies from these interties are not included in **Exhibits 4.9-3** or **4.9-4** as they are considered emergency or tentative supplies.

NMWD Water Supply Limitations

NMWD - Novato Service Area The main constraints and limitations to the Novato service area supply include:

- Physical capacity of SCWA's transmission system;
- Water rights limitations of Novato Creek / Stafford Lake;
- Groundwater quality and quantity limitations;
- Drought impacts to SCWA supplies. An extended drought could result in a supply reduction of 30 percent or more; [58] and,
- Legal and environmental impacts to SCWA supplies. Anticipated future supply increases may be delayed due to approval of additional water rights and challenges to environmental documentation. [59] Three fish species (i.e., coho salmon, steelhead trout, and Chinook salmon) in the Russian River system are listed as threatened under the federal Endangered Species Act.

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[56] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[57] Emergency Inverness Intertie and Cooperative Services Agreement, July 5, 2005.

[58] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

[59] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

NMWD - West Marin Service Area The main constraints and limitations to the West Marin service area supply include:

- Water rights limitations of Lagunitas Creek;
- Groundwater quality and quantity limitations; and
- Aging storage tanks.

These constraints are further discussed in the *Water Supply and Demand Impacts and Mitigations Measures* section.

Marin Municipal Water District

Marin Municipal Water District (MMWD) provides water to the southern and central eastern corridor of Marin County with a service area of 147 square miles. MMWD has been in operation since 1912, and in 2005 served a population of approximately 190,800 people. [60] MMWD obtains its water from seven local reservoirs on four watersheds augmented with imported SCWA water and recycled water. MMWD reservoirs collect rainfall in five local reservoirs on the Mt. Tamalpais watershed, located in central Marin. Additional water comes from two West Marin reservoirs. Over 70 percent of the supply is local surface water while imported SCWA water accounts for ten to 30 percent and recycled water contributes two to three percent. [61] **Exhibit 4.9-5** summarizes these water supply sources. These and other potential water supply sources are discussed below.

MMWD Water Supply Sources

Surface Water MMWD uses local surface water for about 70 percent of its supply. Seven reservoirs collect water from approximately 21,250 acres of District-owned land. This includes 18,500 acres in the Mount Tamalpais watershed and 2,750 acres in West Marin. In addition, 35,000 acres of privately owned land drain into the two West Marin reservoirs. [62] Descriptions of the seven reservoirs are below. The first five reservoirs are on Mt. Tamalpais while the last two are in West Marin. Reservoir capacities correspond to the average annual runoff that flows into them from their respective watersheds. [63]

- **Lagunitas Lake** was built in 1873 and is the district's oldest reservoir. It has a capacity of 350 AF and is used only for emergency purposes.
- **Phoenix Lake** was built in 1905 and has a capacity of 411 AF. This is not an active supply and is used only for emergency purposes.

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60 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

61 *Public Review Draft San Rafael Area Service Review and Spheres of Influence*, Marin Local Agency Formation Commission, January 2006.

62 Marin Municipal Water District website, http://www.marinwater.org/, January 20, 2006.

63 Marin Municipal Water District website, http://www.marinwater.org/, January 20, 2006.

- **Alpine Lake** was constructed in 1918. The dam has been raised twice since then and has a capacity of 8,891 AF.
- **Bon Tempe Reservoir** was constructed in 1948 and has a capacity of 4,017 AF.
- **Kent Lake** was first constructed in 1953 and enlarged in 1983. It presently has a capacity of 32,895 AF.
- **Nicasio Reservoir** was constructed in 1960 and has a capacity of 22,430 AF.
- **Soulajule Reservoir** was finished in 1979 and has a capacity of 10,572 AF. [64]

Exhibit 4.9-5
MMWD Annual Water Supply Source Information

Water Supply Source	Acre Feet / Year	Entitlement	Right	Contract	Ever Used
Local Surface Water (Reservoirs)	20,500		X		Yes
Groundwater	0				No
Imported (Sonoma County Water Agency)	8,150	X			Yes
Wholesaler	0				No
Reclaimed	650				Yes - 2005 use
Transfer / Exchange	0				No
Desalination	0				Potential future use

Source: MMWD

On Mt. Tamalpais, several watersheds drain into Lagunitas Creek and its tributaries and flow into MMWD reservoirs. Phoenix Lake is supplied by Ross Creek, which drains into Corte Madera Creek and into San Pablo Bay. Average annual runoff into these five Mt. Tamalpais reservoirs is 46,564 AF. A runoff maximum of 213,000 AF occurred in the wet 1982-83 year and a runoff low of 3,000 AF occurred in the very dry year of 1976-77. [65] Two reservoirs, Nicasio and Soulajule, are in West Marin and account for more than 40 percent of MMWD's storage capacity and provide approximately 15 percent of MMWD's supply. [66] Nicasio Creek feeds into Nicasio Reservoir and eventually joins Lagunitas Creek, which empties into Tomales Bay. Soulajule Reservoir is on Arroyo Sausal, a tributary to Walker Creek, which drains to Tomales Bay.

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64 *Letter to Michele Rodriguez of Marin County Community Development Agency from Eric McGuire, Environmental Services Coordinator, Marin Municipal Water District regarding Marin Countywide Plan Update*, June 29, 2004.

65 Marin Municipal Water District website, http://www.marinwater.org/, January 20, 2006.

66 Marin Municipal Water District website, http://www.marinwater.org/, January 20, 2006.

The MMWD reservoirs have a total storage capacity of 79,566 AF with approximately 70,000 AF accessible for use. Average annual runoff into all the reservoirs is 61,415 AF.[67] This does not include losses due to evaporation and seepage.

Exhibit 4.9-6 presents current and projected water supplies for MMWD from 2005 to 2030 in five-year increments for a normal year. The operational yield of the reservoirs has been estimated at 20,500 AF and is assumed constant through 2030.[68] This operational yield number is based on the amount of water that can be supplied in all but very dry years with programmed reductions in water use in dry years such as reservoir water storage at the end of the drought of record would not be below minimum operating levels.[69] This operational yield is the water demand that can be met with a 25 percent overall reduction in use during a period of drought equal to that of the 1970's with 10,000 AF maintained in storage at the end of the drought. During the severe drought of the mid 1970s, MMWD had less than 45 percent of normal reservoir storage.[70]

Exhibit 4.9-6
MMWD Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	***2005***	***2010***	***2015***	***2020***	***2025***	***2030***
Local Surface Water (Reservoirs)	20,500	20,500	20,500	20,500	20,500	20,500
Groundwater	0	0	0	0	0	0
Imported (Sonoma County Water Agency)	8,150	7,590	7,025	6,460	5,900	5,366
Wholesaler	0	0	0	0	0	0
Reclaimed	650	710	775	840	900	934
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***29,300***	***28,800***	***28,300***	***27,800***	***27,300***	***26,800***

Source: MMWD

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67 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

68 Todd Engineers communication with Eric McGuire, Environmental Services Coordinator, Marin Municipal Water District, April 11, 2006.

69 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

70 *Impact of Severe Drought in Marin County, California*, California Department of Water Resources (DWR), Bulletin 206, November 1979.

MMWD reservoirs capture about 40 percent of the water that historically flowed to Tomales Bay. SWRCB Order WR95-17 sets flow limits on Kent Reservoir. Instream flows are subject to augmentation via reservoir releases depending on gauged discharges in the lower reach of the Lagunitas Creek. In defined low water years, these releases must be increased to meet minimum instream flows downstream.

MMWD holds five appropriative water rights permits, one license, and at least three pre-1914 rights. MMWD has indicated to the State that they have used as much water as they ever intend to from four of the five newer permits. The total volume allowed to be diverted to storage and use is about 86,000 AFY. Under the terms of these rights, MMWD releases an average of 13,000 AFY (on schedules developed by the State Division of Water Rights) to Lagunitas Creek and Arroyo Sausal to support the fishery of those creeks. [71] Lagunitas Creek contains endangered coho salmon, steelhead trout, and California freshwater shrimp.

MMWD water quality is good and has never exceeded a water quality regulatory limit or received a regulator violation. [72] Occasional algal blooms occur that cause only aesthetic taste and odor problems. Elevated mercury concentrations were discovered in Soulajule Reservoir fish in 2004 and health advisories limiting fish consumption were issued. Reservoir water does not have elevated mercury concentrations as mercury does not concentrate in water as it does in fish. MMWD has been asked by regulators to increase mercury monitoring and reduce bacteria washing into the reservoir from nearby ranches. [73]

Before distribution, water is treated in one of the three treatment plants maintained by the MMWD. Water treated at the Bon Tempe Water Treatment Plant is distributed primarily to southern Marin while water treated at the San Geronimo Water Treatment Plant is consumed in central Marin. Water from the Intertie at Ignacio is adjusted for corrosion control and monitored for quality before being accepted into the northern portion of the service area.

Imported Water Approximately ten to 30 percent of MMWD's supply is imported water from SCWA, which provides water principally from the Russian River. Maximum allocations to MMWD include 14,300 AFY with a maximum winter delivery rate of 23 mgd and a maximum summer delivery rate of 12.8 mgd. [74] The contract will expire in 2034. Currently, MMWD receives about 8,000 AF annually from SCWA. As discussed in previous sections, maximum allocations are based on the premise that SCWA's water right will be increased from 75,000 AFY to 101,000 AFY and that new facilities will be constructed. [75] However, SCWA's proposed expansion of its water supply has resulted in litigation, endangered species impacts, water rights proceedings, and the prospect of

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[71] Todd Engineers communication with Eric McGuire, Environmental Services Coordinator, Marin Municipal Water District, April 11, 2006.

[72] *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

[73] Marin County Officials Ordered to Lower Reservoir Mercury Levels, AP News, May 29, 2006.

[74] *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

[75] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

millions of dollars in infrastructure upgrades and environmental mitigations. [76] Consequently, SCWA has declared a temporary impairment of its transmission system.

SCWA deliveries are not only dependent upon these numerical limits but also pipeline capacity limits of SCWA and NMWD facilities. During high demand periods, this pipeline is not large enough to deliver the necessary amount for both agencies; it is projected that MMWD must reduce its supply from existing facilities in future years as seen in **Exhibit 4.9-6**.

In 1992, the voters approved Measure V, a bond measure that included funding for a dedicated MMWD pipeline to deliver the supply it had already secured from SCWA. The pipeline and its associated infrastructure were planned to be constructed in phases, as needed. MMWD empowered a citizen's advisory committee to study the balance between supply and demand and make a recommendation as to when the pipeline construction phase should be implemented. In 2000, the committee recommended not to proceed with construction of the pipeline, and to focus instead more attention on water conservation as a method to reduce the overdraft of available supply. MMWD is currently reviewing the need for and timing of additional facilities.

Recycled Water Thirteen wastewater agencies serve the MMWD service area and six of these have treatment facilities. Three of these utilize recycled water. [77] The largest supply of recycled water is from the Las Gallinas Valley Sanitary District (LGVSD). During winter months, effluent is discharged to San Pablo Bay while summer month effluent is reclaimed and used for pasture irrigation, filling of storage ponds, storage pond evaporation, and a cooperative effort between LGVSD and MMWD in treating wastewater through the tertiary treatment stage and sending it to customers for landscape irrigation. LGVSD supplies an average of 650 AFY to 323 service connections. Most (95 percent) of the water is used for irrigation. Other uses include toilet flushing, car washes, cooling towers, and laundries. **Exhibit 4.9-6** shows the projected increase in recycled water use between 2005 (650 AF) and 2030 (934 AF). [78] MMWD is currently in the planning phases of the Peacock Gap Recycled Water Extension that proposes to supply recycled water to the Peacock Gap Golf Course and several other users along the pipeline route. The project also includes upgrades to the LGVSD treatment plant. [79] Preliminary analysis is completed and planning, environmental documentation, and design are expected to occur between July 2007 and September 2008. Construction is anticipated in September 2008 and the project will be operating in 2010. [80]

The other two treatment facilities that supply recycled water are in southern Marin. The Sewerage Agency of Southern Marin (SASM) supplies recycled water to irrigate Mill Valley's Bayfront and Hauke parks adjacent to the SASM treatment plant. Other potential customers include nearby schools

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[76] Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies, December 2, 2005.

[77] *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

[78] *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

[79] *Wastewater and Recycled Water Functional Area Document, Bay Area Integrated Regional Water Management Plan*, Bay Area Clean Water Agencies, March 3, 2006.

[80] *Public Draft Bay Area Integrated Regional Water Management Plan* (IRWMP), RMC and Jones & Stokes, September 2006.

and a community center. Total current recycled wastewater capacity is 180,000 gpd.[81] The Richardson Bay Sanitary District also supplies recycled water.[82] An average of 30,000 gpd of secondarily treated wastewater is reclaimed from April to October and is used for irrigation, dust control, and cleaning. Other potential recycled water uses include provision of recycled water by the Sausalito-Marin City Sanitary District for irrigation at the National Park Service facilities at Fort Baker.

The market for recycled water use is limited in the MMWD service area, as there are few large users of non-potable water and the remaining water recycling options are less feasible. Increased water efficiency and conservation has decreased water use making recycling less feasible. In addition, saltwater intrudes into the sewer collection systems of most of the local sanitation agencies, degrading the source water and increasing costs of treatment. Water recycling also is not widely used in the southern portion of MMWD because the three treatment facilities serving that area do not have the required periods of zero discharge to the Bay required for other plants north of San Rafael.[83]

As indicated in **Exhibit 4.9-6**, MMWD can currently supply 29,300 AF annually from its reservoirs, SCWA imported water, and recycled water.[84]

Other Potential Water Sources for MMWD

Groundwater Studies of groundwater in the area have indicated that only very limited supplies are available. Groundwater is found mainly in Franciscan Formation fractures or in shallow alluvial valleys. A mid-1970s study found that wells in the headlands just north of Golden Gate bridge and on Mt. Tamalpais showed significant drawdown after several days of pumping at low rates. A 1978 study by William C. Ellis and Associates for MMWD of the largest alluvial area, Ross Valley, found that the groundwater yield was limited and already being used for landscape irrigation. A 2004 study by GSi/water for MMWD of the groundwater yield in upper Lagunitas Creek indicated only a slight chance that sufficient quantities in fractured rock could be developed.[85, 86]

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81 *Public Review Draft Southern Marin Service Review and Spheres of Influence Update*, Marin Local Agency Formation Commission, April 26, 2004.

82 *Public Review Draft Southern Marin Service Review and Spheres of Influence Update*, Marin Local Agency Formation Commission, April 26, 2004.

83 *Public Review Draft Southern Marin Service Review and Spheres of Influence Update*, Marin Local Agency Formation Commission, April 26, 2004.

84 Todd Engineers communication with Eric McGuire, Environmental Services Coordinator, Marin Municipal Water District, April 11, 2006.

85 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

86 *GSI/Water, Ground Water Supply Alternatives, Upper Lagunitas Creek Catchment, Results – Phase I*, prepared for MMWD, November 17, 2004.

MMWD overlies the Ross Valley, San Rafael Valley, and portions of the Novato Valley groundwater basins. The Ross Valley Groundwater Basin has a surface area of 2.87 square miles. [87] It is bounded on the east by San Francisco Bay and on the north by Corte Madera Creek. Annual precipitation ranges from 31 inches in the east to 41 inches in the west. Water-bearing sediments consist of unconsolidated Quaternary alluvium.

The San Rafael Valley Groundwater Basin lies north of the Ross Valley Groundwater Basin and is a small 1.4 square mile basin. It is bounded on the east by San Pablo Bay and on the north by San Rafael Creek. Its southernmost boundary is near San Quentin and it includes the City of San Rafael. Like the Ross Valley Groundwater Basin to the south, water bearing sediments consist of unconsolidated Quaternary alluvium. [88]

The southern portion of the Novato Valley Groundwater Basin lies within the MMWD service area. Groundwater is generally semiconfined and occurs in alluvial deposits consisting of clay, silt, and sand with discontinuous lenses of gravel. These deposits range in thickness between 60 feet near the City of Novato to more than 200 feet near the bay. Wells in sand and gravel layers 25 to 50 feet deep yield an average of 50 gpm. [89] Recharge is from rainfall infiltration and stream percolation. Groundwater near the bay is subject to intrusion of brackish water. [90]

A review of Marin County's database of private drinking and irrigation wells indicates that over 650 private wells are within the MMWD service area. A majority of these wells are used for irrigation and were drilled in the late 1970s, likely in response to the drought. More than half of these wells are in the three groundwater basins described above. Data collected and reviewed to date indicate that future groundwater potential is limited as private wells are already pumping available groundwater, existing wells have limited yield, and there is potential for seawater intrusion.

Desalinated Water In order to address an increasing supply deficit, provide reliability, and reduce the dependence on water from outside its service area, MMWD is investigating the use of desalinated water from the San Francisco Bay by using reverse osmosis technology. A pilot plant was constructed at the Marin Rod & Gun Club in San Rafael. Opened in June 2005, the plant enabled the district to conduct environmental studies, test equipment, refine operating costs, and demonstrate the technology to MMWD customers. The pilot plant was dismantled at the end of April 2006 and a Draft Environmental Impact Report should be completed in late 2006. [91] The proposed full-scale facility would be constructed in two phases. The first phase would consist of a ten mgd facility and, if needed,

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87 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

88 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

89 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

90 *Bulletin 118-Update*, California Department of Water Resources, basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

91 Bob Castle, MMWD, e-mail to Todd Engineers, September 8, 2006.

a second phase could add five mgd to the facility.[92] The next step is preparation of a Preliminary Design Report that provides the design basis for moving ahead with the full-scale project.[93] Preliminary plans indicate that plant would be located near the pilot plant and bay water would be piped west along East Francisco Boulevard from an intake located near the Richmond-San Rafael Bridge. Waste solids would be trucked to Redwood Landfill north of Novato. Waste brine would be blended with Central Marin Sanitation Agency's wastewater effluent and discharged back to the bay. Produced water would have a maximum total dissolved solids (TDS) concentration of 170 mg/l or parts per million (ppm), comparable to MMWD's current water.[94] If approved, it is uncertain at this time when desalinated water would be available to the public.

Transfers and Exchanges MMWD utilizes a water exchange program with NMWD established in the *1993 Intertie Agreement* as discussed in the NMWD section. Under the agreement, stored water can be released by MMWD into Lagunitas Creek from Kent Lake for dry period use in NMWD's West Marin service area. In exchange, an equal amount of SCWA water is delivered to MMWD from the NMWD-Novato water system. Although NMWD has adequate water in their Novato service area, its wells along Lagunitas Creek in West Marin are restricted from pumping during dry periods and an alternative source of water is required. The existing intertie agreement between the two water districts runs through 2014 and provides for a maximum exchange of 250 AFY. As this is for emergency only, it has not been included in the water supply total for MMWD (**Exhibit 4.9-6**).

One of the worst periods of drought for MMWD occurred in 1976-1977. As an emergency response, a pipeline was built across the Richmond-San Rafael Bridge to carry East Bay Municipal Utility District water to MMWD. However, after the drought, MMWD was unable to secure permanent supply from the East Bay or the Delta and Caltrans required MMWD to remove the pipeline.

MMWD Water Supply Limitations

The main constraints and limitations to the MMWD water supplies include:

- Water rights limitations of creeks that supply reservoirs;
- Environmental concerns downstream of the reservoirs;
- Groundwater quality and quantity limitations;
- Drought impacts to local supplies;
- Physical capacity of SCWA's transmission system; and

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92 Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies (BACWA), December 2, 2005.

93 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

94 Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies (BACWA), December 2, 2005.

- Legal and environmental impacts to SCWA supplies. Anticipated future supply increases may be delayed due to obstacles to approval of additional water rights and challenges to environmental documentation.[95] Three fish species (e.g., coho salmon, steelhead trout, and Chinook salmon) in the Russian River system are listed as threatened under the federal Endangered Species Act.

Bolinas Community Public Utility District

The Bolinas Community Public Utilities District (BCPUD) serves the community of Bolinas, which is located directly south of Point Reyes National Seashore along the West Marin coastline. BCPUD provides water collection, treatment, and distribution services to 591 accounts (or connections), of which two are agricultural, 29 are commercial and institutional, 519 are residential, 37 are multifamily, and four are inactive.[96] The full-time population within BCPUD's service area is approximately 1,500. However, recreational areas in and surrounding Bolinas are popular destinations on summer weekends and holidays, during which the local population increases substantially. BCPUD relies solely on surface water for its water supply to provide on average about 150 AFY to its customers. To address chronic water shortages during the dry season, BCPUD since 1971 has maintained a moratorium on new service connections to the municipal water supply and has relied on voluntary rationing by customers.

BCPUD Water Supply Sources

BCPUD obtains its water supply from one local stream, Arroyo Hondo, and from two surface reservoirs, Woodrat Reservoirs 1 and 2. The catchment areas for Arroyo Hondo and the two surface reservoirs are situated within the Point Reyes National Seashore. Consequently, the surface water sources are well protected against potentially contaminating activities. Water licenses have been secured separately for each source, and there are no sensitive species associated with the Arroyo Hondo stream.

Two dams on the Arroyo Hondo provide on average 135 AFY of water, while Woodrat Reservoirs 1 and 2 have a combined net safe yield of 40 AFY. All raw water is treated at BCPUD's advanced microfiltration water treatment plant, which was installed in 1996. Treated water is stored in two 430,000-gallon tanks prior to distribution.

In 2004, BCPUD produced 168 AF of water compared to 150 AF in 2000. Average annual water demand is between 140,000 and 150,000 gpd (157 to 168 AFY). Maximum water production capacity, when allowances are made for routine downtime, is 190,000 gpd. For six to seven months of the year, sufficient water supplies can be drawn from the stream. During the dry season, stream discharge decreases substantially, and the storage reservoirs must augment this source.[97]

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95 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

96 Todd Engineers communication with Jennifer Blackman, General Manager, Bolinas Community Public Utility District, October 26, 2006.

97 Todd Engineers communication with Jennifer Blackman, General Manager, Bolinas Community Public Utility District, October 26, 2006.

Exhibit 4.9-7 summarizes the current sources of water available to BCPUD. As shown in **Exhibit 4.9-7**, BCPUD does not import, exchange, or transfer water supplies and does not perform desalinization. BCPUD's reliance on surface water alone for its water supply makes it susceptible to periods of low stream discharge during the dry season.

Exhibit 4.9-7
BCPUD Annual Water Supply Source Information

Water Supply Source	*Acre Feet / Year*	*Entitlement*	*Right*	*Contract*	*Ever Used*
Local Surface Water					
Arroyo Hondo	135		X		Yes
Woodrat 1 and 2 Reservoirs	40		X		Yes
Groundwater	0				No
Imported	0				No
Wholesaler	0				No
Reclaimed	0				No
Transfer / Exchange	0				No
Desalination	0				No

Source: BCPUD

Exhibit 4.9-8 summarizes the current and projected water supply for BCPUD. BCPUD has recently been awarded a $500,000 grant from the Department of Parks and Recreation to construct a water reclamation plant. [98] Water from this plant will be used to irrigate adjacent soccer and baseball fields. BCPUD has until 2012 to utilize these grant funds and is currently in the process of identifying appropriate technologies to satisfy health-related contaminant guidelines. In addition, BCPUD plans to replace older pipes in its distribution system in order to limit the amount of water lost due to leakage, which is estimated at about ten percent. BCPUD is actively characterizing the distribution system to prioritize point repairs. Because neither the proposed water reclamation plant nor pipe repair plans have been finalized, projected water supply increases associated with these projects are not included in **Exhibit 4.9-8**.

[98] Todd Engineers communication with Jennifer Blackman, General Manager, Bolinas Community Public Utility District, April 25, 2006.

Exhibit 4.9-8
BCPUD Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	2005	2010	2015	2020	2025	2030
Local Surface Water	175	175	175	175	175	175
Groundwater	0	0	0	0	0	0
Imported	0	0	0	0	0	0
Wholesaler	0	0	0	0	0	0
Reclaimed	0	0	0	0	0	0
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***175***	***175***	***175***	***175***	***175***	***175***

Source: BCPUD

BCPUD monitors over 100 constituents of concern in its water supply, focusing primarily on volatile organic and inorganic chemicals. Chromium, arsenic and MTBE have never been detected in BCPUD drinking water. Other than color, which is not a health-related standard, BCPUD's treated drinking water in 2003 complied with State and federal drinking water standards. [99]

BCPUD is currently implementing the new federal Disinfectants / Disinfection Byproducts Rule concerning the primary (health-based) maximum contaminant levels (MCLs) of 80 micrograms per liter (ug/l) for total trihalomethanes and 60 ug/l for haloacetic acids. Based on the average of the four quarterly disinfection byproduct sampling results in 2003, BCPUD has exceeded the primary (health-based) MCLs for both contaminants. It is important to recognize that this violation is a result of new, stricter standards and not any deterioration in water quality. THM's are monitored for profiling purposes, and no remedial action is required if detected. Nevertheless, BCPUD is implementing a plan to bring its treated water into full compliance with these stringent standards. [100]

BCPUD Water Supply Limitations

Limitations on BCPUD water supply include the following:

- BCPUD is relatively isolated, with no existing interties to other water systems;
- Surface water diversions are limited by stream discharge and catchment drainage to reservoirs;
- Water treatment facility capacity is limited.

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[99] *Consumer Confidence Report*, Bolinas Community Public Utility District, 2005.

[100] *Consumer Confidence Report*, Bolinas Community Public Utility District, 2005.

- Water supply facilities are insufficient to meet maximum day water demands during the summer tourist season, requiring reliance on storage facilities.

Stinson Beach County Water District

Stinson Beach County Water District (SBCWD) serves the community of Stinson Beach, which is located on the West Marin coastline along the western slopes of Bolinas Ridge and margins of Bolinas Lagoon. The SBCWD service area, as defined by the Marin Local Agency Formation Commission (LAFCO), encompasses approximately 12 square miles, of which 9.5 square miles is watershed and 2.5 square miles is service area. While Stinson Beach has only 755 permanent residents, the community and surrounding parklands are popular recreational destinations that can attract tens of thousands of visitors on summer weekends. Fulfilling this seasonal water demand is a particular challenge for SBCWD.

SBCWD Water Supply Sources

Stinson Beach County Water District obtains its water supply from four local streams and three active wells. Surface water is diverted directly from the streams and conveyed to raw water storage tanks. Groundwater from two wells also is conveyed to the raw water storage tanks, while groundwater from one well is delivered directly into the distribution system. Raw water is treated at the Laurel Water Treatment Plant and then released to the distribution system or stored in potable water storage tanks prior to distribution.

Exhibit 4.9-9 provides information on specific SBCWD sources. SBCWD is isolated from other water agencies and facilities, and as shown in **Exhibit 4.9-9**, does not import, exchange, or transfer water supplies. SBCWD also is not a wholesaler of water. SBCWD provides state-of-the-art management of onsite wastewater treatment and disposal systems, but does not provide reclaimed water. In addition to the local surface water and groundwater supplies, seawater is available for emergency fire-fighting purposes by means of a drafting hydrant installed in Seadrift Lagoon. SBCWD is currently undertaking a comprehensive assessment of additional water supply options including new surface water diversions, new and rehabilitated wells, water recycling, and desalination. Emergency interties also are being considered with Bolinas Community Public Utilities Department, Marin Municipal Water District, and local private well owners.

Exhibit 4.9-9
SBCWD Annual Water Supply Source Information

Water Supply Source	Acre Feet / Year	Entitlement	Right	Contract	Ever Used
Local Surface Water (Total)	88				
McKinnan Gulch [a]	(26)		X		Yes
Stinson Gulch	39		X		Yes
Fitzhenry Creek	25		X		Yes
Black Rock Creek	18				Yes
Webb Creek	6				Yes
Groundwater (Total)	115				
Ranch Tank Well No. 1	17				Yes
Alder Grove Well No. 3	97				Yes
Highlands Well	1				Yes
Imported	0				No
Wholesaler	0				No
Reclaimed	0				No
Transfer / Exchange	0				No
Desalination (Ocean Water)	Emergency fire protection only				Yes

a. Not included in total since no facilities

Source: SBCWD

Exhibit 4.9-10 summarizes the sources in terms of quantity now and in the future. For the purposes of this report, future supplies include only those supplies that are known to be available in the future, for example, water supplies that are legally secured and physically available but not currently maximized or projects with documented financing, full-scale planning and design, environmental review and permitting, or construction. At this time, SBCWD is assessing water supply options, but does not have additional secured future water supplies.

Exhibit 4.9-10
SBCWD Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	***2005***	***2010***	***2015***	***2020***	***2025***	***2030***
Local Surface Water	88	88	88	88	88	88
Groundwater	115	115	115	115	115	115
Imported	0	0	0	0	0	0
Wholesaler	0	0	0	0	0	0
Reclaimed	0	0	0	0	0	0
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***203***	***203***	***203***	***203***	***203***	***203***

Source: SBCWD

It should be noted that the data in **Exhibit 4.9-10** provide a general, year-round estimate of available water supply. This is consistent with the discussion of other Marin County water agencies and provides an overview. However, **Exhibit 4.9-10** does not address the most pressing water supply challenge that SBCWD faces, namely the very high peak day demands that occur when Stinson Beach is host to tens of thousands of visitors on a summer holiday weekend. At this time, the SBCWD available supply capacity alone is insufficient to meet maximum day demands; the deficiency is offset by existing storage capacity. [101]

Surface Water Slightly less than half of SBCWD supply is surface water, which is derived from four watersheds draining the western slope of Bolinas Ridge: Stinson Gulch, Fitzhenry and Black Rock creeks (tributaries to Eskoot Creek), and Webb Creek.

SBCWD also has water rights to McKinnan Gulch, located immediately north of Stinson Gulch, but currently has no facilities there. SBCWD is evaluating the feasibility of resuming diversions from McKinnan Gulch, which historically was developed for residential supply. The District retains a right-of-way easement for a pipeline connecting McKinnan Gulch to facilities in Stinson Gulch, but no McKinnan Gulch diversion or conveyance facilities are currently in operation. The anticipated yield approximates ten to 20 percent of SBCWD annual supply or about 19 to 38 AFY, with an average yield of 26 AFY, as shown on **Exhibit 4.9-9**. This supply, however, is not yet planned or secured, so the 26-AFY yield is not included in the total water supply.

It is noteworthy that the watersheds are protected public lands administered by State and federal agencies. In addition, many of the local streams are habitat for critical species such as steelhead and Coho salmon and/or drain into Bolinas Lagoon, a coastal wetland with numerous beneficial uses

[101] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

including fishing, shellfish harvesting, marine habitat, wildlife habitat, fish migration, fish spawning, rare and endangered species, and non-contact and contact water recreation.

The SBCWD water right permit for Stinson Gulch identifies three points of diversion and allows diversion of 1.5 cfs. However, SBCWD diverts only 0.2 cfs because of treatment plant and conveyance facility limitations.[102] In 2004, Stinson Gulch sources provided 38.8 AF (12,655,206 gallons).[103] For this report, this amount represents the available supply.

Fitzhenry Creek is a tributary to Eskoot Creek and Bolinas Lagoon. The Fitzhenry Creek water right permit allows for diversions up to 1.5 cfs.[104] Four other riparian water users are known along Fitzhenry Creek. However, water supply is constrained by environmental considerations; SBCWD Fitzhenry Creek diversions are voluntarily reduced in the early summer months or even discontinued in late summer and early autumn to provide for fish flows and habitat maintenance. Additional water supply development would require continuous monitoring to protect fish habitat. For the purposes of **Exhibit 4.9-9**, the approximate 2004 yield from Fitzhenry Creek of 24.8 AF (8,099,300 gallons)[105] is deemed the reasonably available supply.

Black Rock Creek is a tributary to Eskoot Creek. The Black Rock Creek diversion has a peak capacity of about 0.4 cfs.[106] The 2004 production amounted to18.0 AF (5,885,544 gallons),[107] which is considered the available supply. Two other riparian right users are known along the creek.

SBCWD diverts water from Webb Creek, which discharges directly to the Pacific Ocean. The diversion is limited by a Coastal Development Permit to 75 gpm or 0.17 cfs.[108] This indicates a potential water supply of 123 AFY and SBCWD currently is assessing the feasibility of additional diversion from Webb Creek. Current diversions require a booster pump to a raw water storage tank prior to treatment and use, so SBCWD normally maximizes diversion of water from Webb Creek only for peaking or emergency purposes. In 2004, Webb Creek yielded 6.1 AF (1,998,156 gallons).[109]

Water quality is not a constraint on surface water supply. SBCWD surface water is derived from protected watersheds and following diversion, is treated by SBCWD at its Laurel Water Treatment Plant. The SBCWD *Annual Report on the Quality of Our Drinking Water for 2003* indicates that all drinking water sources meet all primary (health-based) MCLs. However, the secondary (aesthetic)

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[102] *Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, July 23, 2003.

[103] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[104] *Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, July 23, 2003.

[105] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[106] *Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, July 23, 2003.

[107] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[108] *Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, July 23, 2003.

[109] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

standard was exceeded once with one elevated iron detection in a sample from the Ranch Tank well; follow-up sampling and analysis indicated iron concentrations within the secondary MCL.

Groundwater As indicated in **Exhibit 4.9-9**, SBCWD has three active groundwater wells, which provide slightly more than half of the total supply. The Ranch Tank and Alder Grove No.3 wells are located in Stinson Gulch, while the Highlands Well is located on a broad ridge between Stinson Gulch and Fitzhenry Creek.

The Ranch Tank well is 193 feet deep and completed in bedrock, with an estimated maximum pumping rate of about 22 gpm and production capacity of 11.6 million gallons per year. [110] This is equivalent to a maximum yield of 17 AFY, assuming year-round 12-hours a day pumping. Production from the Ranch Tank well in 2004 was about 16 AF (5,087,999 gallons). [111]

Alder Grove No. 3 well was completed in 2005 to replace Alder Grove No. 2. [112] Alder Grove No. 2 was a major source of water supply, producing 80 AF in 2004, or 43.5 percent of total supply. Alder Grove No. 3 is adjacent to Alder Grove No. 2 and is 65 feet deep with screens opposite alluvial sand and gravel deposits. With a recommended pumping rate of 120 gpm, Alder Grove No. 3 is expected to be the primary groundwater source for SBCWD. Assuming year-round, 12-hours per day pumping at 120 gpm, annual production would be about 97 AFY. Alder Grove No. 2 is slated for abandonment.

The Highlands well has a completed depth of 253 feet in bedrock. It is the least reliable source of supply to SBCWD, with a summer dry season yield of only about 30 gpm, and is used as an emergency supply. In 2004, the well was used only in September, when it produced less than 250,000 gallons (i.e., less than one acre-foot). [113]

No groundwater basin, as designated by the Department of Water Resources (DWR), exists near Stinson Beach. All SBCWD wells are located in *groundwater source areas*, defined by DWR as areas (including bedrock areas) where groundwater may be found in economically retrievable quantities outside of normally-defined basins. [114]

SBCWD has prepared a *Hydrologic Survey* [115] that provides a framework for water management by SBCWD involving monitoring of groundwater levels and quality and surface water flows and quality. Stinson Beach relies on onsite wastewater treatment and disposal systems, and SBCWD actively manages these systems through its Onsite Wastewater Management Program (OWMP).

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[110] *Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, July 23, 2003.

[111] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[112] *Drilling, Construction, and Testing of Alder Grove No.3 Well*, Todd Engineers, Report to Stinson Beach County Water District, October 2003.

[113] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[114] *California's Groundwater Update 2003*, Bulletin 118, California Department of Water Resources, 2003.

[115] *Stinson Beach Hydrologic Survey*, Report to Stinson Beach County Water District, Todd Engineers and Questa Engineering, February 1998.

As described in the *Hydrologic Survey*, Stinson Beach is underlain primarily by the Franciscan bedrock complex, which includes highly fractured and deeply weathered sandstones and shale along the lower slopes of Bolinas Ridge. Alluvium occurs in alluvial fans at the mouth of Stinson Gulch and along Eskoot Creek, while dune sands underlie the coastal portions of the community.

Local groundwater is recharged by rainfall along Bolinas Ridge and locally by stream flow and onsite wastewater disposal systems. Groundwater level data indicate a relatively shallow water table that generally mimics topography and slopes from Bolinas Ridge toward the ocean. Groundwater discharge primarily occurs to the Bolinas Lagoon and the Pacific Ocean, but also to lower Eskoot Creek and production wells. Groundwater levels along the shore are close to mean sea level and show small seasonal fluctuations (typically less than five feet) as well as tidal influences. [116]

While groundwater storage has not been assessed, long-term changes in storage are unlikely, given the limited local use of groundwater. The *Hydrologic Survey* revealed that fourteen known wells were drilled in Stinson Beach, including six municipal wells drilled over time by SBCWD and eight wells installed for domestic and irrigation purposes. Local wells are clustered in Stinson Gulch and the eastern, relatively populated part of Stinson Beach.

Groundwater quality data are available from SBCWD monitoring wells and production wells. SBCWD maintains a network of monitoring wells as part of its OWMP; this OWMP monitoring focuses on potential impacts of wastewater disposal on local groundwater and surface water quality. Groundwater quality is not a significant constraint on groundwater supply. The quality of groundwater from SBCWD production wells is excellent, as exemplified by the Alder Grove Nos. 2 and 3 wells. Water quality samples taken and analyzed in 2003 [117] show that all analyzed constituents and physical properties meet primary and secondary drinking water standards. The high quality is indicated by the 2003 total dissolved solids (TDS) concentrations below 160 mg/L for these two wells, which is excellent for groundwater. The high quality reflects the small watershed and short groundwater pathways from recharge areas to the wells, and the relatively pristine nature of the watersheds. Although the wells are located near the coast, there is no evidence of seawater intrusion; current pumping (about 75 AFY or three percent of rainfall) is insufficient to cause seawater intrusion.

SBCWD Water Supply Limitations

Limitations on Stinson Beach water supply include the following:

- Stinson Beach CWD is relatively isolated, with no existing interties to other water systems;
- Surface water diversions are limited by water rights permits and environmental considerations; specific SBCWD diversions are voluntarily reduced to provide for fish flows and habitat maintenance;
- Groundwater pumping from the local Franciscan Formation bedrock is constrained by low well yields; and

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[116] *Stinson Beach Hydrologic Survey*, Report to Stinson Beach County Water District, Todd Engineers and Questa Engineering, February 1998.

[117] *Drilling, Construction, and Testing of Alder Grove No.3 Well*, Todd Engineers, Report to Stinson Beach County Water District, October 2003.

- Water supply facilities are insufficient to meet maximum day water demands during the summer tourist season, requiring reliance on storage facilities.

Inverness Public Utility District

The Inverness Public Utility District (IPUD) provides water service to the small community of Inverness in western Marin County. The full time population living within the district's boundaries was estimated at 702 people during the 2000 Census. The community of Inverness is a popular vacation area with numerous weekend and vacation homes. The main challenge facing IPUD is to provide for the peak demand imposed during prime vacation periods in the summer months.

To meet the water demands of the community it serves, IPUD gathers surface water from IPUD and State owned watershed lands and then transfers that water to one of two main micro-filtration plants where it is treated and piped to storage tanks around Inverness. Water is then released from these storage tanks as necessary to satisfy the community's demand. This surface water supply is supplemented with groundwater from three groundwater wells. IPUD acquired its current water system in 1980 and since that time has expanded the storage system. [118] Current storage capacity is 279,750 gallons (325,000 - 45,250 for fire resources). The highest observed single day demand was 170,000 gallons in 1996. The last expansion was in 1990 when a 20,000-gallon tank was replaced with a 70,000-gallon tank. [119]

IPUD Water Supply Sources

IPUD's water supply consists mainly of surface water obtained from three creeks that flow to the east from the top of the Inverness Ridge toward Tomales Bay in the Tomales Bay West Shore watershed. IPUD diverts and stores streamflow from these three creeks and has a storage and distribution capacity of roughly 95 to 105 AFY. Under normal rainfall conditions, these three streams provide approximately 125 AF of water annually. The water diverted from these creeks is augmented with a smaller amount of groundwater (<20,000 gpd or about 20 AFY) pumped from three groundwater wells. [120]

IPUD operates two water treatment plants: one main plant in First Valley and second smaller plant in Third Valley. The main plant operates continuously year-round, while the second, smaller plant is used on a seasonal, as-needed basis from late spring through fall. Both plants provide micro-filtration and chlorination. The main plant's capacity is rated nominally at 100 gpm while the smaller plant is rated nominally at 15 gpm. In combination, the plants provide a theoretical finished-water capacity of 115 gpm or approximately 165,000 gpd. IPUD estimates that realistically its sustainable finished-water capacity is 155,000 gpd. If operated at full sustainable daily capacity on a year round basis, these treatment plants would be able to produce approximately 174 AFY.

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[118] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[119] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[120] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

The community of Inverness is located within the boundaries of the NMWD's West Marin Service Area and IPUD maintains an emergency water agreement with NMWD as discussed in the NMWD section. [121] This agreement allows for the transfer of water between the two districts' water systems through an intertie in the event of catastrophic or unforeseen events. During a catastrophic event, up to 40 gpm (or approximately 57,500 gpd) of water can be released in either the NMWD or the IPUD water systems. A catastrophic event may include pipeline failure, treatment plant failure, supply contamination, severe fire, or interruption caused by natural and manmade disasters. This emergency agreement is not intended to provide IPUD with a sustainable supply of water during a significant drought or to provide for any portion of regular customer water demand. [122] As this is for emergency use only, it has not been included in water supply total for IPUD (**Exhibit 4.9-12**).

Exhibit 4.9-11 summarizes IPUD's water supply sources. Outside of IPUD's agreement for emergency water supply with NMWD, IPUD does not import, exchange, or transfer water supplies with any other water supplier. Similarly, IPUD does not utilize desalinated water or reclaimed water as a source of water supply. Records provided by Marin County Environmental Health Services indicate that there are a significant number of private domestic (103) and irrigation (eight) wells within the community of Inverness. The wells are not operated by IPUD and their yields are unknown. Most were drilled prior to 1980, but wells have been installed as recently as 2005. The private wells can be regarded as beneficially lessening the current demands placed on the IPUD system, and not as competing for water supply. Most of these wells were in operation prior to IPUD acquisition of the water system, so the current IPUD assessment of water supply likely incorporates the effect of private wells. Private wells also may represent a future potential demand for IPUD if wells fail and owners seek connection to IPUD.

Capital improvements planned by the IPUD include an expansion of water treatment capacity and replacement of aging finished-water storage tanks and increase in finished-water storage capacity to 345,000 gallons. [123] Total storage capacity at this time for finished water is 325,000 gallons, of which 45,250 gallons are set aside as fire reserve. IPUD does not anticipate the expansion of its water supply as there is little potential for growth in the district's service area.

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[121] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[122] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[123] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

Exhibit 4.9-11
IPUD Annual Water Supply Source Information

Water Supply Source	Acre Feet / Year	Entitlement	Right	Contract	Ever Used
Local Surface Water	125				Yes, up to 103 Acre-Feet
Groundwater	20				Yes
Imported	0				No
Wholesaler	0				No
Reclaimed	0				No
Transfer / Exchange	0				No
Desalination	0				No

Source: IPUD

Exhibit 4.9-12 summarizes the current and projected water supply available to IPUD through 2030. As no capital improvements are planned to expand the IPUD current water supply beyond current levels, water supply is anticipated to remain constant at approximately 145 AFY.

Exhibit 4.9-12
IPUD Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	2005	2010	2015	2020	2025	2030
Local Surface Water	125	125	125	125	125	125
Groundwater	20	20	20	20	20	20
Imported	0	0	0	0	0	0
Wholesaler	0	0	0	0	0	0
Reclaimed	0	0	0	0	0	0
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***145***	***145***	***145***	***145***	***145***	***145***

Source: IPUD

Surface Water The three streams from which IPUD diverts all of its surface water are known as First Valley Creek (a.k.a. Inverness Creek, Ness Creek, or Brook Ness Creek), Second Valley Creek (a.k.a. Alder Creek), and Third Valley Creek. [124] Since there are no large reservoirs within the district, the district is largely dependent on the daily flows in these three streams and the limited temporary storage capacity provided by its holding tanks. Two major unnamed tributaries to First Valley Creek are spring-fed and maintain year-round creek flow though no springs have been observed along the main channel. [125]

The watersheds for each of these three creeks are surrounded by the protected public lands of the Point Reyes National Seashore, consequently development within these watersheds has been minimal and the watersheds are relatively pristine. The presence of Coho salmon was not recorded in either First Valley Creek or Second Valley Creek during surveys conducted by the National Marine Fisheries Service [126] and the California Department of Fish and Game [127] and neither stream is tributary to a known spawning stream. However, the fact that these surveys did not record the presence of Coho does not preclude the possibility of Coho salmon within these streams.

IPUD diverts water from a pair of intakes in each steam. The so-called High Intakes are located higher in each streams' watershed, closer to the headwaters, and the Low Intakes are located nearer to each stream's outlet to Tomales Bay. Most of the water used by IPUD is diverted at the High Intakes. High Intake diversions are supplemented by up to 38,000 gpd of diversions at the Low Intakes. IPUD holds a pre-1914 prescriptive water right to divert water via the High Intakes. [128],[129] Water diverted through the Low Intakes is allowed through an agreement with the United States Department of Fish and Game. [130] Streamflow is gauged on a monthly basis at each of the High Intakes. Measurements taken since 2000 have recorded combined streamflows for all three streams ranging from as much as 2,000,000 gpd to as little as 69,000 gpd at the High Intakes.

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[124] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[125] *First Valley Creek, aka Inverness Creek (Tomales Bay tributary) stream survey, 10 June 1976*, California Department of Fish and Game, Unpublished CDFG file memo by G. Scoppettone et al., 1976.

[126] *Historical and Current Presence-Absence of Coho Salmon in the Central California Evolutionarily Significant Unit*, Adams et al., National Marine Fisheries Service, 1999.

[127] *Status Review of California Coho Salmon North of San Francisco*, California Department of Fish and Game, Report to the California Fish and Game Commission, 2002.

[128] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[129] Letter to John West, President, Inverness Public Utility District from State Water Resources Control Board, February 21, 1984.

[130] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

Groundwater IPUD operates three groundwater wells to supplement its supply of surface water. The annual yield of these three wells is estimated to be approximately 20 AF. [131] Individually each well's yield is estimated at slightly less than five gpm. These wells are not located over any groundwater basin delineated by the California Department of Water Resources (DWR). [132] Instead, these wells are likely screened in the granitic bedrock that underlies Inverness. The primary function of these wells is to supplement supply when surface water yields are low.

The largest water supply challenge facing IPUD is the potential for large spikes in water demand during peak holiday and vacation periods. While sufficient water supply is available on an annual basis to satisfy the community's annual water demand, IPUD's lack of long term storage and reliance on the availability of streamflow leave the district vulnerable to supply shortfalls during dry periods when streamflow is low. Additionally, a potential bottleneck in the IPUD water system, which may restrict the district's ability to meet peak single day customer water demand spikes, is the rate at which surface water can be processed by the district's water treatment facilities.

During late summer and fall, before the beginning of the rainy season, the amount of surface water available can be equal to or slightly less than the daily production demand. The largest measured single day demand for the IPUD water system was 170,000 gpd, while typical single day peak summer water demand ranges from 150,000 gpd to 155,000 gpd. As peak demands generally occur during the driest parts of the year, single day water demand can exceed available streamflow. During a drought period, High Intakes streamflow was measured at 69,000 gpd.

To aid in meeting peak levels of single day water demand, IPUD utilizes a network of several storage tanks. The total storage capacity of IPUD's network of two steel and eight redwood water storage tanks is 325,000 gallons. Additional capacity exists within the network, but it is unusable due to the poor condition of the storage tanks. Streamflow diverted at the High Intakes can also be supplemented with up to 58,000 gpd of water obtained from the district's three groundwater wells and the Low Intakes, but this supplemental supply is also likely to be reduced in the event of drought conditions. [133] The current capacity of the storage tanks is sufficient to provide water to satisfy the highest observed single day water demand in the absence of streamflow. However, should a multi-day period of peak demand coincide with a severe drought, this water storage capacity could be exhausted rapidly.

To deal with the possibility of a supply shortfall, IPUD has implemented a peak demand conservation program that has reduced the weekly variation in customer demand from 48 percent to 12 percent, helping to smooth out demand spikes. This program allows for the IPUD Board of Directors to declare a water shortage emergency under the conditions cited in Sections 350 through 850 of the California Water Code. This declaration places restrictions on the delivery of water and the consumption of water supplied for public use. There are four stages in the implementation of the declared water shortage emergency: (1) general conservation and prohibition of nonessential uses of

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[131] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[132] *Bulletin 118-Update*, California Department of Water Resources (DWR), basin descriptions from website: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/index.cfm), updated February 27, 2004.

[133] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

water; (2) prohibitions on outdoor uses of water and / or restrictions on when outdoor watering is permitted; (3) prohibition of outdoor watering at all times; and 4) water rationing. The IPUD Board of Directors has the option of applying penalties in the event of water usage that is in violation of the declared water shortage emergency.

To remove the potential bottleneck of insufficient treatment capacity, IPUD acquired a new treatment unit in 2002 that is currently being prepared for operation. The unit will add an additional 15 gpm or 21,500 gpd, of finished-water capacity.[134] This third micro-filtration unit will bring the total finished-water capacity of the IPUD's water treatment system to 176,500 gpd, which exceeds the district's largest observed single day water demand of 170,000 gpd. The unit is expected to be online by the end of 2006.[135] *IPUD Water Supply Limitations*

Limitations on IPUD water supply include:

- Available water supply is insufficient to meet maximum day water demands during summer holiday periods; and
- Water treatment facilities can also be insufficient to meet peak demands.

Muir Beach Community Service District

The Muir Beach Community Services District (MBCSD) serves the community of Muir Beach, located on the West Marin County coast. The community is situated along the lower portions of Redwood Creek (Frank Valley) and Green Gulch and along the ridge overlooking Big Lagoon and the Pacific Ocean. While Muir Beach is characterized by full-time residency with a permanent population of about 350 residents, the community and surrounding parklands are popular recreational destinations that can attract numerous visitors on summer weekends. The service area of MBCSD is focused on the Muir Beach community, but also extends up the coastline west of Shoreline Highway and inland along the south side of Shoreline Highway.

MBCSD Water Supply Sources

MBCSD relies solely on groundwater, as shown in **Exhibit 4.9-13.** MBCSD is isolated from other water agencies and facilities, and does not import, exchange, or transfer water supplies. MBCSD does not use surface water or reclaimed water sources and is not a wholesaler of water.[136] [137] [138]

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134 Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

135 Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

136 *Twenty Year Plan for Water System Capital Improvement, 1997-2016*, Report to Muir Beach Community Services District, Hyde & Associates and Associated Business & Community Consultants, Inc., 1996, and Todd Engineers communication with Leighton Hills, General Manager, Muir Beach Community Services District, April 20, 2006.

137 *Letter to Michele Rodriguez of Marin County Community Development Agency from Donovan Macfarlane*, General Manager, Muir Beach Community Services District, June 1, 2004.

Exhibit 4.9-13
MBCSD Annual Water Supply Source Information

Water Supply Source	Acre Feet / Year	Entitlement	Right	Contract	Ever Used
Local Surface Water	0				No
Groundwater	50		X		Yes
Imported	0				No
Wholesaler	0				No
Reclaimed	0				No
Transfer / Exchange	0				No
Desalination	0				No

Source: MBCSD

MBCSD groundwater supply is pumped from a well field located along Redwood Creek in the alluvial Frank Valley.[139] While bedrock wells are possible, the local bedrock consists of Franciscan Formation, which is characterized by low well yields. The MBCSD wells are classified as diversion points from a defined underground channel associated with underflow of Redwood Creek and thus are subject to a water rights permit from the California State Water Resources Control Board.[140] The MBCSD water rights permit involves a maximum diversion or pumpage of 45,000 gpd (0.07 cfs) with a mandatory reduction in daily pumping to no more than 35,000 gpd during severe drought conditions.[141] On an annualized basis, the maximum diversion of 45,000 gpd is equivalent to 50 AFY, as shown in **Exhibit 4.9-13**.

Exhibit 4.9-14 summarizes the sources in terms of quantity now and in the future. For the purposes of this report, future supplies include only those supplies that are *known* to be available in the future. For MBCSD, the existing and future supply is provided by the existing well field and permitted groundwater diversion of Redwood Creek underflow in Frank Valley.

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138 Description of Muir Beach Community Services District and Water System Layout, July 9, 2005, available online at http://www.muirbeachcsd.com and accessed April 4, 2006.

139 *Hydrogeology of the Muir Beach CSD Well Site, Frank Valley, Redwood Creek, California, Golden Gate National Recreation Area*, Martin, Larry, United States Department of the Interior National Park Service, Water Resources Division Technical Report NPS/NRWRD/NRTR-2000/265, April 2000. Available online at: http://www.nature.nps.gov/water/technicalReports/Pacific_West/GOGA_2000.pdf

140 *Twenty Year Plan for Water System Capital Improvement, 1997-2016*, report to Muir Beach Community Services District, Hyde & Associates and Associated Business & Community Consultants, Inc., 1996.

141 *Letter to Michele Rodriguez of Marin County Community Development Agency from Donovan Macfarlane*, General Manager of Muir Beach Community Services District, June 1, 2004.

Exhibit 4.9-14
MBCSD Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	***2005***	***2010***	***2015***	***2020***	***2025***	***2030***
Local Surface Water	0	0	0	0	0	0
Groundwater	29	50	50	50	50	50
Imported	0	0	0	0	0	0
Wholesaler	0	0	0	0	0	0
Reclaimed	0	0	0	0	0	0
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***29***	***50***	***50***	***50***	***50***	***50***

Source: MBCSD

Currently, MBCSD has two wells in service. The 2002 Well, with a production capacity of about 60 gpm, is the primary source, while the 1996 Well, with a pumping rate of 33 gpm [142] provides backup supply. These wells have the capability to pump the permitted amount; as perspective, pumping of the 2002 Well at 60 gpm on a year-round, 12-hour daily basis could yield about 48 AFY.

Both wells are screened opposite unconsolidated alluvium in the Frank Valley. While the alluvium of Frank Valley is not a designated groundwater basin of the Department of Water Resources (DWR), it does represent a groundwater source area, where groundwater is found in economically retrievable quantities. Underlain by Franciscan Formation bedrock, Frank Valley is partially filled with unconsolidated alluvium to a depth of at least 37 feet. [143] The alluvium consists of heterogeneous and laterally discontinuous lenses of silt, sand, and gravel.

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[142] *Hydrogeology of the Muir Beach CSD Well Site, Frank Valley, Redwood Creek, California, Golden Gate National Recreation Area*, Martin, Larry, United States Department of the Interior National Park Service, Water Resources Division Technical Report NPS/NRWRD/NRTR-2000/265, April 2000. Available online at: http://www.nature.nps.gov/water/technicalReports/Pacific_West/GOGA_2000.pdf

[143] *Hydrogeology of the Muir Beach CSD Well Site, Frank Valley, Redwood Creek, California, Golden Gate National Recreation Area*, Martin, Larry, United States Department of the Interior National Park Service, Water Resources Division Technical Report NPS/NRWRD/NRTR-2000/265, April 2000. Available online at: http://www.nature.nps.gov/water/technicalReports/Pacific_West/GOGA_2000.pdf

As documented in a recent hydrogeologic study, [144] surface water in Redwood Creek and groundwater in the Frank Valley alluvial aquifer are hydraulically connected. The major source of recharge to the MBCSD well field is Redwood Creek. While historic groundwater level records are not known to exist, no long-term water level trends are likely, given the limited thickness of the alluvial aquifer, direct connection to the creek, and minimal local groundwater use. The major constraint on use of groundwater in Frank Valley is the potential impact on Redwood Creek streamflow and associated habitat, including flows to maintain steelhead trout and coho salmon.

Water quality currently is not a constraint on water supply. Review of recent (2002) water quality analyses from the MBCSD 1996 and 2002 Wells demonstrates that the groundwater meets all primary, health-related drinking water standards. [145] Concerns have existed historically in the community over the susceptibility of the groundwater quality to potentially contaminating upstream activities, including wastewater disposal from Muir Woods National Monument through septic systems; this potential problem was averted by construction of a pipeline to convey park wastewater out of the watershed. [146]

MBCSD Water Supply Limitations

The water supply for Muir Beach CSD is subject to the following constraints:

- Groundwater pumping from the existing well field in the alluvial Frank Valley along Redwood Creek is limited by a water rights permit that defines both maximum diversions and diversions under severe drought conditions.

- In general, groundwater pumping from local alluvial aquifers and any potential surface water diversions are constrained by potential impacts to streams and associated habitat.

- Groundwater pumping from the local Franciscan Formation bedrock is constrained by low well yields.

Coast Springs Water System

The Coast Springs Water System (CSWS) is a privately owned water system that provides water from a collection of groundwater wells to the community of Dillon Beach in northwestern Marin County. The 2000 Census documented a full-time population for Dillon Beach of 319 people. The task of providing water service to this small community is shared between CSWS and another private water provider: the Estero Mutual Water System. Dillon Beach's small full-time population is augmented significantly during the summer months and peak vacation periods. Water demand is consequently

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[144] *Hydrogeology of the Muir Beach CSD Well Site, Frank Valley, Redwood Creek, California, Golden Gate National Recreation Area*, Martin, Larry, United States Department of the Interior National Park Service, Water Resources Division Technical Report NPS/NRWRD/NRTR-2000/265, April 2000. Available online at: http://www.nature.nps.gov/water/technicalReports/Pacific_West/GOGA_2000.pdf

[145] *Twenty Year Plan for Water System Capital Improvement, 1997-2016*, Report to Muir Beach Community Services District, Hyde & Associates and Associated Business & Community Consultants, Inc., 1996, and Todd Engineers communication with Leighton Hills, General Manager, Muir Beach Community Services District, April 20, 2006.

[146] Description of Muir Beach Community Services District and Water System Layout, July 9, 2005, available online at http://www.muirbeachcsd.com and accessed April 4, 2006.

higher during these times and the task of meeting that demand more difficult. However, little long term growth in water demand is anticipated for this community as there is little room for future development within the community's three square mile boundaries and a moratorium exists on new connections.

CSWS Water Supply Sources

The Coast Springs Water System, which is owned by the California Water Service Company, is based on seven groundwater wells in Dillon Beach. [147] The maximum combined yield of these seven wells averages roughly 50,000 gpd (56 AFY). During the drier summer months, the combined yield of these wells can drop dramatically to approximately 24,000 gpd.

A large portion of this water, up to 36,000 gpd, is pumped from a single large well located adjacent to the channel of Dillon Creek. [148] This well is actually a horizontal infiltration gallery dug into the ground approximately 30 yards from the centerline of Dillon Creek from which water is pumped. The water from this well is not strictly groundwater, but is rather groundwater under the influence of surface water, namely Dillon Creek. [149] In addition to this horizontal well, CSWS operates six vertical wells known as the "hillside wells." These wells are drilled to depths between approximately 200 to 250 feet into hillsides surrounding Dillon Beach and yield the remainder of the system's water supply. [150]

The CSWS facilities also include two hillside french drain horizontal water collectors that drain water into a small holding pond. The water produced by these two structures is not potable due to its poor quality. [151] The CSWS makes no use of this water. Once the holding pond has been filled, any overflow runs off into Dillon Creek.

CSWS also maintains two storage tanks with a combined capacity of 335,000 gallons. [152] These tanks are used to store water pumped by the CSWS's potable water wells for later distribution. This storage capacity allows CSWS to deal with peak single day water demand during vacation periods, which may exceed the well system's daily extraction capacity. Peak demand in Dillon Beach can rise sharply during peak vacation periods. Typical peak demand during these periods is approximately 40,000 gpd. This is very close to the CSWS average daily well yield of 50,000 gpd, and in excess of observed

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[147] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[148] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[149] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[150] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[151] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[152] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

lower yield levels during periods of drought. To supplement the yield of its wells during peak demand periods, the CSWS utilizes the 335,000 gallons of water held in its two water storage tanks. This storage capacity enables CSWS to meet peak demands, but a prolonged period of peak demand coinciding with a drought could exhaust this supply.

Exhibit 4.9-15 summarizes CSWS's water supply sources. CSWS does not import, exchange, or transfer water supplies with any other water supplier. Similarly, CSWS does not utilize surface water, desalinated water, or reclaimed water as a source of water supply. It should be noted that the data in **Exhibit 4.9-15** provide an estimate of the CSWS's year-round available water supply and does not address the water supply challenge posed by seasonal reductions in water supply during the dry season which coincide with the higher levels of demand during peak vacation periods.

Exhibit 4.9-15
CSWS Annual Water Supply Source Information

Water Supply Source	*Acre Feet / Year*	*Entitlement*	*Right*	*Contract*	*Ever Used*
Local Surface Water	0				No
Groundwater	56				Yes
Imported	0				No
Wholesaler	0				No
Reclaimed	0				No
Transfer / Exchange	0				No
Desalination	0				No

Source: CSWS

The Marin County Environmental Health Services documents 12 drinking water wells within the community of Dillon Beach. These wells include some of the wells operated by CSWS or EMWS and private wells. The private wells, while few in number, may lessen the demands placed on CSWS, represent potential future connections, or potentially compete for groundwater supplies.

Exhibit 4.9-16 details the current and projected water supply available to the CSWS through 2030. Future supply includes only those supplies that are *known* to be available in the future. The CSWS currently has a moratorium on new service hookups. At this point, the CSWS has no plans to expand its water supply or to lift the moratorium on new service connections. With this in mind, it is anticipated that there will be no foreseeable increase in CSWS water supply.

Exhibit 4.9-16
CSWS Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	***2005***	***2010***	***2015***	***2020***	***2025***	***2030***
Local Surface Water	0	0	0	0	0	0
Groundwater	56	56	56	56	56	56
Imported	0	0	0	0	0	0
Wholesaler	0	0	0	0	0	0
Reclaimed	0	0	0	0	0	0
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***56***	***56***	***56***	***56***	***56***	***56***

Source: CSWS

CSWS has been approached by a private developer who wishes to construct 14 new residences in the community of Dillon Beach. [153] This developer has proposed developing a small water desalinization plant to provide water to these residences. Once completed, this small desalinization plant would be deeded to CSWS's owner, the California Water Service Company. However, since formal plans or a defined proposal do not exist for this development project or the associated desalinization plant, it has not been included in **Exhibit 4.9-16**.

Surface Water The CSWS does not expressly utilize surface water as a source of water supply. However, the CSWS does pump water from an infiltration gallery located adjacent to Dillon Creek and the yield of this gallery is influenced by flows within Dillon Creek.

Groundwater Most of CSWS's water is pumped from the infiltration gallery located adjacent to Dillon Creek. This infiltration gallery is not strictly a groundwater well, and its yield is influenced by the level of flow in Dillon Creek. When creek flows are high during rainy periods, CSWS pumps up to 36,000 gpd of water from this gallery. During the dry season, when flows are reduced, the yield of the well drops. However, the yield remains relatively high as the base flow (the flow from groundwater) of Dillon Creek is sufficient to allow for significant levels of water extraction. [154]

[153] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[154] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

The "hillside" wells are relatively low-yield wells. Assuming relatively uniform well yield, each well likely produces between two and three gpm. These wells are currently operating at close to their anticipated capacities. [155]

Two groundwater basins surround the community of Dillon Beach: the Sands Point Area groundwater basin and the Wilson Grove Formation Highlands groundwater basin. Little information is available on these groundwater basins. CSWS personnel believe that the system's groundwater wells are not located in either of these basins, and are instead drilled in fractured bedrock.

CSWS has conducted a hydrologic study to investigate the feasibility of further developing its existing wells to increase their yield. [156] The study determined that further extraction of groundwater within the CSWS service boundaries would not be feasible. [157]

CSWS Water Supply Limitations

Limitations on CSWS water supply include the following:

- Water supply facilities may be insufficient to meet maximum day demands during extended droughts; and
- Groundwater yields are limited.

Estero Mutual Water System

The Estero Mutual Water System (EMWS) is a mutually homeowner-owned water company that serves the community of Dillon Beach in northwestern Marin County. The full time population of Dillon Beach is small, estimated to be 319 people during the 2000 Census, yet this population is supplemented significantly during the summer months and peak vacation periods. Water demand is consequently highest during these peak periods. The task of providing water service to this small community is shared between EMWS and the California Water Service Company via their Coast Springs Water System. Water provided to the community by EMWS is from nearby groundwater and surface water resources. Water demand growth in Dillon Beach is restricted, as there is little room for future development within the community's current boundaries.

EMWS Water Supply Sources

The Estero Mutual Water System extracts groundwater from two wells that together yield approximately three gpm. [158] These wells are screened in deep aquifers that respond slowly to both

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[155] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[156] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[157] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[158] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

recharge and drawdown, although seasonal variations do occur. Peak well yields often occur in the months of May and June. [159]

In addition to wells, EMWS also has riparian water rights to divert during the rainy season up to 400 AFY from an unnamed tributary of the Estero de San Antonio. [160] Diverted flows that are not immediately delivered to customers are stored in a small reservoir. The reservoir is then slowly drawn down over the course of the summer dry season. [161]

Exhibit 4.9-17 summarizes EMWS's water supply sources. EMWS does not import, exchange, or transfer water supplies with any other water provider. Similarly, the EMWS does not utilize desalinated water, or reclaimed water as a source of water supply.

Records compiled by Marin County Environmental Health Services indicate 12 domestic drinking water wells in Dillon Beach. As noted in the preceding CSWS discussion, these wells can reduce the demands placed on EMWS or, conversely, compete for available supply. In the future, private well failure may prompt a well owner to request connection to EMWS.

Currently, no capital improvements are planned for the expansion of EMWS water supplies in the next several years as the system is sufficient to meet current and projected future water demand. [162]

Exhibit 4.9-17
EMWS Annual Water Supply Source Information

Water Supply Source	*Acre Feet / Year*	*Entitlement*	*Right*	*Contract*	*Ever Used*
Local Surface Water	17		X		Yes
Groundwater	4				Yes
Imported	0				No
Wholesaler	0				No
Reclaimed	0				No
Transfer / Exchange	0				No
Desalination	0				No

Source: EMWS

[159] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

[160] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

[161] The reservoir was drained dry during the 1980s drought.

[162] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

Exhibit 4.9-18 details the current and projected water supply available to the EMWS through 2030. As indicated in the exhibit, the supply remains the same through 2030.

Exhibit 4.9-18
EMWS Current and Projected Water Supplies (AFY) – Normal Year

Water Supply Source	2005	2010	2015	2020	2025	2030
Local Surface Water	17	17	17	17	17	17
Groundwater	4	4	4	4	4	4
Imported	0	0	0	0	0	0
Wholesaler	0	0	0	0	0	0
Reclaimed	0	0	0	0	0	0
Transfer / Exchange	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	***21***	***21***	***21***	***21***	***21***	***21***

Source: EMWS

Surface Water EMWS has riparian water rights to divert up to 400 AFY from an unnamed tributary to the Estero de San Antonio. Surface water is diverted only during the winter rainy season and most of the water is diverted to storage in a small 52 AF EMWS reservoir.[163] Diversion rates are consistently an order of magnitude less than the permitted 400 AFY, due to limited water availability. The reservoir fills at the end of the rainy season in approximately 80 percent of the years. Diversion rates are less in dry years due to lack of streamflow. Annual diversions are generally less than 17 AFY, roughly equal to annual demand minus demand met by groundwater. In the driest 20 percent of the years, when diversions are less than annual demand, reservoir storage is used to meet demands. In wet years, when streamflow is high, diversion volumes may be greater than 17 AFY to replace lost reservoir storage, but remain an order of magnitude less than 400 AFY.

The water stored in the reservoir is utilized to meet customer water demands during the summer dry season. The safe yield of this reservoir is unknown; however, the largest recently recorded volume of water drawn from this reservoir during a single dry season was estimated to be approximately 15 AF.[164] The annual supply from the reservoir is estimated to be 17 AFY. As the supply of water from the reservoir is independent from daily surface water flows and EMWS's groundwater well supply, this supply provides EMWS a means of satisfying higher seasonal demand during the summer and dealing with single day, peak demand spikes during prime vacation periods.

[163] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

[164] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

Groundwater EMWS's two groundwater wells yield between 1.4 and 1.6 gpm each. [165] These yields can be reduced somewhat during the summer dry season; however EMWS staff believe that the depth at which the wells are screened (i.e., ~250 feet below ground surface) mutes the impact of seasonal variations in precipitation on well yield. Water levels in the wells are slow to respond to precipitation, with peak levels occurring as late in the year as early June. The annual yield of these wells has been estimated at four AFY.

Two groundwater basins surround the community of Dillon Beach: the Sands Point Area groundwater basin, and the Wilson Grove Formation Highlands groundwater basin. Little information is available on these basins. The low yields of the EMWS wells (i.e., similar to the yields of Coast Springs Water System wells) suggest that the system's groundwater wells are not located in either of these basins, and are instead drilled into the fractured bedrock located beneath the community itself.

The Coast Springs Water System recently conducted a hydrologic study to investigate the feasibility of further developing its existing groundwater wells to increase yields. [166] This study determined that further extraction of groundwater from these wells was economically infeasible. Since EMWS wells likely draw water from the same groundwater source area as the Coast Springs Water System's wells, and have similar yields, it is very likely that further development of EMWS wells is similarly constrained.

EMWS Water Supply Limitations

Limitations to the EMWS water supply include:

- Surface water supply availability is limited, especially during droughts;
- Groundwater yield is limited; and
- There is a shortage of storage. A severe multiyear drought could result in the draining of the reservoir.

Unincorporated County Use

A large portion of Marin County land is rural and lies beyond existing municipal and community water service boundaries. Available water supply sources for rural residents typically involve individual wells or springs; surface water systems, which require storage, treatment, and management are typically infeasible. Although limited areas of higher yielding sediments may be found in alluvial valleys (e.g., Nicasio and Lagunitas valleys), much of the rural land is underlain by low-permeability, fractured bedrock (sheared Franciscan Complex) and thin alluvial deposits with insufficient saturated thickness to yield meaningful quantities of water. Potential water supplies associated with local streams are constrained by environmental considerations. Thus, a major limitation to future growth in these areas is the availability of water supplies.

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[165] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

[166] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

Unincorporated County Water Supply Sources

Private Wells Currently, 482 private wells are identified in the Marin County Environmental Health Services database as having been drilled outside of the existing municipal and community water service areas. The location of these private wells serves as an indicator of the current state of groundwater development in unserved areas of the county. **Exhibit 4.9-19** shows the distribution of these wells by location and classified use. As shown in the exhibit, 87 percent of these wells are classified for domestic use, while only ten percent are classified for irrigation (three percent have no classification). The wells are concentrated in the communities of Nicasio, Tomales, and Marshall.

Exhibit 4.9-19
Distribution of Private Wells Outside of Existing Municipal and CWS Service Areas

Town	*Domestic*	*Irrigation*	*Both*	*Unknown*	*Total*
Fallon	6	0	0	1	7
Inverness Park	21	0	0	6	27
Marshall	66	7	4	8	85
Nicasio	225	10	5	12	252
Tamalpais Valley	1	2	0	0	3
Tomales	79	17	2	2	100
Valley Ford	8	0	0	0	8
Total	***406***	***36***	***11***	***29***	***482***

Source: Marin County Well Database, 2006.

A focused review of well construction and pumping rates for approximately 60 wells in Tomales revealed that wells are screened in fractured sandstone of the Franciscan Complex with yields ranging between two and 30 gpm. Specific capacity (defined as the ratio of well yield over water level drawdown) averages between 0.1 and 0.3 gallons per minute per foot of drawdown (gpm/ft of dd), which is below the threshold for consideration of a municipal public water supply well. The existing water supply conditions in Tomales indicate that fractured bedrock can provide limited water supply to rural communities. While the concentration of private wells in these rural communities indicates the presence of groundwater supply, a large numbers of wells also may indicate that well yields are limited, that wells are prone to failure and replacement, and that numerous wells are being drilled to provide sustainable supply.

Small Public Water Systems In some communities, residents have come together to create Small Public Water Systems to satisfy their primarily domestic water needs. A *Small Public Water System* is defined as:

> *A system, regardless of type of ownership, for the provision of piped water to the public for domestic use, if such a system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days of the year. (CCR Title 22, Section 64411 (C))*

Exhibit 4.9-20 shows the 26 Small Public Water Systems currently established in Marin County and the sources used to supply water for each system. The systems are further divided into three categories, which are defined below:

- **Community Water System (CWS)** is a public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents.

- **Non-Transient, Non-Community Water System (NTNC)** is a public water system that is not a community system and that regularly serves at least the same 25 persons over six months of the year.

- **Transient, Non-Community Water System (TNC)** is a public water system that is not a community water system and does not regularly serve at least 25 of the same persons over six months per year.

As documented in **Exhibit 4.9-20**, the water supply sources are primarily groundwater, with over 30 active wells, three collection galleries, several springs, and two surface water sources.

Agricultural Water Supply Marin County agriculture is primarily related to ranching for livestock production and dairies, including irrigated pasture, but also includes production of irrigated specialty crops. Water supply sources for ranch and dairy operations include wells and springs for domestic use and stock watering supply, and surface water stock ponds. Lack of reliable water supply is a factor limiting intensive (irrigated) agriculture in Marin County.[167] Available water supply sources for irrigation include rainfall-derived surface water and groundwater from various watersheds, and recycled water.

Irrigated agriculture in Marin occurs in three planning areas: West Marin, Novato, and Las Gallinas Valley. In coastal West Marin, agriculture is focused in the Tomales Bay (Lagunitas Creek), Pine Gulch (Paradise Valley), and Green Gulch watersheds. The major area of irrigation (over 300 acres of pasture) occurs at the southern end of Tomales Bay. This irrigation is based on surface water rights to Lagunitas Creek, which has a large watershed (103 square miles) and abundant rainfall (average 39.8 inches/year). Small truck (vegetable) farms are also located along Pine Gulch and Green Gulch with supply from the streams, springs or wells. For example, **Exhibit 4.9-20** indicates that Green Gulch Farm obtains its supply from spring and well sources.

In central West Marin, agriculture occurs primarily in the San Antonio Creek, Walker Creek, and Nicasio Creek watersheds with water supply variously from streams, springs, and wells. San Antonio Creek watershed (with an average rainfall of 22 inches/year and an area of 32 square miles in Marin County and additional area in Sonoma County) supports an aggregated irrigated area of about 150 acres. Walker Creek watershed (75 square miles and an average rainfall of 27 inches) includes over 400 acres of irrigated agriculture, mostly near Chileno Valley and Hicks Valley. Nicasio Creek watershed above the reservoir contains about 45 acres of irrigated agriculture.

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[167] *Facts about Agriculture in Marin County*, University of California Cooperative Extension, January 2006.

Exhibit 4.9-20
Marin County Small Public Water Systems

Name	System Type [a]	Source [b]	Source Description
Audubon Bolinas Lagoon Reserve [c]	TNC	GW	2 wells with 2 distribution systems
Blue Mountain Center	CWS	GW	1 well, 2 irrigation wells, multiple irrigation springs
Bothin Youth Center	TNC	UISW	1 collection gallery
Camp Tamarancho	TNC	GW	1 well
Estero Mutual	CWS	SW/GW	1 surface water, 2 active wells
Full Circle Programs	NTNC	GW	1 well (corrosion control)
Green Gulch Farm	CWS	UISW/GW	1 spring, 1 well, 2 distribution systems, and 2 plants
Hog Island Oyster Company	TNC	GW	1 well
Walker Creek Ranch	NTNC	GW	3 active wells, 1 inactive well, 1 plant
Marin French Cheese	TNC	SW	1 surface water
Marshall Boat Works	TNC	GW	1 active well, 2 inactive wells
Muir Beach Community	CWS	GW	2 wells, 1 standby well, 1 active well, 1 plant
Nicasio School	NTNC	SW	1 collection gallery
Nicasio Valley Ranch	CWS	GW	1 active well, 1 standby well
Nick's Cove	TNC	GW	1 well, functionally inactive
Piazzi Building	TNC	GW	1 well
Rancho Nicasio	TNC	GW	1 well
Shoreline High School Bus Garage	NTNC	GW	1 well
Skywalker Ranch [d]	NTNC	GW	8 active wells, 1 inactive well, 1 irrigation well
Tomales Café	TNC	GW	1 well
Tomales Elementary and Middle School	NTNC	GW	1 well
Tomales High School	NTNC	GW	3 active wells, 1 irrigation well; 1 plant
Tony's Seafood	TNC	UISW	1 collection gallery
William Tell House	TNC	GW	1 well

a TNC: Transient, Non-Community Water System
NTNC: Non-Transient Non-Community Water System
CWS: Community Water System

b GW: Groundwater
SW: Surface water
UISW: Groundwater under the direct influence of surface water

c One PWS system (Volunteer Canyon and Audubon Canyon Ranch Distribution Systems)

d Three PWS systems and three plants (Farm House, Skywalker Ranch, and Big Rock Ranch Distribution Systems)

Source: Marin County Community Development Agency, 2006.

Irrigation in the eastern Marin planning areas (Novato and Las Gallinas Valley) involves use of recycled water to irrigate about 1,000 acres of pastureland. The Las Gallinas Valley Sanitary District provides recycled water for irrigation of 200 acres of pastureland north of San Rafael, while Novato Sanitation District irrigates 820 acres of pasture. The primary purpose of this irrigation is to provide disposal for recycled water, but also support pasture for livestock. The Novato Sanitary District expects to increase the supply of recycled water for pasture irrigation from 2,400 to 2,600 AFY by 2030. [168]

Supply Overview: Linkages and Issues

Available water supply is dependent upon many variables including natural resources (e.g., surface water supply, groundwater resources, water quality), legal and environmental constraints, and management of water resources. While Marin County has relatively abundant rainfall and runoff, local water agencies already have developed surface water supplies through eight major reservoirs and numerous small diversions. Lack of perfected water rights and environmental considerations—primarily the need to preserve instream habitats—are constraints to local surface water development and to securing imported water supply. Marin County does not have substantial groundwater resources to fall back on for supply or storage. The major agencies faced with growing water demand (NMWD and MMWD) are focused on the alternative supplies of recycled water and desalinated water. These two agencies are linked, both in terms of facilities and the shared intent to increase supplies, and are likely to cooperate increasingly.

In contrast, the West Marin agencies (with the exception of IPUD) are isolated from NMWD, MMWD and each other. These agencies generally have sufficient water on an average annual basis and do not anticipate projects to increase overall supply. However, most are strained to meet peak demands in summer and seek additional supply or storage to meet peak demands. Constraints on a more reliable, seasonal supply include uncertain water rights, limited groundwater resources, and environmental issues. Communities in the unserved areas (e.g., Tomales, Nicasio, and Marshall) are dependent on private wells.

In general, Marin County water agencies have effectively used conservation (water demand management) to reduce and delay water supply augmentation projects.

WATER DEMAND

NMWD Existing and Future Demand

NMWD - Novato Service Area Demand

The population of NMWD-Novato service area is expected to increase from 56,816 people in 2005 to 68,669 people by 2030, an increase of 21 percent or 0.83 percent per year. [169] Demand in the NMWD-Novato service is projected to increase from 12,125 AF (10.8 mgd) in 2005 to 15,444 AF (13.8 mgd) in 2030, an increase of 27 percent. Most water use is residential. Total use varies

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[168] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

[169] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

seasonally with summer use generally greater than 50 percent of average use.[170] **Exhibit 4.9-21** presents the breakdown of number of connections and demand by water use sector. Future water demands were based on a study of historical North Marin water use conducted for NMWD and summarized in their Draft 2005 UWMP.[171] The study used the following average future water demands:

- New single family homes = 424 gallons per day per account (gpd/a)
- Existing single family homes = 417 gpd/a [150 gcd with 87 gcd inside use]
- Commercial = 1,185.5 gpd/a
- Apartments (five or more units) = 1,039.1 gpd/a [90 gcd with 78 gcd inside use]
- Townhomes and condos (triplexes and fourplexes) = 183.6 gpd/a [83 gcd with 78 gcd inside use]
- Irrigation accounts = 3,244.2 gdp/a
- Government = 2,584.1 gpd/a
- Pools = 1,784.1 gpd/a
- Mobile Homes = 1,083 gpd/a
- Miscellaneous (includes livestock watering, hydrants, temporary service) = 1,841.8 gpd/a
- Unaccounted for water/losses (difference between water purchased and water billed) = seven percent

Data from the 2000 census indicate that the average household size in NMWD-Novato service area is 2.45 people[172] while ABAG projections for the county estimate 2.4 persons per household. These values may be representative of other Marin County communities.

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[170] North Marin Water District website, www.nmwd.com, accessed March 17, 2006.

[171] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

[172] *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

Exhibit 4.9-21
NMWD Novato Service Area Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	14,503	6,772	15,558	7,230	16,487	7,615	17,089	7,841	17,443	7,954	17,744	8,055
Multi-Family	3,560	1,314	3,795	1,376	4,001	1,425	4,135	1,448	4,215	1,454	4,281	1,460
Commercial	1,037	1,371	1,177	1,530	1,385	1,776	1,505	1,914	1,591	2,012	1,642	2,069
Governmental	98	284	112	323	131	380	143	413	151	436	156	451
Irrigation	341	1,238	387	1,405	455	1,654	494	1,797	523	1,899	540	1,961
Miscellaneous (Pools, etc.)	189	298	198	315	209	338	216	352	220	361	223	367
Losses	0	848	0	915	0	988	0	1,034	0	1,061	0	1,081
Total	***19,728***	***12,125***	***21,227***	***13,094***	***22,668***	***14,176***	***23,582***	***14,799***	***24,143***	***15,177***	***24,586***	***15,444***

Notes: Numbers may vary slightly due to rounding. Losses are unaccounted for (unmetered) water and include water used for fire protection and training, system and street flushing, sewer cleaning, construction, unauthorized connections, system leaks, meter inaccuracies, raw water losses, and recycled water losses. Multifamily use includes apartments, town homes, condominiums and mobile homes.

Source: NMWD, 2006.

NMWD - West Marin Service Area Demand

Exhibit 4.9-22 presents estimates of NMWD-West Marin service area demand in terms of number of accounts and deliveries. In 2005, the NMWD-West Marin service area had 776 connections.[173] It is assumed that all are single family residential because NMWD does not have a breakdown of connection types at this time.[174] Demand in 2005 was 316 AFY while 2030 demand has been estimated at 485 AFY.[175] It is assumed that connections and demand increase linearly between 2005 and 2030. Losses are estimated to be about ten percent of demand.

MMWD Existing and Future Demand

MMWD's service area population is projected to increase from 190,800 in 2005 to 212,256 in 2030, an increase of 11.2 percent or 0.45 percent per year.[176] In 2004, MMWD had 60,729 service connections.[177] Exhibit 4.9-23 presents estimates of MMWD current and projected water demand in terms of number of accounts and deliveries. Most of the water supply is used by single family homes. Total deliveries were obtained using estimated billed water deliveries from MMWD's 2005 UWMP[178] and adding an assumed ten percent for losses. Use for each water sector was then increased proportionally to the increased demand for each five year period. Landscape irrigation demand is expected to remain flat due to conservation.[179] The 2030 estimated billed demand was obtained directly from MMWD[180] because the 2005 UWMP projections extended only to 2025.

Although annual water production dropped precipitously during the 1976-77 drought when rationing was imposed, it rebounded and then gradually rose to exceed pre-drought levels by 1986. Consumption dropped with the onset of the drought of the late 1980s and early 1990s but slowly rebounded during the 1990s. Water conservation has played a key role in keeping demand below the levels experienced in the early 1970s and the mid 1980s in spite of a continued slow growth in the number of service connections and population.

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173 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

174 Todd Engineers communication with Carmela Chandrasekera, North Marin Water District, April 20, 2006.

175 Todd Engineers communication with Carmela Chandrasekera, North Marin Water District, April 20, 2006 and Brelje & Race, *North Marin Water District, West Marin Long Range Plan*, October 2001.

176 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

177 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

178 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

179 Todd Engineers communication with Eric McGuire, Marin Municipal Water District, April 11, 2006.

180 Todd Engineers communication with Eric McGuire, Marin Municipal Water District, April 11, 2006.

Exhibit 4.9-22
NMWD West Marin Service Area Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	776	316	835	350	895	385	955	420	1,015	455	1,075	485
Multi-Family	*	*	*	*	*	*	*	*	*	*	*	*
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional / Governmental	0	0	0	0	0	0	0	0	0	0	0	0
Landscape Irrigation	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0	0	0	0	0	0
Losses	0	31	0	35	0	38	0	42	0	45	0	48
Total	***776***	***347***	***835***	***385***	***895***	***423***	***955***	***462***	***1,015***	***500***	***1,075***	***533***

* Multifamily connections and deliveries included in single family. Multifamily use includes apartments, town homes, condominiums and mobile homes.

Notes: Numbers may vary slightly due to rounding. Losses are unaccounted for (unmetered) water and include water used for fire protection and training, system and street flushing, sewer cleaning, construction, unauthorized connections, system leaks, meter inaccuracies, raw water losses, and recycled water losses. Buildout lossess may be conservative as Long Range Plan (Oct 2001) indicated that 10% losses were already incorporated into buildout use of 485 AFY.

Source: NMWD

New residential units were estimated to use an average of 0.25 AFY. Estimated commercial use ranges from 0.01 AFY per 1,000 square feet of office space to 1.26 AFY per 1,000 square feet for fast food restaurants with a conservative average of 0.5 AFY for all commercial uses.[181] Current residential demand is 0.32 AFY while overall demand per connection for MMWD, including losses, is 0.51 AFY as indicated in **Exhibit 4.9-23** for 2005 (actually 2004 values).

Bolinas Community PUD Existing and Future Demand

BCPUD serves 591 connections, of which two are agricultural, 29 are commercial and institutional, 519 are single family, 37 are multifamily, and four are inactive. The four inactive connections have been placed in the single family connection category.[182] **Exhibit 4.9-24** summarizes the current and future water demand in Bolinas and the distribution of active connections. It should be noted that the annual values in **Exhibit 4.9-24** do not communicate the challenges associated with surges in peak day water demand during summer weekends and holidays, which typically draw down storage in Woodrat Reservoirs 1 and 2. As discussed in the *Community Facilities Background Report* included in **Appendix 1** of the Draft EIR n engineering study conducted for the BCPUD recommended the construction of an additional 80 and 120 AF of storage capacity to accommodate present and future water demands.

Approximately 68 to 75 open parcels could be developed in Bolinas under the 1985 Bolinas Community Plan, which would increase future water demand. However, the moratorium on new connections is expected to be maintained in the foreseeable future, development will be constrained, and future water demand will be maintained near current levels. Consequently, water demand associated with these undeveloped parcels has not been included in **Exhibit 4.9-24**.

Stinson Beach County Water District Existing and Future Demand

SBCWD presently serves water to 718 metered connections including residential, commercial and federal and State park recreational uses. Stinson Beach is zoned primarily as single-family residential land use, and 95 percent of the water connections are for single family homes. Over 40 percent of these are vacation homes that are not occupied full-time. However, summertime and weekend visitors can easily exceed 10,000 persons on any given weekend from July through October.

Exhibit 4.9-25 summarizes current and future water demand in Stinson Beach, including the number of accounts (connections) and delivered water for single family, multifamily, commercial, and other water use sectors. Unaccounted water also is shown as losses. This includes pipeline leaks, meter errors, unauthorized uses, and non-metered authorized uses such as fire fighting and hydrant flushing.

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[181] Letter to Michele Rodriguez of Marin County Community Development Agency from Eric McGuire, Marin Municipal Water District, regarding Marin Countywide Plan Buildout Numbers, June 29, 2005.

[182] Todd Engineers communication with Jennifer Blackman, General Manager, Bolinas Community Public Utility District, October 26, 2006.

Exhibit 4.9-23
MMWD Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	51,435	17,500	55,600	19,100	57,490	19,800	58,520	20,170	59,375	20,500	60,230	20,800
Multi-Family	4,422	4,300	4,780	4,670	4,940	4,820	5,030	4,920	5,105	5,000	5,180	5,100
Business	3,326	3,400	3,600	3,680	3,720	3,810	3,790	3,890	3,850	3,950	3,905	4,000
Institutional / Governmental	237	2,100	250	2,300	260	2,370	265	2,420	270	2,450	275	2,500
Landscape Irrigation	1,309	2,700	1,410	2,750	1,460	2,800	1,485	2,800	1,510	2,800	1,530	2,800
Losses	0	3,000	0	3,250	0	3,360	0	3,420	0	3,470	0	3,520
Total	***60,729***	***33,000***	***65,640***	***35,750***	***67,870***	***36,960***	***69,090***	***37,620***	***70,110***	***38,170***	***71,120***	***38,720***

Notes: 2004 values from 2005 UWMP. Used 2005 UWMP billed use and added 10 percent for losses for total water demand. Then increased each sector demand proportionally to total demand increase for each 5-year period with the exception of landscape irrigation demand which is expected to remain flat due to conservation (MMWD, April 11, 2006). 2030 total billed demand of 35,200 from MMWD, April 11, 2006.

Source: MMWD

Exhibit 4.9-24
BCPUD Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	523	150	523	150	523	150	523	150	523	150	523	150
Multi-Family	37	**	37	**	37	**	37	**	37	**	37	**
Commercial	29	**	29	**	29	**	29	**	29	**	29	**
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional / Governmental	*	**	*	**	*	**	*	**	*	**	*	**
Landscape Irrigation	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural	2	**	2	**	2	**	2	**	2	**	2	**
Losses	0	15	0	15	0	15	0	15	0	15	0	15
Total	***591***	***165***	***591***	***165***	***591***	***165***	***591***	***165***	***591***	***165***	***591***	***165***

Notes: Single family connections include 4 currently inactive connections. 2005 demand estimated. Losses assumed to be 10 percent of demand

* Institutional connections included in commercial
** Multifamily, commercial, institutional, and agricultural deliveries included in single family

Source: BCPUD

Exhibit 4.9-25
SBCWD Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	683	133	688	133	693	134	698	135	703	136	708	137
Multi-Family	7	3	7	3	7	3	7	3	7	3	7	3
Commercial	20	10	20	11	20	11	20	11	20	11	20	11
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional / Governmental	0	0	0	0	0	0	0	0	0	0	0	0
Landscape Irrigation	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0	0	0	0	0	0
Other	8	6	8	6	8	6	8	6	8	6	8	6
Losses	0	23	0	23	0	23	0	23	0	23	0	24
Total	***718***	***175***	***723***	***176***	***728***	***177***	***733***	***178***	***738***	***179***	***743***	***181***

Notes: *2004 data. Single family accounts in future increased by one acct/yr, based on 1995-2004 increase in no. of connections, UWMP p.27 Table 5. Single family deliveries based on average delivery per connection, 2001 through 2004. Multifamily accounts, commercial, and other assume no change, as per 1995-2004 connections UWMP Table 5. Multifamily demand is average of 2001 through 2004, 0.87 million gallons, UWMP Table 6, p. 28. Commercial demand is average of 2001 through 2004, 3.44 million gallons, UWMP Table 6. p 28. Other demand is average of 2001 through 2004, 2.10 million gallons, UWMP Table 6, p. 28. Other demand is average of 2001 through 2004, 2.10 million gallons, UWMP Table 6, p. 28.

Source: SBCWD

The 2005 values are represented by 2004 data. For the future single family water accounts and water deliveries, the accounts were increased by one account per year, based on the increase in number of accounts that actually occurred from 1995 through 2004. [183] The delivery to each single family water account was based on the average demand of 2001 through 2004, 0.063 million gallons per single family account. For the future multifamily, commercial, and other accounts, no increase was assumed, because no net change occurred between 1995 through 2004. Multifamily, commercial and other demand values were based on the average demand of 2001 through 2004, or 0.87, 3.44, and 2.10 million gallons, respectively. [184] Unaccounted water (or losses) was assumed to be 15 percent of production based on recent experience. [185]

As shown in **Exhibit 4.9-25**, only minor growth in water demand is anticipated in the foreseeable future. Growth potential is limited in Stinson Beach by the publicly owned lands surrounding the community, and SBCWD estimates that there may be potential for 60 additional lots to be developed before the community is built out. Additional increase in water demand (not accounted for here) may occur as vacation homes are used increasingly as year-round primary residences.

Inverness Public Utility District Existing and Future Demand

The IPUD serves approximately 540 residential unit equivalents (RUEs) through 501 individual service connections within its approximately 2.5 square mile area. RUE is a measurement that allows commercial and residential users to be grouped together. Of the 501 customer connections, 483 are residential services and 18 are non-residential. The 18 non-residential connections consist of a three-room school, a church, a library/museum, a yacht club, seven inns or motels, four retail establishments, two restaurants, and one utility (SBC). [186]

Residential occupancy levels within the district fluctuate on a seasonal basis. The full time population of the district, estimated at 702 people in 2000, occupies only 367 of the 574 housing units. The remaining 207 housing units in the Inverness area are vacation and weekend houses occupied only during the summer and other peak holiday periods. During these peak vacation times, the community's population can swell by several thousand people. This population fluctuation can create large short-term spikes in water demand and significant seasonal fluctuations in water demand.

IPUD produces on average approximately 95 AFY of water. It is estimated that local users consume approximately 85 AF of water annually. An additional ten AFY are reserved for system overhead, non-metered uses, and system losses due to pipeline leakage. The district expects to meet future water demands with its current facilities, except for eventual replacement of water storage tanks as

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[183] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[184] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[185] *2005 Draft Urban Water Management Plan*, Stetson Engineers, Stinson Beach County Water District, 2006.

[186] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

previously discussed. [187] The community of Inverness is nearly built-out, as only a few potentially developable lots remain. Future growth expansion of the district is constrained by the surrounding Point Reyes National Seashore and Tomales Bay State Park. IPUD estimates that ultimate development will be 600 RUE's, slightly more than a ten percent increase over the current service demand. IPUD does not expect the total number of connections ever to exceed 525 (an increase of 24 over the current 501). [188]

Exhibit 4.9-26 provides a breakdown of the current and projected water demand predicted by the IPUD through 2030. These projections indicate only slight increases in annual water demand through 2030. Muir Beach Community Services District Existing and Future Demand

Exhibit 4.9-27 summarizes current and future water demand in Muir Beach, including the number of accounts (i.e., connections) and delivered water for single family and multifamily residential uses, commercial/institutional uses, and unaccounted water/losses, including leaks and water for system maintenance. MBCSD provides water service to 152 connections: 147 residential connections (all but one are single-family residences) and five additional connections for a commercial establishment (the Pelican Inn), Muir Beach community center, Muir Beach Park (currently inactive), and the State Park, including an equestrian facility. Of the non-residential connections, only the commercial connection for the Pelican Inn represents a significant demand. [189]

MBCSD reports that water production ranges from 20,000 gpd in the winter rainy season to as much as 45,000 gpd during summer weekends. [190] Average annual production is close to 30,000 gpd, or about 34 AFY. **Exhibit 4.9-27** shows that water production in 2005 amounted to 29 AFY (25,500 gpd) with deliveries of 26 AFY and unaccounted-for water/losses (leaks, meter errors, etc.) amounting to three AFY. Residential water demand is about 18 AFY (16,100 gpd). With a population of about 350 people, per capita demand is less than 50 gpcd. The low water demand per person reflects the cool fog-belt climate and environmental awareness of the local residents. Little or no growth in water demand is anticipated in the foreseeable future. The community is surrounded by national and State parklands and agricultural preserves, so there is no potential for community expansion. Only about ten undeveloped residential parcels in the service area may be developed in the future, depending on provision of feasible onsite wastewater treatment and disposal. However, it is anticipated that several of these parcels may be maintained in an undeveloped state for view protection. At this time, three will-serve letters are outstanding. No additional commercial facilities are planned. [191]

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[187] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[188] Todd Engineers communication with Karen Gann, General Manager, Inverness Public Utility District, March 30, 2006 and April 13, 2006.

[189] *Twenty Year Plan for Water System Capital Improvement, 1997-2016*, Report to Muir Beach Community Services District, Hyde & Associates and Associated Business & Community Consultants, Inc., 1996, and Todd Engineers communication with Leighton Hills, General Manager, Muir Beach Community Services District, April 20, 2006.

[190] *Twenty Year Plan for Water System Capital Improvement, 1997-2016*, Report to Muir Beach Community Services District, Hyde & Associates and Associated Business & Community Consultants, Inc., 1996, and Todd Engineers communication with Leighton Hills, General Manager, Muir Beach Community Services District, April 20, 2006.

[191] *Letter to Michele Rodriguez of Marin County Community Development Agency from Donovan Macfarlane*, General Manager, Muir Beach Community Services District, June 1, 2004.

Exhibit 4.9-26
IPUD Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	483	82	488	83	492	84	497	84	502	85	506	86
Multi-Family	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	15	2	15	3	15	3	16	3	16	3	16	3
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional / Governmental	3	1	3	1	3	1	3	1	3	1	3	1
Landscape Irrigation	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0	0	0	0	0	0
Losses	0	10	0	10	0	10	0	11	0	11	0	11
Total	***501***	***95***	***506***	***96***	***511***	***97***	***516***	***98***	***521***	***99***	***525***	***100***

Source: IPUD

Exhibit 4.9-27
MBCSD Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	146	18	146	18	146	18	146	18	146	18	146	18
Multi-Family	1	*	1	*	1	*	1	*	1	*	1	*
Commercial	5	8	5	8	5	8	5	8	5	8	5	8
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional / Governmental	0	0	0	0	0	0	0	0	0	0	0	0
Landscape Irrigation	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0	0	0	0	0	0
Losses	0	3	0	3	0	3	0	3	0	3	0	3
Total	***152***	***29***	***152***	***29***	***152***	***29***	***152***	***29***	***152***	***29***	***152***	***29***

Notes: * Multifamily demand is included in Single Family. Institutional / Governmental is combined with Commercial.

Source: MBCSD

Coast Springs Water System Existing and Future Demand

The Coast Springs Water System provides water to customers through 252 individual service connections. The bulk of these connections (249) are to single family residential customers. CSWS also serves one commercial customer, a mobile home park, and a post office in Dillon Beach. [192] A significant number of these homes are used as summer or vacation homes.

CSWS assessed per unit household water demand in 1985, at which time it was found to average 96 gpd. In the same year, peak unit household demand was measured to be 170 gpd. The current moratorium allows only for the addition of three connections to currently undeveloped lots.

Exhibit 4.9-28 provides a breakdown of the current and projected water demand predicted by CSWS through 2030. It should be noted that the data in **Exhibit 4.9-28** provide only an estimate of year-round water demand and are not illustrative of the challenge posed to CSWS by seasonal fluctuations in water demand.

Estero Mutual Water System Existing and Future Demand

EMWS serves approximately 132 individual connections, all single family residential. [193] In addition to these connections, there are about 40 additional undeveloped lots in Dillon Beach. [194] These connections are to lots zoned as single family residential within the present boundaries of Dillon Beach. Once these lots are developed, the total number of connections serviced by the EMWS will be 172. Further expansion of demand is not anticipated with the exception of the subdivision of four to six existing undeveloped lots. [195] Thus, by 2030, there could be a maximum of 178 connections.

Per connection demand in Dillon Beach has not been estimated by the EMWS. The Coast Springs Water System estimated that per household water demand averaged 96 gpd in Dillon Beach in 1985 with peak demand estimated at 170 gpd. These values were applied to EMWS connections.

Exhibit 4.9-29 provides a breakdown of the current and projected water demand predicted for EMWS through 2030. It is anticipated that water demand will grow by approximately 35 percent as the number of new water service connections could likely grow from 132 to 178.

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[192] Todd Engineers communication with Bill Koehller, District Manager, California Water Service Company, March 31, 2006.

[193] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

[194] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

[195] Todd Engineers communication with John Brizzina, General Manager, Estero Mutual Water Company, March 29, 2006.

Exhibit 4.9-28
CSWS Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	249	27	250	27	250	27	251	27	251	27	252	27
Multi-Family	1	*	1	*	1	*	1	*	1	*	1	*
Commercial	1	*	1	*	1	*	1	*	1	*	1	*
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional / Governmental	1	*	1	*	1	*	1	*	1	*	1	*
Landscape Irrigation	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0	0	0	0	0	0
Losses	0	2	0	2	0	2	0	2	0	2	0	2
Total	***252***	***29***	***253***	***29***	***253***	***29***	***254***	***29***	***254***	***29***	***255***	***29***

* Multifamily, commercial and institutional/governmental deliveries included in single family

Source: CSWS

Exhibit 4.9-29
EMWS Current and Projected Water Demand

Water Use Sector	2005		2010		2015		2020		2025		2030	
	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)	No. of Accounts	Deliveries (AFY)
Single Family	132	14	141	15	150	16	160	17	169	18	178	19
Multi-Family	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Institutional / Governmental	0	0	0	0	0	0	0	0	0	0	0	0
Landscape Irrigation	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0	0	0	0	0	0
Losses	0	1	0	1	0	2	0	2	0	2	0	2
Total	***132***	***15***	***141***	***16***	***150***	***18***	***160***	***19***	***169***	***20***	***178***	***21***

Source: EMWS

Unincorporated County Existing and Future Demand

Unincorporated Domestic Existing and Future Demand

Assuming that each of the 482 private wells listed in **Exhibit 4.9-19** can be associated with a single-family residential water use of 0.4 AFY, then private domestic water demand for unincorporated rural communities can be estimated to be 193 AFY (482 x 0.4 AFY). The water use rate of 0.4 AFY was selected as a representative single-family home water use and was derived from known single-family use rates. NMWD in their 2005 UWMP indicted that existing single family home use averaged 0.47 AFY while MMWD's current residential water demand is 0.32 AFY per residence. [196,197] This value is a general estimate based on reported wells; additional wells may exist without having been reported. On the other hand, some reported wells likely are inactive, replaced with newer wells. The private wells likely serve not only residences, but also some small commercial businesses. As a check, water demand for farmsteads was estimated. Marin County is reported to have 276 agricultural operations, most of which are small, family-owned operations. Assuming that each operation has one farm residence with a residential water use of 0.4 AF per year, then farmstead water demand can be estimated to be about 110 AFY. This estimate is a subset of the private domestic demand and suggests that about half (110/193) the rural water demand is for scattered farmsteads and about half is for non-farm rural residents and businesses.

Demand from small public water systems can be estimated roughly from the number and types of systems (see **Exhibit 4.9-20** and the previous *Unincorporated County Use section*). For this study, CWS, NTNC, and TNC water demand was estimated to be about 44 AFY.

Total domestic water demand, including private wells and small public water systems, can thus be estimated to be about 237 AFY.

Unincorporated Commercial and Industrial Existing and Future Demand

Water demand for commercial and industrial uses is relatively limited and likely included in private domestic well use (see preceding section) or small water systems use (see **Exhibit 4.9-20**).

Unincorporated Agricultural Existing and Future Demand

Approximately 169,000 acres (or half) of Marin County are in farms and ranches. Marin County agriculture is primarily related to ranching for livestock production and dairies in rural, inland Marin. Water demand for farmsteads is addressed in the section on rural domestic use.

Water demand for livestock needs is relatively small and widely distributed. Livestock in Marin County include cattle, sheep, poultry, and horses. [198] Water needs for livestock are estimated as follows. For the approximately 35,461 head of cattle, it is estimated their water use is 41 AFY assuming a 15 gal/day use by each cow. For the approximately 7,749 sheep, it is estimated their water

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196 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

197 *UWMP 2005*, Marin Municipal Water District, adopted January 18, 2006.

198 *Marin County Livestock & Agricultural Crop Report 2004*, Marin Department of Agriculture Weights and Measures, 2005.

use is nine AFY assuming a two gpd use by each sheep. For the approximately 85,000 poultry, it is estimated their water use is 95 AFY assuming a 0.05 gpd use. For the approximately 3,381 horses, it is estimated their water use is four AFY assuming a ten gpd use by each horse.

It should be noted that 1,883 horses in Marin County are reported as kept near private residences in backyards, while 1,066 horses are kept in boarding stables or live on farms. Some horses may reside within the service areas of the major water agencies.

Exhibit 4.9-30 summarizes the evaluation of irrigation water demand. Irrigated areas are grouped into three regions: coastal West Marin, central West Marin, and East Marin to allow use of water application rates appropriate to the coastal and inland climates, and to distinguish the recycled water-based pasture irrigation in the eastern Novato and Las Gallinas Valley planning areas. The regions are further subdivided into watersheds. **Exhibit 4.9-30** also lists the irrigated crop types and respective areas in Marin, which were most recently mapped by the DWR in 1999. As shown, pasture is a major irrigated crop. Marin County also has irrigated grains and specialty crops, including truck crops, vineyards, and olive orchards.

Exhibit 4.9-30 also shows water application rates [199] that were applied to the mapped crop type areas to estimate water demand. As indicated, estimated water application rates are between about one and three AF/acre. The water demand for each crop type in each watershed is the product of the irrigated acreage and the water application rate. It should be noted that the exhibit provides a general estimate of water demand; actual water demand will vary with specific cropping patterns and irrigation practices.

In coastal West Marin, the largest estimated water demand (668 AFY) is for 318 acres of pasture at the southern end of Tomales Bay. Truck crops planted along Pine Gulch and Green Gulch involve an estimated water demand of about 141 AFY, for a total demand of 809 AFY. In central West Marin, various crops are grown, with an estimated total water demand of 1,203 AFY. Irrigation in the eastern Marin planning areas (Novato and Las Gallinas Valley) involves use of recycled water to irrigate 1,020 acres of pastureland.

Overall, the evaluation of water demand for irrigated agriculture indicates a total demand of 4,970 AFY, with 2,958 AFY or 60 percent involving pasture irrigation with recycled water. The remaining 2,012 AFY of irrigation demand is distributed through West Marin for a variety of crops.

For the purposes of this report, irrigation water demand is expected to be relatively stable into the future. While prediction of cropping patterns into the future is difficult (as it is based on changing market forces and the individual decisions of numerous farmers), a number of factors support the stability of irrigated water demand. First, a large portion of the irrigation water demand (60 percent) involves pastureland that is irrigated with recycled water and thus serves as an important means of recycled water disposal. In fact, the volume of recycled water used for irrigation is anticipated to increase by about ten percent by 2030.

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[199] *Vegetative Water Use in California, 1974*, Bulletin 113-3, California Department of Water Resources, April 1975.

Exhibit 4.9-30
Estimated Irrigation Water Demand, AFY

Region / Watershed	*Crop Type*	*Area (acres)*	*Applied Water (AFY / acre)*	*Water Demand (AFY)*	*Notes*
Coastal West Marin					
Tomales Bay	Pasture	318	2.1	668	1
Pine Gulch	Misc. Truck	70	1.7	119	3
Green Gulch	Misc. Truck	13	1.7	22	3
Coastal West Marin Total	**-**	***401***	**-**	***809***	**-**
Central West Marin					
San Antonio Creek	Pasture	95	2.9	276	2
	Vineyards	54	1.5	81	4
San Antonio Creek Subtotal	-	*149*	-	*357*	-
Walker Creek	Pasture	70	2.9	203	2
	Vineyards	78	1.5	117	4
	Olives	107	2.8	300	5
	Grain	157	1.0	157	6
Walker Creek Subtotal	-	*412*	-	*777*	-
Nicasio Creek	Misc. Truck	14	1.7	24	3
	Vineyards	31	1.5	47	4
Nicasio Creek Subtotal	-	*45*	-	*70*	-
Central West Marin Total	**-**	***606***	**-**	***1,203***	**-**
East Marin (Novato and Las Gallinas Valley)					
Novato Creek	Pasture	820	2.9	2,378	2,7
Miller Creek	Pasture	200	2.9	580	2,7
East Marin Total	**-**	***1,020***	**-**	***2,958***	**-**
Total		***2,027***	**-**	***4,970***	**-**

Notes:
1 Pasture applied water rate for North Coast Coastal Valleys
2 Pasture applied water rate from Novato Sanitary District
3 Truck applied water rate for San Francisco Bay North
4 Vineyard applied water rate for San Francisco Bay North
5 Olive applied water rate for Sacramento Valley North
6 Grain rate for North Coast Interior Valley and Central Coast
7 Areas from Novato Sanitary District and Las Gallinas Valley Sanitary District

Source: Marin Department of Agriculture, 2006 and California Department of Water Resources, 1975.

In addition, substantial agricultural land in Marin County is protected in agricultural preserves. While concern has historically been expressed over loss of agricultural land, comparison of crop reports [200] indicate that Marin County currently has a solid agricultural land base and has had relatively stable production in recent years. In addition, substantial agricultural land in Marin County is protected in agricultural preserves and by conservation easements and restricted development regulations. [201] A survey in July 2002 revealed that although about half of the farmers and ranchers relied on off-farm agricultural work to supplement their income, 80 percent considered their operation as profitable to marginally profitable, and 82 percent of farmers intended to continue farming into the foreseeable future. [202]

Existing and Future Demand Overview

This review of existing and future demand reveals a basic dichotomy: NMWD and MMWD anticipate significant growth in water demand and the remainder of Marin County does not. Based on the exhibits in this section, by 2030 NMWD would experience an increase in water demand for its Novato and West Marin service areas to 127 and 154 percent of existing (2005) water demand, respectively. MMWD would experience a more modest increase to 117 percent by 2030. Combined, the two agencies face an increase in water demand exceeding 9,000 AFY.

With the exception of EMWS, which anticipates an increase in water demand from 15 to 21 AFY (a proportionally substantial increase to 140 percent), most of the West Marin agencies see little or no future growth in water demand. In this section, agricultural water demand is predicted to remain relatively stable while unincorporated commercial and industrial demands were assumed to be included in unincorporated domestic and small water systems demand. An evaluation of the *Draft 2005 CWP Update* increases in unincorporated demands at buildout, including rural domestic, commercial and industrial occurs in the next section.

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[200] *Marin County Livestock & Agricultural Crop Reports 2003, 2004, and 2005*, Marin Department of Agriculture Weights and Measures, 2004, 2005, and 2006.

[201] *Status of Marin County Agriculture: A Profile of Current Practices and Needs*, University of California Cooperative Extension, February 2003.

[202] *Status of Marin County Agriculture: A Profile of Current Practices and Needs*, University of California Cooperative Extension, February 2003.

Water Supply and Demand – Significance Criteria

The water supply and demand analysis uses criteria from the *State CEQA Guidelines* and professional practices. According to these criteria, the project would have a significant water supply impact if it would:

- Result in the demand for water that exceeds the capacity of existing entitlements and/or resources in normal, drought, and multi-drought years.
- Result in the demand for water that exceeds available distribution, storage capacity, or pressure requirements, resulting in the need for the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge.
- Result in significant interference with water supply.
- Result in secondary impacts such as degradation of water supply quality or environmental impacts, including impacts on endangered species.

Water Supply and Demand – Impacts and Mitigation Measures

Impact 4.9-1 Adequacy of Water Supply During a Normal Year

Land uses and development consistent with the Draft 2005 CWP Update would increase the demand for water. As a result, water supplies would be insufficient to serve some of the unincorporated and incorporated areas in normal rainfall years. Development of additional water resources would be required. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in the building of new homes and businesses for an estimated buildout population of 283,100, an increase of 29,759 persons above 2006 population estimates (see **Exhibit 3.0-4**), and a resulting increase in water demand on the order of 8,000 AFY. Projected buildout demands would exceed available supplies in some water service areas. The environmental setting describes the water supply and demand for each of the nine water service areas and the unserved areas. To compare water supply and demand in each water service area the following text is divided into three main sections:

- Water Supply and Demand Comparison
- Comparison of Water Supplier and *Draft 2005 CWP Update* Housing Units, and
- *Draft 2005 CWP Update* Water Demand.

The *Water Supply and Demand Comparison* section includes a supply and demand overview that compares current supply to demand and compares buildout (2030) supply to demand for each water service area and unserved areas.[203] These comparisons are for normal or average precipitation conditions. The impact of drought on water supplies (and demands) is estimated for each water service area in *Impact 4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years* to get an indication of supply reliability during severe droughts. Drought supplies are also compared to demands under current and 2030 conditions in *Impact 4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years*. Note that the demand numbers used here correspond to water supplier demand estimates; the next section compares water supplier housing units to *Draft 2005 CWP Update* housing units.

The second section, *Comparison of Water Supplier and Draft 2005 CWP Update Housing Units*, compares the number of current housing units estimated by the *Draft 2005 CWP Update* to those estimated by each water supplier to confirm that the baseline assumed by both is similar. This section also compares the number of 2030 housing units projected by the *Draft 2005 CWP Update* to those projected by each water supplier to determine the differences between *Draft 2005 CWP Update* and water supplier projections.

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203 As discussed in ***Chapter 3.0 Description of the Proposed Project***, the *Draft 2005 CWP Update* does not have a horizon year, but for projection purposes, the year 2030 is used. The maximum growth identified in the *Draft 2005 CWP Update* may not occur by the horizon year of 2030. In fact, given the County's low historical growth rate it is unlikely that the buildout projection would occur by 2030.

In the third section, *Draft 2005 CWP Update Water Demand*, the 2030 water demand is estimated and compared to supply. The terms buildout and 2030 are used interchangeably throughout these sections but some of the 2030 population and demand numbers presented by the water suppliers may not necessarily represent buildout. The water supplier numbers may take into account Marin County's slow growth rates or other restrictions such as connection moratoria. Buildout has been presumed to occur by 2030 in each water service area to include all projected water demands in the analysis, but in reality growth may occur more slowly. It is important to clarify here that the accuracy of all the water supply and demand values presented may not specifically coincide with the number of decimal places or significant figures presented in the summary exhibits. Some numbers are general order-of-magnitude estimates, some are results of numerous calculations, and some have been rounded. Nonetheless, the accuracy of the resulting water supply and water demand numbers is sufficient to document supply deficiencies and determine impacts, especially in view of the fact that the annual water supply (mainly precipitation) varies widely.

WATER SUPPLY AND DEMAND COMPARISON

This section compares current / 2005 supply to demand and 2030 supply to demand for each water service area and unserved areas based on numbers provided from the water suppliers. Comparison of water supplier current and 2030 numbers to County values for current and *Draft 2005 CWP Update* buildout follows later in this section of the Draft EIR. An estimate of available water supplies during dry and multiple dry years is also provided under the next impact and compared to demand to give an indication of the reliability of the supplies. Marin County's water supply is tied closely to rainfall as most of the water supply is from surface water through either local reservoirs and streams or imported Russian River water. Current and 2030 water supplies sources are summarized below.

Current Supply		**Estimated 2030 Supply**	
Surface water	22,855 AFY (48.1%)	Surface water	22,855 AFY (46.9%)
Imported SCWA water	18,210 AFY (38.3%)	Imported SCWA water	18,090 AFY (37.1%)
Groundwater	5,824 AFY (12.2%)	Groundwater	5,824 AFY (12.0%)
Recycled water	650 AFY (1.4%)	Recycled water	1,954 AFY (4.0%)
Total	**47,539 AFY**	**Total**	**48,723 AFY**

Total net water supply is estimated to increase slightly (by 1,184 AF or 2.5 percent) from current supplies to 2030 supplies. The increase is due to 1,304 AFY of recycled water. Use of imported SCWA water is projected to decrease for MMWD (-2,784 AFY) and increase for NMWD (+2,664 AFY) resulting in a net decrease of 120 AFY by 2030. Based on water supplier values, surface water and groundwater use are projected to remain stable.

Current and 2030 water supplier estimated demand has been broken down into East Marin (NMWD-Novato and MMWD) and West Marin (NMWD-West Marin, BCPUD, SBCWD, IPUD, MBSCD, CSWS, and EMWS) in the table below. Unincorporated demand is an estimate for private well use, small public water systems, and rural irrigation as discussed in the previous section.

Current Demand by Water Suppliers		**Estimated 2030 Demand by Water Suppliers**	
NMWD, MMWD	45,125 AFY (88.1%)	NMWD, MMWD	54,164 AFY (89.6%)
West Marin Purveyors	855 AFY (1.7%)	West Marin Purveyors	1,058 AFY (1.8%)
Unincorporated Estimate	5,207 AFY (10.2%)	Unincorporated Estimate	5,207 AFY (8.6%)
Total	**51,187 AFY**	**Total**	**60,429 AFY**

Exhibit 4.9-31 presents a summary of current / 2005 and 2030 supply and demand by water service area. The 2030 demand values are those projected by the water supplier and not *Draft 2005 CWP Update* buildout. A comparison of water supplier 2030 housing units and demands occurs in subsequent sections. For this exhibit, it was assumed that the net water use in rural unserved areas would remain the same and that supply is at least equal to demand. Much of the available rural water supply is being used, provided by wells that already exist in the limited areas of high yielding sediments in alluvial valleys. Most of the rural land is underlain by low-permeability, fractured bedrock and thin alluvial deposits with insufficient saturated thickness to yield meaningful quantities of water. While **Exhibit 4.9-31** presents supply and demand on an annual basis, it does not address summer peaks when available water supplies may fall short. This is especially true of the West Marin suppliers. Impacts related to summer peaking are addressed in this impact (*Impact 4.9-1 Adequacy of Water Supply During a Normal Year*) and *Impact 4.9-2 Adequacy of Water Supply During Drought and Multi-Drought Years* in terms of reducing peaking problems by reducing use and in *Impact 4.9-3 Require New or Expanded Water Supply Facilities*.

Exhibit 4.9-31
Current and Projected Water Supply and Demand Comparison - Normal Year

Water Service Area	***2005 / Current***		***Water Supplier 2030 / Buildout***	
	Supply (AFY)	***Demand (AFY)***	***Supply (AFY)***	***Demand (AFY)***
NMWD Novato	12,010	12,125	15,694	15,444
NMWD West Marin	372	347	372	533
MMWD	29,300	33,000	26,800	38,720
BCPUD	175	165	175	165
SBCWD	203	175	203	181
IPUD	145	95	145	100
MBCSD	50	29	50	29
CSWS	56	29	56	29
EMWS	21	15	21	21
Private Wells [a]	193	193	193	193
Small Public Water Systems [a]	44	44	44	44
Estimated Irrigation Water Demand [a]	4,970	4,970	4,970	4,970
Total	***47,539***	***51,187***	***48,723***	***60,429***

a Assumes supply is the same as demand; actual supply is more but accurate estimate is unavailable.

Source: NMWD, MMWD, BPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers

The NMWD Novato service area has a slight current deficit in water but anticipates that additional imported SCWA supplies and recycled water use would meet demand projections in future years. The NMWD West Marin service area may have a deficit in future years if the projected buildout water use is reached. NMWD is actively investigating additional supplies and most likely would have additional groundwater supplies and surface water rights. They have not been included in these summaries as they are not yet secure. MMWD has the greatest current and future water supply deficit. Demand is anticipated to increase while imported SCWA supplies are projected to decrease. The decrease in imported SCWA water would be offset slightly by an increase in recycled water use. The proposed use of desalinated water could resolve this deficit, but at this time, the project is uncertain and it is premature to include it as a future supply.

COMPARISON OF WATER SUPPLIER AND DRAFT 2005 CWP UPDATE HOUSING UNITS

The water supply and demand sections of this Draft EIR so far have examined supply and demand using housing estimates provided by the water suppliers. This section compares current water supplier housing unit estimates to Marin County estimates (**Exhibit 4.9-32**) and 2030 water supplier housing unit projections to those presented in the *Draft 2005 CWP Update* (**Exhibit 4.9-33**). **Exhibit 4.9-32** presents the differences in current housing units in each water service area. Housing units include both single and multifamily units. County housing units have been separated into unincorporated and incorporated; all values are for unincorporated housing units except the second number in parentheses for NMWD-Novato, MMWD, and unserved areas. Water supplier estimates are provided in the third column in the exhibit and the difference between County and water supplier numbers is shown in the last column on the right.

County housing unit numbers are about six percent higher than water supplier estimates. This value does not include the unserved areas. Most of these differences are due to the method of counting/reporting multifamily units. Many of the water supplier numbers reflect multifamily connections rather than multifamily units. For example, a ten unit apartment building may have only one meter and a water supplier would count it as one multifamily connection while the County counts ten units. The County numbers also include second units while the water suppliers probably do not unless there are two water meters. While the County and the water suppliers should strive to get accurate counts of housing units, this difference does not sway the results of this analysis.

The second row from the bottom of **Exhibit 4.9-32** presents estimates of housing units in unserved areas. The County numbers reflect actual housing units while the numbers presented in the water supplier column were derived from the County well database and list of small public water suppliers. The County database numbers are used as they are higher and probably more representative of the number of housing units.

Exhibit 4.9-33 was developed to compare *Draft 2005 CWP Update* housing units to water supplier 2030 housing units. As in **Exhibit 4.9-32** County housing units have been separated into unincorporated and incorporated; all values are for unincorporated housing units except the second number in parentheses for NMWD-Novato, MMWD, and the unserved areas. *Draft 2005 CWP Update* numbers are about eight percent higher than water supplier numbers, excluding the unserved areas, with most of these units in the MMWD service area. These increases in 2030 housing units above water supplier projections are examined in further detail in the next section in the form of increased demand and comparison to supply. Increased water use from nonresidential users is also included in the next section.

Exhibit 4.9-32
Comparison of Current Housing Units by Water District

Water Service Area	Housing Units [a]		
	Draft 2005 CWP Update Housing Units at Buildout [b] (Unincorporated + Incorporated)	Water Supplier [c] 2030 / Buildout	Difference [d]
NMWD Novato	(2,848 + 21,045)	20,611 [e]	3,282
NMWD West Marin	970	776	194
MMWD	(20,307 + 59,624)	77,015 [e]	2,916
BCPUD	524	557	-33
SBCWD	751	690	61
IPUD	540	483	57
MBCSD	137	148	-11
CSWS	247	250	-3
EMWS	125	132	-7
Unserved areas	(874 + 1)	584	291
Total	***107,993***	***101,246***	***+6,747***

a Includes single and multifamily units
b All unincorporated unless indicated with two numbers
c No breakdown available for incorporated and unincorporated water supplier housing units, private wells and small public water systems estimates from County well database
d Some differences may be due, in part, to the number of multifamily connections vs. multifamily units
e NMWD-Novato and MMWD number of multifamily housing units estimated from number of multifamily connections

Source: NMWD, MMWD, BPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers

Exhibit 4.9-33
Comparison of Housing Units at Buildout by Water District

Water Service Area	Housing Units [a]		
	Draft 2005 CWP Update Housing Units at Buildout [b] (Unincorporated + Incorporated)	Water Supplier [c] 2030 / Buildout	Difference [d]
NMWD Novato	(3,116 + 22,185)	25,105 [e]	196
NMWD West Marin	1,262	1,075	187
MMWD	(24,297 + 66,946)	85,353 [e]	5,890
BCPUD	797	557	240
SBCWD	885	715	170
IPUD	647	506	141
MBCSD	153	148	5
CSWS	276	253	23
EMWS	173	178	-5
Unserved areas	(1,109 + 1)	584	526
Total	***121,847***	***114,474***	***+7,373***

a Includes single and multifamily units
b All unincorporated unless indicated with two numbers
c No breakdown available for incorporated and unincorporated water supplier housing units, private wells and small public water systems estimates from County well database
d Some differences may be due, in part, to the number of multifamily connections vs. multifamily units
e NMWD-Novato and MMWD number of multifamily housing units estimated from number of multifamily connections

Source: NMWD, MMWD, BPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers

DRAFT 2005 CWP UPDATE WATER DEMAND

This section presents the methodology and assumptions used to estimate *Draft 2005 CWP Update* water demands in each water service area and unserved areas at buildout. These buildout demands were then compared to buildout supply to ascertain if supply deficits might occur in each water service area under the *Draft 2005 CWP Update*. Future supplies include only those supplies that are known to be available in the future, for example, water supplies that are legally secure and physically available but not currently maximized or projects with documented financing, full scale planning and design, environmental review and permitting, or construction. All estimates are for normal year conditions with average precipitation.

The first step was to calculate the difference (increase) between the number of single and multiple family housing units between existing conditions and *Draft 2005 CWP Update* buildout in each water service area and unserved areas (second column from the left of **Exhibit 4.9-34**). Similar calculations accounted for the difference (increase) in nonresidential floor area. These are presented in the fourth column from the left of **Exhibit 4.9-34** for each water service area and the unserved areas. Housing unit increases have been separated into unincorporated and incorporated; all values are for unincorporated housing units except the second number in the parentheses for NMWD-Novato and MMWD.

The housing unit increases were then multiplied by an estimated water use rate for each water service area to get the demand values in the third column from the left of **Exhibit 4.9-34**. Water use rates ranged from a low of 0.11 AFY per unit in western Marin to a high of 0.38 AFY per unit in eastern Marin in the water service areas. These water use rates were based on average 2030 estimated single and multifamily unit demands in the *Current and Projected Water Demand* exhibits for each water supplier (**Exhibits 4.9-21** through **4.9-29**). Unserved areas demand was estimated to be 0.4 AFY per unit as discussed in the previous ***Unincorporated Domestic Existing and Future Demand*** section.

Nonresidential square footage increases were multiplied by an estimated demand of 0.20 AF per 1,000 square feet. This is based on 2005 nonresidential use per square foot for three water suppliers that had sufficient nonresidential water usage data (NMWD, MMWD, and SBCWD). Nonresidential categories include commercial, business, governmental, and institutional uses. The resulting demand values are presented in the fifth column of **Exhibit 4.9-34**. The two last columns on the right show the sum of the increase in residential and nonresidential demand for unincorporated only and unincorporated plus incorporated, respectively. These values represent estimates of the increase in water demands that would occur from current conditions to *Draft 2005 CWP Update* buildout conditions. Unincorporated water use would increase by 1,871 AFY while unincorporated plus incorporated water use is estimated to increase by 6,386 AFY. For comparison purposes, 2005 water use was approximately 47,000 AF, excluding agricultural water use. The greatest increases (3,849 AFY and 2,108 AFY) would occur in the MMWD and NMWD-Novato service areas, respectively. An increase of 189 AFY would occur in the unserved areas. Much smaller increases would occur in the smaller water service areas in West Marin.

Exhibit 4.9-34
Draft 2005 CWP Update Increase in Water Demand from Current Conditions to Buildout

Water Service Area	Housing Increase [a] (Unincorporated + Incorporated)		Non-Residential Floor Area Increase (Unincorporated + Incorporated)		Unincorporated Total Demand Increase (AFY)	Unincorporated + Incorporated Total Demand Increase (AFY)
	Number of Units	Demand (AFY) [b]	Square Feet [c]	Demand (AFY) [d]		
NMWD Novato	(268+1,140)	535	(200,614+7,664,362)	1,573	142	2,108
NMWD West Marin	292	102	21,018	4	106	106
MMWD	(3,990+7,322)	3,394	(517,066+1,761,446)	456	1,300	3,849
BCPUD	273	74	627	0.1	74	74
SBCWD	134	27	13,516	3	30	30
IPUD	107	18	6,840	1	20	20
MBCSD	16	2	0	0	2	2
CSWS	29	3	0	0	3	3
EMWS	48	5	0	0	5	5
Unserved Areas	235	94	477,100	95	189	189
Total	***13,854***	***4,254***	***10,662,589***	***2,133***	***1,871***	***6,386***

a Includes single and multifamily units
b Used 2030 estimated demand per unit in Water District Current and Projected Water Demand tables
c All unincorporated unless indicated with two numbers
d Used an estimated demand of 0.20 AF per 1,000 square feet based on 2005 non-residential use per square foot

Source: NMWD, MMWD, BPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers

Exhibit 4.9-35 presents the supply-demand comparison with the water service areas listed in the first column on the left. The second column is the estimated 2030 supply in each water service area. These values are from **Exhibits 4.9-1** through **4.9-18** and include only supplies that are known to be available. The third column is current / 2005 demand values for each water service area from **Exhibits 4.9-21** through **4.9-29**. The fourth and sixth columns are estimated demand increases for unincorporated and unincorporated plus incorporated, respectively, from **Exhibit 4.9-34**.

The fifth column of **Exhibit 4.9-35** is the difference between the supply and demand for unincorporated areas while the seventh column is the difference between the supply and demand for unincorporated plus incorporated (or total) areas. To calculate these values, the 2005 demand values were added to the unincorporated (or unincorporated plus incorporated) demand increases in the previous column to get the total demand at 2030. This value was then subtracted from the 2030 supply. As indicated in **Exhibit 4.9-35** water supply deficits (negative numbers in column five) in unincorporated areas are projected to occur in NMWD-West Marin, MMWD, BCPUD, and SBCWD. As expected, when incorporated water demands are added to unincorporated demand (column seven), the deficit increases in MMWD.

These numbers in **Exhibit 4.9-35** are presented on an annual basis and do not address summer peaking problems or the presence of a moratorium on new connections. The last column of this exhibit indicates that six of the nine water service areas have summer peaking problems and that two suppliers (BCPUD and CWCS) have connection moratoria that are not anticipated to be lifted in the near future. The analysis here is conservative as it uses *Draft 2005 CWP Update* buildout numbers that do not consider the moratoria for these two suppliers.

In the unserved areas, the *Draft 2005 CWP Update* project would nearly double the housing units and nonresidential floor area and result in an increase of 189 AFY in demand. Agricultural use was expected to remain the same. Extensive studies would be needed to quantify normal and drought water supplies and use, including agricultural use, in rural areas on a watershed or groundwater basin basis, as conditions vary across the county. This is a very large undertaking and County funds are not available at this time to undertake all these studies. However, the *Draft 2005 CWP Update* does propose to initiate some of these studies as indicated in the mitigation discussions below.

Much of the available rural water supply is provided by wells that already exist in the limited areas of high yielding sediments in alluvial valleys and most rural land is underlain by low-permeability, fractured bedrock and thin alluvial deposits with insufficient saturated thickness to yield meaningful quantities of water. While the increase in unincorporated unserved areas demand (189 AFY) is only three percent of the estimated agricultural use (4,970 AFY from **Exhibit 4.9-30**) the additional use could exacerbate problems during droughts.

As indicated in the previous sections and summarized in **Exhibit 4.9-35,** water supply deficits (negative numbers in column five) in unincorporated areas are projected to occur in the NMWD-West Marin, MMWD, BCPUD, and SBCWD water service areas at *Draft 2005 CWP Update* 2030.

Exhibit 4.9-35
Draft 2005 CWP Update Supply-Demand at Buildout - Normal Year

Water Service Area	2030 / Buildout Supply (AFY)	2005 / Current Demand (AFY)	Draft 2005 CWP Update Demand Increase from 2005 / Current [a]				Issues [b]
			Unincorporated Demand Increase (AFY)	Unincorporated Supply-Demand (AFY)	Total Demand Increase (AFY)	Total Supply-Demand (AFY)	
NMWD Novato	15,694	12,125	142	3,427	2,108	1,461	None
NMWD West Marin	372	347	106	-81	106	-81	Summer Peaking
MMWD	26,800	33,000	1,300	-7,500	3,849	-10,049	Current Deficit
BCPUD	175	165	74	-64	74	-64	Connection Moratorium, Summer Peaking
SBCWD	203	175	30	-2	30	-2	Summer Peaking
IPUD	145	95	20	30	20	30	Summer Peaking
MBCSD	50	29	2	19	2	19	None
CSWS	56	29	3	24	3	24	Connection Moratorium, Summer Peaking
EMWS	21	15	5	1	5	1	Summer Peaking
Unserved Areas[c]	>989	989	189	Not Quantified	189	Not Quantified	None

a Assumes other water uses (losses, agricultural/irrigation, misc.) do not increase from 2005 values
b All have reliability problems in extended drought
c Assumes agricultural use to remain the same

Source: NMWD, MMWD, BPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers

The availability of water supply is dependent upon many factors including climate and water supply management practices. Most of Marin County's water supply is provided by public and private water providers and not under the direct jurisdiction of the County. Water supply issues are not new to Marin County. Water supplies are currently strained: MMWD and NMWD-Novato have current supply deficits. BCPUD and CSWS have connection moratoria; NMWD-West Marin, BCPUD, SBCWD, IPUD, CSWS, and EMWS have summer peaking problems; and most of the water service areas will experience water supply deficits during extreme droughts as discussed in *Impact 4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years.* According to water supplier 2030 projections, water supply deficits are projected to occur in NMWD-West Marin and MMWD service areas in the future (**Exhibit 4.9-31**). Many of the water suppliers are actively looking into additional supplies as discussed in the setting section. These range from additional storage and wells to MMWD's proposed desalinization plant. As these are proposed plans and not yet secure, they have not been included in supply totals. Some may be dependent upon perfecting or securing additional water rights.

The *Draft 2005 CWP Update* would result in the establishment of the Housing Bank. The Housing Bank would include 1,694 housing units that would be transferred from various environmentally sensitive areas. These areas would include sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands Corridor or properties lacking public water or sewer. The housing units would be transferred to the City-Centered Corridor. A large proportion of these units would come from West Marin. This would reduce water demands in West Marin but would increase demands in the City-Centered Corridor, which is mainly the MMWD service area.

The *Draft 2005 CWP Update* contains several policies and implementation programs that, if adopted and implemented, would reduce potential adverse impacts associated with increases in water demand by promoting conservation and reducing water demands. The County's goals for public facilities and services include Goal **PFS-2**, *Sustainable Water Resources*. This goal, which would intend to ensure a reliable, sustainable water supply for existing and future development while protecting the natural environment, is expressed in three policies, **PFS-2.1**, **PFS-2.2**, and **PFS-2.3**. Programs **PFS-2.a, PFS-2.b, PFS-2.c, PFS-2.d, PFS-2.e, PFS-2.f, PFS-2.g, PFS-2.h** and **PFS-2.i** would promote water conservation, water demand planning, use of sustainable sources, and irrigation efficiency. Program **PFS-2.c** would encourage local water providers to enact programs that promote the Ahwahnee Principles for Water Supply. The Ahwahnee Principles for Water Supply are cited in the Water Resources section of the Natural Systems & Agriculture Element and include measures to maximize self-sufficiency and water supply reliability by promoting a diversified portfolio of water supply sources. All of these measures would make best use of existing supplies and reduce existing demands resulting in the enhanced availability of water supply.

Program **PFS-2.d** would direct the County to support water demand planning by working with the water supply purveyors in the development of the Urban Water Management Plans (UWMPs). This program could provide the basis to involve small water systems that are not required by the California Water Code to prepare UWMPs because they have fewer than 3,000 connections. Such systems need not prepare formal UWMPs (although Stinson Beach County Water District has done so voluntarily) to gain much of the advantage of UWMPs in planning for shortages. Accordingly, small systems should be encouraged by the County to consider use of the UWMP format for planning. The water shortage contingency plan portion of the UWMP would provide small systems with the means to identify shortages on a consistent basis, to define water shortage stages and appropriate response measures, and to develop relevant ordinances, resolutions, or rules to manage water shortages.

Several other implementation programs would also reduce adverse impacts to the adequacy of the water supply by maximizing or increasing available supplies. Program **PFS-2.j** would encourage service providers to upgrade the water delivery systems in West Marin to reduce the incidence of saltwater intrusion and leakage. Program **PFS-2.k** would involve conducting a study of groundwater availability and water quality of the Tomales Bay watershed (including the Walker, Lagunitas, Stemple, and Olema Creek watersheds) and the aquifer bordering the Petaluma River to determine the potential for using local groundwater to supplement drinking water supplies.

Program **PFS-2.m** would encourage the use of rainwater catchments for irrigation and other non-potable uses while Program **PFS-2.n** would investigate the feasibility of using rainwater harvesting for groundwater recharge. While enhanced groundwater recharge has multiple benefits, including stormwater management and maintenance of stream flows, increased recharge also can result in high groundwater conditions, seepage, and drainage problems in low-lying portions of a watershed. Accordingly, enhanced groundwater recharge may require increased groundwater management to control groundwater levels and make best use of stored groundwater. Enhanced groundwater recharge may be accompanied by increased groundwater pumping. Wells can be installed and pumped strategically to make best use of groundwater supplies; for example, installing wells in public parks for landscape irrigation where recycled water is not feasible.

Program **PFS-2.o** would require documentation that new development projects will not degrade or deplete groundwater resources. Program **PFS-2.p** would investigate use of graywater systems for irrigation and program **PFS-2.q** would encourage all Marin County water agencies to adopt the California Urban Water Conservation Council's Best Management Practice of tiered billing rates to encourage water conservation.

The *Draft 2005 CWP Update* includes three water resources goals that promote healthy watersheds, clean water, and adequate water for wildlife and humans. These water resources goals recognize the integrated nature of beneficial uses of water, including environmental benefits, economic benefits of providing sustainable water supply to homes and business, and equity benefits of providing sufficient supplies of high quality water to everyone in Marin County. All of these goals support long-term adequacy of water supply.

Goal **WR-1,** *Healthy Watersheds*, has four policies, **WR-1.1**, **WR-1.2**, **WR-1.3, WR-1.4,** to reduce erosion and downstream sedimentation that eventually result in siltation of water supply reservoirs with concomitant loss of storage and yield. Goal **WR-2,** *Clean Water*, has five policies, **WR-2.1**, **WR-2.2**, **WR-2.3**, **WR-2.4**, **WR-2.5**, to protect water quality by controlling erosion, reducing sedimentation and runoff, minimizing pollutants, and promoting water quality education. Program **WR-2.k** would establish educational partnerships to protect water quality. Local drinking water comes primarily from surface water reservoirs.

Sediment is a major concern countywide for numerous reasons, including water quality degradation, loss of groundwater recharge, and siltation of streams and wetlands with subsequent flooding and damage to aquatic habitats. Sedimentation of water supply reservoirs and ponds also is a concern with the long term potential to reduce Marin County's surface water storage and yield. This pertains to the major water supply reservoirs operated by MMWD and NMWD, smaller reservoirs and ponds operated by other water agencies, and privately owned ponds used for agriculture (e.g., stock watering). Downstream flooding, erosion and sedimentation also can adversely affect and damage water supply diversion and conveyance facilities. Damage to instream habitats increases competition among beneficial uses (e.g., environmental, recreational, and water supply) for limited high quality water supply.

These policies would also protect the quantity and quality of groundwater recharge, thereby promoting the long-term sustainability of groundwater supplies. This is particularly important to the West Marin water agencies that rely on groundwater supply for part or all of their water and to private users of spring and well water sources. In addition, promotion of groundwater recharge also makes best use of the available groundwater storage throughout the county, which gradually releases stored water to springs, streams, and seeps and thereby enhances the sustained yield of not only groundwater sources, but also surface water diversions and reservoirs.

Goal **WR-3**, *Adequate Water for Wildlife and Humans*, would call for adequate water for wildlife *and* humans. This goal is supported by two policies, **WR-3.1** and **WR-3.2**, that would reduce water demand and find new sustainable sources for humans.

Policy **WR-3.1** would support reduction of water waste and better matching of water source and quality to the user's needs. Policy **WR-3.2** would call for assessment and mitigation of impacts of new development. These two policies are linked in the *Draft 2005 CWP Update* to two Programs: **WR-3.a** *Support Water Conservation Efforts* and **WR-3.b** *Support and Integrate Water District Conservation Efforts*. Both of these programs would support long-term water supply availability by reducing water waste and minimizing water demands in new development and encouraging reuse.

While these policies and programs would reduce some of the adverse effects to the adequacy of the water supply, water supply impacts would still occur because these programs and policies would not reduce the effects to a less-than-significant level. [204] Therefore, this would be a significant project impact and mitigation would be required.

Only the MMWD and the NMWD-Novato serve water users in the county's incorporated cities and towns. The remaining water districts provide service to water users in the unincorporated area only. Land uses and development consistent with the *Draft 2005 CWP Update* together with development in the 11 cities and towns would result in an increased demand for both NMWD-Novato and MMWD. When water demand from development in the 11 cities and towns is added to the unincorporated demand, the identified water supply deficit for MMWD increases. This would be a significant cumulative impact and implementation of the *Draft 2005 CWP Update* would make a cumulatively considerably contribution to this impact.

Mitigation Measure 4.9-1 In order to reduce impacts to water supply from increased demands, the County would be required to amend Programs **PFS-2.c** *(Promote Ahwahnee Principles for Water Supply)*, **PFS-2.d** *(Support Water Demand Planning)*, **PFS-2.g** *(Promote Xeriscaping)*, **PFS-2.h** *(Promote Native Plants in Public Facilities)*, **PFS-2.j** *(Upgrade West Marin Systems)*, **PFS-2.m** *(Promote Catchments)*, **PFS-2.o** *(Assess Project Impacts to Groundwater)*, **PFS-2.p** *(Investigate and Consider Appropriate Small-Scale Wastewater Use)*, **PFS-2.q** *(Adopt Tiered Billing Rates)*, **WR-2.k** *(Establish Educational Partnerships)*, and **WR-3.b** *(Support and Integrate Water District Conservation Efforts)*. In addition, the County would need to obtain funding for Programs **PFS-2.e** *(Conduct Water Planning through LAFCO Studies)*, **PFS-2.k** *(Investigate Tomales Bay Groundwater)*,

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204 As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that a program could be relied upon to reduce significant impacts to a less-than-significant level if there is an identified funding source, if it is a medium or high priority, and if it will be implemented in the immediate-, short-, or medium-term, or is ongoing. If the program has no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such a program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

PFS-2.n *(Conduct Groundwater Recharge Study)*, **PFS-2.p** *(Investigate and Consider Appropriate Small-Scale Wastewater Use)*, **WR-2.k** *(Establish Educational Partnerships)*, **WR-3.a** *(Support Water Conservation Efforts)*, **WR-3.b** *(Support and Integrate Water District Conservation Efforts)*, and the new water resources program. The following programs would also have to be implemented in the medium-term or sooner: **PFS-2.f** *(Initiate a Water Conservation Program)*, **PFS-2.k** *(Investigate Tomales Bay Groundwater)*, **PFS-2.n** *(Conduct Groundwater Recharge Study)*, **PFS-2.o** *(Assess Project Impacts to Groundwater)*, **WR-2.k** *(Establish Educational Partnerships)*, and the new water resources program.

Mitigation Measure 4.9-1(a) Revise Programs **PFS-2.c**, **PFS-2.d**, **PFS-2.g**, **PFS-2.h**, **PFS-2.j**, **PFS-2.m**, **PFS-2.o**, **PFS-2.p**, **PFS-2.q**, **WR-2.k**, and **WR-3.b** of the *Draft 2005 CWP Update* as follows:

PFS-2.c; *Promote Ahwahnee Principles for Water Supply.* ~~Encourage~~ Support guidelines for local water providers to enact programs that promote the Ahwahnee Principles for water supply. These should include investigations of new sustainable sources such as groundwater, surface water, recycled water, graywater or desalination facilities that match water quantity and quality to the beneficial uses and the perfection or securing of additional water rights for the water purveyors.

PFS-2.d; *Support Water Demand Planning*. ~~Work with the~~ Provide Countywide Plan buildout information in the form of letters to water supply ~~companies~~ purveyors to use in the development of their respective Urban Water Management Plans (UWMPs) ~~to use the Countywide Plan and cities' and towns' General Plans ultimate build-out numbers~~. Assist the water purveyors in the preparation of these UWMPs by reviewing these documents and providing comments. Initiate discussion with or letters to small water systems, which are not required by the California Water Code to prepare UWMPs because they have fewer than 3,000 connections, urging them to adopt use of the UWMP format for planning. The water shortage contingency plan portion of the UWMP would provide the means to identify shortages on a consistent basis, to define water shortage stages and appropriate response measures, and to develop relevant ordinances, resolutions, or rules to manage water shortages.

PFS-2.g; *Promote Xeriscaping, Site Appropriate Landscaping and Native Plants.* Amend the Development Code to require site appropriate, drought-tolerant, low water use, native landscaping and ultra-efficient irrigation systems where appropriate for development applications and re-landscaping projects. ~~and l~~Limit the amount of water intensive landscaping, particularly lawn area allowed to reduce the amount of water needed ~~required~~ for irrigation.

PFS-2.h; *Promote Site Appropriate, Low-water Use and Drought Tolerant Native Plants in Public Facilities*. Restore and promote the native plants ~~garden~~ at the Civic Center~~,~~ and incorporate ~~the development of~~ similar landscaping for all public facilities. Create a Landscaping Master Plan for Public Facilities that specifies appropriate species, methods, and technologies for water-wise landscaping.

PFS-2.j; *Upgrade West Marin Systems*. ~~Encourage~~ Promote assistance to water service providers to upgrade the water delivery systems in West Marin to reduce the incidence of saltwater intrusion and leakage~~.~~ by reviewing plans and initiating discussion among West Marin water providers of viable programs. The County should promote the upgrade and improvement of water supply development (e.g., wells), water treatment, water delivery and water storage facilities for providing supplemental and backup water supplies for peaking and emergency purposes. Upgrade of water systems should be consistent with the Ahwahnee Principles for water supply that encourage a diverse water portfolio, matching of water supply with intended use, protection of

natural systems and water resources, and evaluation of the multiple benefits of a water system upgrade program, among others.

PFS-2.m; *Promote Onsite Rainwater Capture and Retention* ~~*Catchments*~~. ~~Encourage~~ Support the use of on-site rainwater ~~catchments~~ capture, storage, and infiltration for irrigation and other non-potable uses, where appropriate. ~~and work with service providers to e~~Establish standards for rainwater quality and use, and include provisions to prevent contaminating local groundwater and surface water or damaging local septic and water systems.

PFS-2.o; *Assess Project Impacts to Surface Water and Groundwater*. Require documentation that new development projects with the potential to degrade or deplete surface water or groundwater resources will not adversely affect a basin or subbasin, where appropriate.

PFS-2.p; *Investigate and Consider Appropriate Small-Scale Wastewater Reduction, Treatment, and Use Technologies*. Work with water agencies to identify and resolve conflicting regulations regarding pre-treated septic drip dispersal systems and appropriate graywater use, ~~to~~ evaluate the potential of small-scale portable graywater converter systems as ~~possible~~ sources for landscaping water, and ~~to~~ modify regulations as necessary to encourage safe graywater use (such as by allowing dual systems that employ graywater to support landscaping). Include the potential use of composting toilets, waterless urinals, and other appropriate water saving technologies.

PFS-2.q; *Adopt Tiered Billing Rates*. ~~Encourage~~ Provide letters of support to Marin County water agencies without tiered billing rates ~~all Marin County water agencies~~ to adopt the California Urban Water Conservation Council's Best Management Practice of tiered billing rates to encourage water conservation. The tiers should be based on conserving levels of per capita water use, rather than those based on historical non-conserving levels. Offer comprehensive conservation incentive programs to assist customers to achieve conserving levels of use.

WR-2.k; *Establish Educational Partnerships to Protect Water Quality*. ~~Coordinate~~ Initiate discussions with the Regional Water Quality Control Boards, Marin Resource Conservation District, University of California Cooperative Extension, Natural Resources Conservation Service, Marin County Stormwater Pollution Prevention Program, watershed groups, the public, stakeholders and other interested parties to develop and implement public education programs and provide technical assistance to find alternatives and minimize erosion and sedimentation, pathogen and nutrient, and chemical sources of water pollution. This would begin with letters to establish a lead agency to direct the effort. This would include soliciting the input from ~~Coordinate with~~ local, State, and federal recreation management agencies to educate boaters and other recreational groups regarding proper management and disposal of human waste.

WR-3.b; *Support and Integrate Water District Conservation Efforts*. ~~Support~~ Assist the efforts of the water districts to reduce waste and increase reuse through integrated planning of programs and complementary land use and building regulations. Assess and remove barriers to integrated water planning and mitigate the demand for water in new development. Assess the degree of demand hardening. (Also, see policies and programs under Goals AG-1 in the Agricultural and Food section of this Element, and PFS-2 in the Public Facilities and Services section of the Built Environment Element).

Mitigation Measure 4.9-1(b) Add the following policies to the Public Facilities and Services section of the Built Environment Element.

> **PFS-2.(new)** *Sustainable Water Supply Required*. No new development project shall be approved without a specific finding, supported by facts in the administrative record, that an adequate, long-term, and sustainable water supply is available to serve the project.
>
> **PFS-2.(new)** *Offset New Water Demand*. In water districts where there is insufficient water to serve new development, the County shall require new development to offset demand so that there is no net increase in demand through one or more of the following measures: use of reclaimed water; water catchments and reuse on site; water retention serving multiple sites; retrofits of existing uses in the district to offset increased demand; other such means. These measures should be achieved in partnership with the applicable water district.

Mitigation Measure 4.9-1(c) The County would be required to obtain funding for Programs **PFS-2.e**, **PFS-2.k**, **PFS-2.n**, **PFS-2.p**, **WR-2.k**, **WR-3.a**, and **WR-3.b**, set the priority of **PFS-2.k**, **WR-2.k**, and to "medium" or higher, and revise the time frame of implementation of **PFS-2.f**, **PFS-2.n**, **PFS-2.o**, and **WR-2.k** to the medium-term or sooner.

Significance After Mitigation Adoption of the programs listed in Mitigation Measure 4.9-1 would assist in minimizing water demands and lessen potential impacts to adequacy of the water supply. However, these programs would not reduce the impact of increased water demands in normal precipitation years to a less-than-significant level. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised programs and a new program as described in Mitigation Measure 4.9-1 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency, Marin County Department of Public Works, Water Districts, Agricultural Commissioner, Farm Advisor, Marin Cities and Towns, County Parks, Marin County Open Space District, Sewer Districts, Local Agency Formation Commission, Countywide Planning Agency, Tomales Bay Watershed Council, and California Regional Water Quality Control Board would be responsible for recommending and overseeing implementation of appropriate programs / mitigation measures.

Impact 4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years

Land uses and development consistent with the Draft 2005 CWP Update would increase the demand for water. As a result, water supplies would be insufficient to serve some of the unincorporated and incorporated areas, especially in dry years. Development of additional water resources would be required. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in the building of new homes and businesses and a resulting increase in water demand. Projected buildout demands would exceed available supplies in most water service areas during multiyear droughts.

An analysis was conducted to examine the reliability of water supply in terms of drought impacts and the ability of the supply to meet demands during single and multiyear droughts. Four exhibits were generated for each water supplier to compare drought supply and demand. The first exhibit summarizes current supply under normal conditions, a single extreme dry year and years two, three, and four of a multiyear drought. The second exhibit compares supply and demand under similar conditions. The third and fourth exhibits present the same information under 2030 conditions.

Exhibits 4.9-36 to **4.9-71** present the drought impacts to supply and demand for the nine water service areas. For consistency, similar methodologies were used to reduce water supplies and demands in times of drought for each water supplier and for unserved areas. These are discussed below.

Drought Supply

This section presents the estimated impacts that single year and multiyear droughts would have on available water supplies and the basis for these estimates. The section begins with a discussion of past droughts and subsequent water supply impacts. This information was then used to guide the determination of how a single year drought and a multiyear drought would decrease available surface water, SCWA imported water, and groundwater supplies. The section ends with a review of local Urban Water Management Plans (UWMPs) and Water Supply Assessments to compare the methodologies and assumptions used here to those presented in other documents.

During droughts, the supply of available surface water, imported SCWA water, and groundwater could be reduced. Surface water supplies would be adversely affected the greatest during a drought. The recycled water supply is not anticipated to be reduced during times of drought as wastewater will still be generated and treated. Water conservation would result in less wastewater but this decrease would not affect recycled volumes of water.

California DWR considers a drought threshold to occur when single or multiple year runoff is in the lowest ten percent of the historical range and reservoir storage for the same period is less than 70 percent of average. The Urban Water Management and Planning Act require California's larger urban water suppliers to develop contingency plans for shortages of up to 50 percent. [205] These values were taken into consideration when selecting drought impacts to water supplies.

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205 *Preparing for California's Next Drought, Changes Since 1987-92*, California Department of Water Resources (DWR), July 2000, 61 pages.

Exhibit 4.9-36
NMWD Novato Service Area Dry Year Supply - Current Conditions

Current Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water (Staford Lake) [a]	1,700	850	1,105	850	595
Imported (SCWA) [b]	10,060	10,060	9,054	8,048	7,042
Other (Raw Lake Water for Irrigation)	250	125	163	125	88
Total	***12,010***	***11,035***	***10,322***	***9,023***	***7,725***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 0, 10, 20, and 30 percent reductions in imported water supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-37
NMWD Novato Service Area Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	12,010	11,035	10,322	9,023	7,725
Demand	12,125	10,913	9,700	9,700	9,700
Difference [a] (Supply - Demand)	***-115***	***+123***	***+622***	***-677***	***-1,976***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-38
NMWD Novato Service Area Dry Year Supply - 2030 Conditions

2030 Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water (Staford Lake) [a]	1,700	850	1,105	850	595
Imported (SCWA) [b]	12,724	12,724	11,452	10,179	8,907
Reclaimed	1,020	1,020	1,020	1,020	1,020
Other (Raw Lake Water for Irrigation)	250	125	163	125	88
Total	***15,694***	***14,719***	***13,739***	***12,174***	***10,609***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 0, 10, 20, and 30 percent reductions in imported water supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-39
NMWD Novato Service Area 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	15,694	14,719	13,739	12,174	10,609
Demand	15,444	13,900	12,355	12,355	12,355
Difference [a] (Supply - Demand)	***+250***	***+819***	***+1,384***	***-181***	***-1,746***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-40
NMWD West Marin Service Area Dry Year Supply - Current Conditions

Current Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Groundwater [a]	372	335	335	298	298
Total	***372***	***335***	***335***	***298***	***298***

a Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-41
NMWD West Marin Service Area - Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	372	335	335	298	298
Demand	347	312	278	278	278
Difference [a] (Supply - Demand)	***+25***	***+23***	***+57***	***+20***	***+20***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-42
NMWD West Marin Service Area Dry Year Supply - 2030 Conditions

2030 Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Groundwater [a]	***372***	***335***	335	298	298
Total	***372***	***335***	***335***	***298***	***298***

a Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-43
NMWD West Marin Service Area 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	***372***	***335***	***335***	***298***	***298***
Demand	***533***	***480***	***426***	***426***	***426***
Difference [a] (Supply - Demand)	***-161***	***-145***	***-92***	***-129***	***-129***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: NMWD, Todd Engineers, 2006

Exhibit 4.9-44
MMWD Dry Year Supply - Current Conditions

Current Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water (Reservoirs) [a]	20,500	10,250	13,325	10,250	7,175
Imported (SCWA) [b]	8,150	8,150	7,335	6,520	5,705
Reclaimed	650	650	650	650	650
Total	***29,300***	***19,050***	***21,310***	***17,420***	***13,530***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 0, 10, 20, and 30 percent reductions in imported water supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: MMWD, Todd Engineers, 2006

Exhibit 4.9-45
MMWD Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	29,300	19,050	21,310	17,420	13,530
Demand	33,000	29,700	26,400	26,400	26,400
Difference [a] (Supply - Demand)	***-3,700***	***-10,650***	***-5,090***	***-8,980***	***-12,870***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: MMWD, Todd Engineers, 2006

Exhibit 4.9-46
MMWD Dry Year Supply - 2030 Conditions

2030 Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water (Reservoirs) [a]	20,500	10,250	13,325	10,250	7,175
Imported (SCWA) [b]	5,366	5,366	4,829	4,293	3,756
Reclaimed	934	934	934	934	934
Total	***26,800***	***16,550***	***19,088***	***15,477***	***11,865***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 0, 10, 20, and 30 percent reductions in imported water supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: MMWD, Todd Engineers, 2006

Exhibit 4.9-47
MMWD 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	26,800	16,550	19,088	15,477	11,865
Demand	38,720	34,848	30,976	30,976	30,976
Difference [a] (Supply - Demand)	***-11,920***	***-18,298***	***-11,888***	***-15,499***	***-19,111***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: MMWD, Todd Engineers, 2006

Exhibit 4.9-48
BCPUD Dry Year Supply - Current Conditions

Current Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water [a]	175	88	114	88	61
Total	***175***	***88***	***114***	***88***	***61***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: BCPUD, Todd Engineers, 2006

Exhibit 4.9-49
BCPUD Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	175	88	114	88	61
Demand	165	149	132	132	132
Difference [a] (Supply - Demand)	***+10***	***-61***	***-18***	***-45***	***-71***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: BCPUD, Todd Engineers, 2006

Exhibit 4.9-50
BCPUD Dry Year Supply - 2030 Conditions

2030 Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water [a]	175	88	114	88	61
Total	***175***	***88***	***114***	***88***	***61***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: BCPUD, Todd Engineers, 2006

Exhibit 4.9-51
BCPUD 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	175	88	114	88	61
Demand	165	149	132	132	132
Difference [a] (Supply - Demand)	***+10***	***-61***	***-18***	***-45***	***-71***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: BCPUD, Todd Engineers, 2006

Exhibit 4.9-52
SBCWD Dry Year Supply - Current Conditions

Current Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water [a]	88	44	57	44	31
Groundwater [b]	115	104	104	92	92
Total	***203***	***148***	***161***	***136***	***123***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: SBCWD, Todd Engineers, 2006

Exhibit 4.9-53
SBCWD Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	203	148	161	136	123
Demand	175	158	140	140	140
Difference [a] (Supply - Demand)	***+28***	***-10***	***+21***	***-4***	***-17***

a Assumes 10, 20, 20, and 20 percent reduction in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: SBCWD, Todd Engineers, 2006

Exhibit 4.9-54
SBCWD Dry Year Supply - 2030 Conditions

2030 Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water [a]	88	44	57	44	31
Groundwater [b]	115	104	104	92	92
Total	***203***	***148***	***161***	***136***	***123***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: SBCWD, Todd Engineers, 2006

Exhibit 4.9-55
SBCWD 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	203	148	161	136	123
Demand	181	163	145	145	145
Difference [a] (Supply - Demand)	***+22***	***-15***	***16***	***-9***	***-22***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: SBCWD, Todd Engineers, 2006

Exhibit 4.9-56
IPUD Dry Year Supply - Current Conditions

Current Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water [a]	125	63	81	63	44
Groundwater [b]	20	18	18	16	16
Total	***145***	***81***	***99***	***79***	***60***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-57
IPUD Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	145	81	99	79	60
Demand	95	86	76	76	76
Difference [a] (Supply - Demand)	***+50***	***-5***	***+23***	***+3***	***-16***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-58
IPUD Dry Year Supply - 2030 Conditions

2030 Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water [a]	125	63	81	63	44
Groundwater [b]	20	18	18	16	16
Total	***145***	***81***	***99***	***79***	***60***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-59
IPUD 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	145	81	99	79	60
Demand	100	90	80	80	80
Difference [a] (Supply - Demand)	***+45***	***-10***	***+19***	***-2***	***-20***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-60
MBSCD Dry Year Supply - Current Conditions

Current Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Groundwater [a]	50	45	45	40	40
Total	***50***	***45***	***45***	***40***	***40***

a Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-61
MBSCD Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	50	45	45	40	40
Demand	29	26	23	23	23
Difference [a] (Supply - Demand)	***+21***	***+19***	***+22***	***+17***	***+17***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-62
MBSCD Dry Year Supply - 2030 Conditions

2030 Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Groundwater [a]	50	45	45	40	40
Total	***50***	***45***	***45***	***40***	***40***

a Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-63
MBSCD 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	50	45	45	40	40
Demand	29	26	23	23	23
Difference [a] (Supply - Demand)	***+21***	***+19***	***+22***	***+17***	***+17***

a Assumes 10, 20, 20, and 20 reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: IPUD, Todd Engineers, 2006

Exhibit 4.9-64
CSWS Dry Year Supply - Current Conditions

Current Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Groundwater [a]	56	50	50	45	45
Total	***56***	***50***	***50***	***45***	***45***

a Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: CSWS, Todd Engineers, 2006

Exhibit 4.9-65
CSWS Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	56	50	50	45	45
Demand	29	26	23	23	23
Difference [a] (Supply - Demand)	***+27***	***+24***	***+27***	***+22***	***+22***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: CSWS, Todd Engineers, 2006

Exhibit 4.9-66
CSWS Dry Year Supply - 2030 Conditions

2030 Supply Source	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Groundwater [a]	56	50	50	45	45
Total	***56***	***50***	***50***	***45***	***45***

a Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: CSWS, Todd Engineers, 2006

Exhibit 4.9-67
CSWS 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	56	50	50	45	45
Demand	29	26	23	23	23
Difference [a] (Supply - Demand)	***+27***	***+24***	***+27***	***+22***	***+22***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: CSWS, Todd Engineers, 2006

Exhibit 4.9-68
EMWS Dry Year Supply - Current Conditions

Current Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water / Reservoir [a]	17	9	11	9	6
Groundwater [b]	4	4	4	3	3
Total	***21***	***12***	***15***	***12***	***9***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: EMWS, Todd Engineers, 2006

Exhibit 4.9-69
EMWS Current Supply and Demand Comparison

Current	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	21	12	15	12	9
Demand	15	14	12	12	12
Difference [a] (Supply - Demand)	***+6***	***-1***	***+3***	***0***	***-3***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively

Source: EMWS, Todd Engineers, 2006

Exhibit 4.9-70
EMWS Dry Year Supply - 2030 Conditions

2030 Supply Sources	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Local Surface Water / Reservoir [a]	17	9	11	9	6
Groundwater [b]	4	4	4	3	3
Total	***21***	***12***	***15***	***12***	***9***

a Assumes 50, 35, 50, and 65 percent reductions in surface water supply for single and multiple-2, -3, -4 year droughts, respectively.
b Assumes 10, 10, 20, and 20 percent reductions in groundwater supply for single and multiple-2, -3, -4 year droughts, respectively.

Source: EMWS, Todd Engineers, 2006

Exhibit 4.9-71
EMWS 2030 Supply and Demand Comparison

2030 / Buildout	*Normal (AFY)*	*Single Dry (AFY)*	*Multiple - 2 (AFY)*	*Multiple - 3 (AFY)*	*Multiple - 4 (AFY)*
Supply	21	12	15	12	9
Demand	21	19	17	17	17
Difference [a] (Supply - Demand)	***0***	***-7***	***-2***	***-5***	***-8***

a Assumes 10, 20, 20, and 20 percent reductions in demand for single and multiple-2, -3, -4 year droughts, respectively.

Source: EMWS, Todd Engineers, 2006

Rainfall records were reviewed to select representative drought years. Rainfall in Marin County amounted to only 55 percent of average in 1976 and 48 percent of average in 1977. [206] Inspection of 1949 through 2000 annual rainfall for gauges in Muir Woods (DWR Station 6027-00) and Kentfield (DWR Station 4500-00) indicates that the lowest rainfall occurred in 1976 at both locations during this period. Rainfall in Kentfield was 42 percent of average and rainfall in Muir Woods was 45 percent of average in 1976 for the 1949 through 2000 period. A review of historic (pre-1950s) annual rainfall was conducted by reviewing historic rainfall records for San Francisco where data extend back to the mid-1800s. The pattern of annual rainfall in San Francisco is similar to Marin, although the total San Francisco rainfall is less than in Marin County. Historic San Francisco rainfall indicates that 1850 is the only year when rainfall was less than 1976. [207] In addition, historic rainfall near Lake Lagunitas was reviewed and indicates that annual (water year) rainfall during the 1879 to 1999 period was less than 1976 and 1977 rainfall only during three water years (1918, 1920, and 1924). [208] Therefore, the 1976-77 drought was selected to represent the single extreme dry year.

Historic reservoir storage volumes were reviewed to select representative drought impacts to surface water supplies. At the end of the severe drought of the 1970s, MMWD had less than 45 percent of normal reservoir storage. [209] The drought of 1987-92 is also notable for its six-year duration and was selected to represent a multiyear drought. Rainfall in Kentfield and Muir Woods (DWR Stations 4500-00 and 6027-00) had been around 60 percent of average for the first three years of this drought.

Monthly reservoir storage volumes in MMWD's four largest reservoirs (Soulajule, Nicasio, Kent and Alpine) were available for select years (1977, 1983, and 2001-2006). [210] A review of monthly water storage indicates that minimum storage typically occurs at the end of October, the end of the dry season. The current capacity of the four reservoirs (maximum storage) is 74,800 AF. Historic average end of October storage for the four reservoirs is reportedly 44,700 AF or 60 percent of capacity. In 1977, the four reservoirs held only 5,500 AF at the end of October but it should be noted that total available storage was less at the time as Kent Lake was enlarged in 1983 and Soulajule Reservoir was completed in 1979. A review of storage in MMWD reservoirs during the early 1990s drought was also conducted. Reservoir storage was the lowest at the end of January 1991- about 45 percent of the historical average at that time. [211]

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206 *Impact of Severe Drought in Marin County, California*, California Department of Water Resources (DWR), Bulletin 206, November 1979, 46 pages.

207 Golden Gate Weather Website, accessed April 28, 2006 online at http://ggweather.com/sf/seasonalrain.gif/

208 *Marin Municipal Water District Rainfall-Runoff Data and Evaluation*, B.G. Grant and Bernie Heare, 1971, 20 pages and KRIS West Marin-Sonoma website, accessed April 17, 2006 online at http://www.krisweb.com/kris_wms/krisdb/webbuilder/1c_c15.htm

209 *Impact of Severe Drought in Marin County, California*, California Department of Water Resources (DWR), Bulletin 206, November 1979, 46 pages.

210 California Department of Water Resources Website, accessed April 28, 2006 online at http://cdec.water.ca.gov/cgi-progs/printfv/STORAGEM/

211 California Department of Water Resources Website, accessed May 5, 2006 online at http://cdec.water.ca.gov/cgi-progs/iodir/STORAG.0191/

It was assumed that the impact of drought on other Marin County surface water supplies would be similar to drought impacts to MMWD reservoir storage. Accordingly, surface water supplies were projected to decrease to 50 percent during a severe single year drought. During the second, third, and fourth years of a prolonged drought, surface water supplies would be decreased by 35 percent, 50 percent, and 65 percent of normal, respectively.

It was projected that imported SCWA water would decrease by ten percent, 20 percent, and 30 percent during the second, third, and fourth years of the drought, respectively. An extended drought could result in a 30 percent or more reduction in SCWA supplies. [212] A recent Water Supply Assessment for Rohnert Park indicated that in a SCWA water rights decision, SCWA would be required to reduce diversions by 30 percent when the volume of water in Sonoma Lake was less than 100,000 AF but that it is unlikely that such a reduced diversion would be triggered after a single dry year. [213] SCWA supplies to Marin County were assumed to remain the same during a severe single year drought.

At the time of preparation of this Draft EIR, the SCWA 2005 Urban Water Management Plan was not available. Nonetheless, draft SCWA 2005 UWMP water supply and demand values were used in the NMWD 2005 UWMP. These values (and those presented in the SCWA 2005 UWMP) assume that additional SCWA facilities will be built and that SCWA contractors will implement water conservation measures. [214] Supply reliability information presented in the SCWA 2000 UWMP is not applicable, as those supply values assumed that SCWA would be granted an increase in water rights from 75,000 AFY to 101,000 AFY, which has not happened yet and is contingent on many conditions. [215] For this Draft EIR, it is deemed prudent to assume up to 30 percent reductions in SCWA supplies in times of severe droughts until additional SCWA water rights are secured as discussed in the paragraph above.

Groundwater is generally less affected by droughts than surface water, at least in the first year or two of a drought. However, most groundwater used in Marin County is hydraulically connected to surface water, as the wells tap shallow alluvial aquifers along stream courses. Available groundwater supplies were estimated to decrease by ten percent during a single extreme drought and ten percent, 20 percent, and 20 percent during the second, third, and fourth years of the drought, respectively.

Review of UWMPs and Water Supply Assessments prepared for other Bay Area communities indicates that many different approaches are used to quantify drought impacts. Supplies to these communities include various combinations of imported water, surface water, groundwater, and recycled water that are each impacted differently during droughts. The drought supply reductions used here are greater than what is reported in NMWD and MMWD UWMPs. NMWD indicated that no supply reductions would occur in drought years; however, their supply estimates are based on the premise that SCWA will secure additional water rights. [216] MMWD indicated that supplies would be reduced by ten percent in a single dry year and by 25 and 50 percent in the second and third dry years,

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212 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

213 *City of Rohnert Park Final Water Supply Assessment*, Winzler & Kelly Consulting Engineers, January 2005.

214 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

215 *Sonoma County Water Agency 2000 Urban Water Management Plan*, Sonoma County Water Agency, 2001.

216 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

respectively.[217] The drought supply reductions selected here seem more prudent as they have occurred in the past and are generally applicable to all the water suppliers.

As a matter of perspective, a Water Supply Assessment for the City of Rohnert Park projected a 30 percent SCWA supply reduction (from normal) in a single extreme dry year and 20 percent reductions in each year of a multiyear drought.[218] Demands were reduced by 20 percent in a single extreme dry year and ten percent in each year of a multiyear drought.[219] Santa Clara Valley Water District's 2005 UWMP used a 57.8 percent supply reduction in an extreme single year drought and 20.7 percent supply reduction from normal in each year of a multiyear drought.[220] Their sources of supply include imported water, groundwater, and local reservoirs. The City of San Jose's 2005 UWMP reduced groundwater and imported water supply by 34.3, 37.5, and 48.7 percent in the first through third years of a multiyear drought, respectively.[221] San Francisco indicated that their water supplies (imported water, groundwater, and recycled water) would be reduced by ten percent in a single dry year and ten, 20 and 20 percent in the first, second, and third years of a multiyear drought, respectively.[222] EBMUD used a five percent reduction in a single dry year and a 25 percent reduction in the second year of a multiyear drought. In the third year of a multiyear drought, supplies would be reduced between 26 and 80 percent depending upon storage depletion.[223] EBMUD's supplies include imported water, surface water, groundwater, and recycled water. In the context of those supply reductions for Bay Area water agencies, the drought reduction estimates used herein are reasonable.

Drought Demand

During a drought, demands are expected to decrease in response to conservation requests or requirements by water suppliers. During the drought of 1976-77, MMWD single family customers reduced demand by 28 percent in 1976 and by 71 percent in 1977 while multifamily customers reduced demand by 12 percent in 1976 and by 54 percent in 1977 in response to the emergency water shortage.[224] These reductions are extremely responsive and generally unrealistic today because water conservation and demand reduction measures have since been initiated and per capita water use is generally not as high as before the 1976-77 drought. MMWD has reduced demand by 15 percent since 1991 and 25 percent since 1970.[225] Water use, especially outdoor use, is already minimal in

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217 *2005 Urban Water Management Plan*, Marin Municipal Water District, adopted January 18, 2006.

218 *City of Rohnert Park Final Water Supply Assessment*, Winzler & Kelly Consulting Engineers, January 2005.

219 *City of Rohnert Park Final Water Supply Assessment*, Winzler & Kelly Consulting Engineers, January 2005.

220 *Santa Clara Valley Water District 2005 Urban Water Management Plan*, December 20, 2005.

221 *2005 Urban Water Management Plan for City of San Jose Municipal Water System*, December 2005.

222 *2005 Urban Water Management Plan for City and County of San Francisco*, San Francisco Public Utilities Commission, December 2005.

223 *East Bay Municipal Utility District (EBMUD) 2005 Urban Water Management Plan*, November 2005.

224 *Impact of Severe Drought in Marin County, California*, California Department of Water Resources (DWR), Bulletin 206, November 1979, 46 pages.

225 Letter to Michele Rodriguez of Marin County Community Development Agency from Eric McGuire, Marin Municipal Water District, regarding Marin Countywide Plan Update, June 29, 2004.

many West Marin communities and it would be unreasonable to expect rationing to reach the 1976-77 MMWD proportional reductions. Although specific water demand reductions during a drought for each use sector (such as single family, multifamily, commercial, etc.) would vary, an average of ten or twenty percent was assumed depending upon the drought year. Demand would be reduced by ten percent during a single year extreme drought as the severity of the emergency and the call to conserve would not become clear until later in the year. Demands would be reduced by 20 percent the second, third, and fourth years of a multiyear drought.

Drought Supply and Demand

Exhibit 4.9-72 summarizes drought impacts to supply and demand in each water service area on an annual basis. The exhibit presents the water service area in the first column and the next four columns indicate under which climatic condition a supply deficit (demand greater than supply) would occur. The baseline in a normal precipitation year under current and 2030 supply and demand estimates is shown in the second and fourth columns. This is similar to the results in **Exhibit 4.9-31** where NMWD-Novato and MMWD have current water supply deficits and NMWD-West Marin and MMWD have projected 2030 supply deficits with average water supplies.

Current and 2030/dry conditions are summarized in the third and fifth columns if water supply deficits occur during a single year drought or in the second, third or fourth years of a multiyear drought. As shown in the exhibit, most of the water service areas experience supply deficits during drought times. MMWD has annual water supply deficits under normal and all drought conditions while MBCSD is able to meet water demands in times of drought.

It is important to note that six of the nine water service areas have summer peaking problems (last column in **Exhibit 4.9-72**). On an annual basis, it may appear that the water providers have enough water, but summer peak demands strain the capacity of water facilities to provide the needed supply on a daily basis. The bottom table of **Exhibit 4.9-72** summarizes the assumptions used to reduce supply and demand during drought years. Rationales for these percent reductions were discussed in the proceeding sections of this Draft EIR.

A set of similar drought impact exhibits was not completed for the unserved areas. Nonetheless, drought related impacts would occur as most unserved users have limited supplies, minimal if any storage facilities and no opportunity to tie into another water source in emergencies. During the 1976-77 drought, livestock ranchers were severely affected and many had to have water and feed hauled in. [226]

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226 *Impact of Severe Drought in Marin County, California*, California Department of Water Resources (DWR), Bulletin 206, November 1979, 46 pages.

Exhibit 4.9-72
Summary of Current and 2030 Water Supply Deficits in Normal and Drought Years [a]

Water Service Area	Demand Greater Than Supply				
	Current - Normal	Current - Dry	2030 -Normal	2030 - Dry	Summer Peaking Problems
NMWD Novato	Deficit	Deficit (Years 3 and 4)		Deficit (Years 3 and 4)	
NMWD West Marin			Deficit	Deficit (All)	Yes
MMWD	Deficit	Deficit (All)	Deficit	Deficit (All)	
BCPUD		Deficit (All)		Deficit (All)	Yes
SBCWD		Deficit (Single, Years 3, 4)		Deficit (Single, Years 3, 4)	Yes
IPUD		Deficit (Single and Year 4)		Deficit (Single, Years 3, 4)	Yes
MBCSD					
CSWS					Yes
EMWS		Deficit (Single and Year 4)		Deficit (All)	Yes

Assumptions of Percent Drought Reduction from Normal				
Source	Single Extreme Year	Year 2 of Multiyear	Year 3 of Multiyear	Year 4 of Multiyear
Surface Water	50	35	50	65
Imported Water	0	10	20	30
Groundwater	10	10	20	20
Recycled	0	0	0	0
Demand	10	20	20	20

a Deficit indicates demand is greater than supply; for multiyear drought, years when deficit occurs are listed

Source: Todd Engineers, 2006

Note that the water supply reliability exhibits (**Exhibits 4.9-36** to **4.9-72**) are based on water supplier current and projected 2030 numbers rather than current County estimates and future *Draft 2005 CWP Update* buildout numbers. The results would be similar if current County numbers were used rather

than current water supplier numbers. Drought impacts would be slightly greater if *Draft 2005 CWP Update* 2030 demands had been used rather than water supplier 2030 demands. The analysis indicates that, as expected, most of the water service areas will experience water supply problems during extended droughts. This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative water supply impact.

Mitigation Measure 4.9-2 Same as Mitigation Measure 4.9-1(a), 4.9-1(b) and 4.9-1(c) for *Impact 4.9-1 Adequacy of Water Supply During a Normal Year*.

Significance After Mitigation Adoption of the programs listed in Mitigation Measures 4.9-1(a), 4.9-1(b) and 4.9-1(c) would assist in minimizing water demands in drought years and lessen potential impacts to adequacy of water supply. However, these programs would not reduce the impact of increasing water demands to a less-than-significant level. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised programs and a new program as described in Mitigation Measure 4.9-1 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency, Marin County Department of Public Works, Water Districts, Agricultural Commissioner, Farm Advisor, Marin Cities and Towns, County Parks, Marin County Open Space District, Sewer Districts, Local Agency Formation Commission, Countywide Planning Agency, Tomales Bay Watershed Council, and California Regional Water Quality Control Board would be responsible for recommending and overseeing implementation of appropriate programs / mitigation measures.

Impact 4.9-3 Require New or Expanded Water Supply Facilities

Land uses and development consistent with the Draft 2005 CWP Update would increase water demand that could exceed the capacity of available distribution, treatment, and / or storage facilities for a number of water agencies during short, peak demand periods. Such an increase could result in the need for new or expanded / retrofitted water supply facilities. While construction of new or expanded water supply facilities could result in adverse effects to the environment, the Draft 2005 CWP Update contains policies that would substantially reduce construction related impacts. Therefore, this would be a less-than-significant impact.

To meet the increased water supply demands consistent with the *Draft 2005 CWP Update*, new or expanded water supply facilities would be needed. These facilities could include water treatment plants, pipelines, wells, and other related supporting equipment.

Six of the nine water service areas currently experience summer peaking problems (**Exhibit 4.9-72)**. Water supply system problems associated with summer peaking can involve the necessity to operate facilities (e.g., wells, pumping stations, treatment plants) at full capacity and around-the-clock to maintain flows, system pressures, and required storage. Water agencies maintain backup and supplemental systems; however, under peak demand conditions, the reliability of the water supply system is more readily compromised by emergencies or disasters. Implementation of the *Draft 2005 CWP Update* would allow additional residential and commercial construction resulting in additional water demands, including demands during peak periods.

The California Department of Health Services (DHS) prescribes minimum standards for source water capacity and storage volume for small water systems. DHS standards require that a system's water sources and storage reservoirs have sufficient capacity to meet the requirements of all water users during maximum demand conditions. These requirements are intended to ensure that sufficient water

supply and water system pressure is available to serve water customers and to support fire-fighting. Accordingly, the capability to meet peak water demands involves public health and safety.

In general, incomplete water supply projects and new facilities have not been included in the supply projections presented in this Draft EIR. An exception is the NMWD-Novato imported SCWA supply. The imported SCWA supply presented in the NMWD's *2005 Urban Water Management Plan* (UWMP) is currently based, in part, on SCWA acquisition of additional water rights and construction of new facilities as discussed in the setting section. Future annual NMWD's imported SCWA water supply was calculated as the difference needed to meet projected demands and it is uncertain how much additional water and what facilities SCWA would need to meet this. [227] SCWA deliveries to MMWD are also dependent upon the NMWD pipeline capacity limits. During high demand periods, this pipeline is not large enough to deliver the necessary amount to NNWD and MMWD and, consequently, MMWD reduced its SCWA supply in future years. [228]

Currently, maximum SCWA water allocations to NNWD and MMWD are limited as SCWA's proposed expansion of its water supply has resulted in litigation, endangered species impacts, water rights proceedings, and the prospect of millions of dollars in infrastructure upgrades and environmental mitigations. [229] An EIR prepared in the 1990s for SCWA's water project expansion was successfully challenged and SCWA is currently preparing an EIR for a new water project, named the Water Supply, Transmission, and Reliability Project. In the meantime, SCWA has declared a temporary impairment of its transmission system and allocations have been reduced.

In order to address an increasing supply deficit, provide reliability, and reduce the dependence on water from outside its service area, MMWD is investigating the use of desalinated water from the San Francisco Bay by using reverse osmosis technology. A pilot plant was constructed at the Marin Rod & Gun Club in San Rafael to evaluate technologies, support environmental assessment, and demonstrate the desalination process. After opening for nearly a year, the pilot plant was dismantled at the end of April 2006.

The proposed full-scale facility would be constructed in two phases. The first phase would consist of a ten mgd facility and, if needed, a second phase could add five mgd to the facility. [230] The next step is to prepare a Preliminary Design Report that provides the design basis for moving ahead with the full-scale project. [231] Preliminary plans indicate that the plant would be located near the pilot plant and bay water would be piped west along East Francisco Boulevard from an intake located near the Richmond-San Rafael Bridge. Waste solids would be trucked to Redwood Landfill north of Novato. Waste brine would be blended with Central Marin Sanitation Agency's wastewater effluent and

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227 *Draft North Marin Water District 2005 Urban Water Management Plan*, North Marin Water District, March 2006.

228 *2005 Urban Water Management Plan*, Marin Municipal Water District, adopted January 18, 2006.

229 Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies (BACWA), December 2, 2005.

230 Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies (BACWA), December 2, 2005.

231 *2005 Urban Water Management Plan*, Marin Municipal Water District, adopted January 18, 2006.

discharged back to the Bay. Produced water would have a maximum total dissolved solids (TDS) concentration of 170 mg/l or parts per million (ppm), comparable to MMWD's current water. [232]

Environmental issues associated with desalination include water intake, brine disposal, plant location, energy use, and growth-inducing impacts. Environmental benefits include reduced reliance on dams and diversions from rivers and groundwater. These impacts will be addressed in a Draft EIR scheduled for release to the public late this year.

EIRs would need to be developed and approved for large water supply facilities such as the SCWA water supply project and MMWD's proposed desalinization plant. The County should take an active role in these EIRs to ensure that they are consistent with the *Draft 2005 CWP Update* and that all potential impacts would be mitigated.

Additional policies and mitigations for this impact are covered in other impacts including *Impacts 4.5-1 Water Quality Standards, 4.5-2 Water Quality - Soil Erosion and Downstream Sedimentation Related to Construction, and 4.5-3 Groundwater Recharge.*

The *Draft 2005 CWP Update* contains goals, policies and programs that, if adopted and implemented, would reduce the need for extra facilities to meet peak demands. County goals for Public Facilities and Services include Goal **PFS-2**, *Sustainable Water Resources*. This goal contains two policies in the *Draft 2005 CWP Update* that pertain to peak demand reductions:

- Policy **PFS-2.1** would promote water conservation, reduction of water waste, and better matching of the source and quality of water to the user's needs. By reducing overall water demand, this policy would also support reduction of peak water demand.

- Policy **PFS-2.2** would support cooperation with local water agencies to mitigate increases in water demand due to new development by supporting water efficiency programs, and thereby would minimize the increase in overall water demand and peak demand that would occur with new development.

The *Draft 2005 CWP Update* includes programs for water conservation that would reduce overall water demand, including peak water demand. These include Programs **PFS-2.a, PFS-2.b, PFS-2.f, PFS-2.g**, **PFS-2.h**, **PFS-2.i**, and **PFS-2.q**. Program **PFS-2.d** would direct the County to support water demand planning by working with the water supply purveyors in the development of the Urban Water Management Plans.

However, reduction of overall water demand results in demand hardening, or the limitation of the water supplier or user's ability to reduce water use further. Demand hardening is defined as *the diminished ability or willingness of a customer to reduce demand during a supply shortage as the result of having implemented long-term conservation measures*. [233] The customers have improved the efficiency of their water use until little water is wasted while living with normal water use behavior and future reductions would be more difficult. Demand hardening results in loss of the flexibility in the system to deal with shortage management because of long-term conservation. This is particularly

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232 Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan* (IRWMP), Bay Area Clean Water Agencies (BACWA), December 2, 2005.

233 *Long-Term Water Conservation & Shortage Management Practices: Planning that Includes Demand Hardening*, California Urban Water Agencies, June 1994.

true in many West Marin County communities where water demands already are extremely low, reflecting the previous success of water conservation programs (e.g., plumbing retrofits and water-wise landscaping), the local cool climate and often-minimal landscaping. Accordingly, water conservation alone is not sufficient for mitigating impacts associated with peak water demand.

Peak water demand stresses on a water system can be alleviated through development of supplemental water supply sources. The *Draft 2005 CWP Update* cites the Ahwahnee Principles for Water Supply and includes Program **PFS-2.c**, which would encourage local water providers to enact programs that promote the Ahwahnee Principles for Water Supply. One of the Ahwahnee Principles indicates that communities should maximize self-sufficiency and water supply reliability by promoting a diversified portfolio of water supply sources. This principle is restated in the water resources Policy **WR-3.1,** *Conserve Water and Develop New Sustainable Sources*, which would support better matching of water source and quality to the user's needs. This principle also is expressed in several public facility programs of the *Draft 2005 CWP Update* (i.e., Programs **PFS-2.k**, **PFS-2.n,** and **PFS-2.o**) that would promote investigation of groundwater availability, quality, and recharge to supplement drinking water supplies, while also requiring documentation of the impact of new development projects on groundwater resources. Related policies for maintaining healthy watersheds and groundwater recharge (i.e., Programs **WR-1.1**, **WR-1.2**, **WR-1.3**, and **WR-1.4**) would be supportive of a portfolio of long-term sustainable water supply sources.

Similarly, peak water demand stresses on a water system could be alleviated through development of alternative or supplemental water supply sources for other users, thereby allowing potable water to be used to meet peak community demands. The *Draft 2005 CWP Update* cites the Ahwahnee Principles, including the recommendation to maximize potable water supply by matching water supplies with the appropriate end use. For example, Program **PFS-2.m** would encourage use of rainwater catchments for irrigation and other non-potable uses, and work with service providers to establish standards for rainwater quality. Program **AG-1.q** would support the efforts of farmers and ranchers in developing diverse water sources for agriculture, including treated wastewater and rainwater catchments. Program **PFS-2.p** would promote appropriate graywater use for landscaping.

The *Draft 2005 CWP Update* also includes Program **PFS-2.j**, *Upgrade West Marin Systems*. This program would encourage water service providers to upgrade the water delivery systems in West Marin to reduce the incidence of saltwater intrusion and leakage. Reduction of leakage in particular would result in greater water system efficiency, supporting the water system in providing water even under peak demand conditions.

Implementation of the *Draft 2005 CWP Update* would require improved or additional water supply facilities to meet increased water demand. The construction of these facilities could result in adverse physical effects on the environment including erosion and sedimentation of drainageways and noise and dust associated with construction activities. However, site-specific impacts of these facilities cannot be determined until such time that they are proposed and undergo environmental review.

The *Draft 2005 CWP Update* includes a number of policies and implementing programs that would substantially reduce construction related impacts from new or expanded water supply facilities. Policies **BIO 4.1** and **BIO 4.2** would reduce such impacts to riparian corridors (e.g., erosion and sedimentation and loss of sensitive habitat) by establishing development setbacks in Streamside Conservation Areas (SCAs). Policies **WR-2.1**, **WR-2.2**, **WR-2.3**, and **WR-2.4** would reduce the volume of urban run-off from pollutants, maintain water quality standards, and avoid erosion and sedimentation from grading and construction activities for new development and County facilities. Policy **AIR-1.3** would require discretionary projects to incorporate the best available air quality

mitigation in order to reduce dust, greenhouse gases, and other harmful emissions. Policy **NO-1.3** would require measures to minimize noise exposure from construction-related activities.

Therefore, this would be a less-than-significant impact. No mitigation would be required..

Mitigation Measure 4.9-3 None Required.

Impact 4.9-4 Impact to Groundwater Supply

Land uses and development consistent with the Draft 2005 CWP Update would result in increased rural demand for groundwater supply. Installation of private wells for domestic and/or agricultural use would result in adverse impacts to groundwater levels in wells and decreased well yields, especially in drought. Due to the lack of comprehensive information regarding the county's groundwater resources, it is uncertain if groundwater supplies would be sufficient to meet rural water demands, especially in drought. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in building of new homes and businesses, accompanied by installation of additional groundwater supply wells in rural and unserved areas. Adverse effects to groundwater supplies and well yields would occur, including potential short-term impacts where pumping of a well causes increased drawdown in a neighboring well and long-term impacts involving overdraft; for example, chronic depletion of groundwater storage or seawater intrusion.

The *Draft 2005 CWP Update* contains several policies and implementation programs that, if adopted and implemented, would reduce adverse effects related to availability of groundwater supply. As summarized in other sections, the *Draft 2005 CWP Update* contains two policies for sustainable water resources (i.e., Policies **PFS-2.1** and **PFS-2.2**) and related programs to support water conservation. These policies and programs would reduce water demand for rural groundwater supply.

The *Draft 2005 CWP Update* also includes Policy **PFS-2.3**, *Manage Water Resources Sustainability*, which would direct the County to manage water resources (including groundwater) to ensure a sustainable clean water supply. Associated with this policy is Program **PFS-2.k**, which would promote studies of groundwater availability and water quality in rural Marin County.

The four policies supporting Healthy Watersheds, **WR-1.1**, **WR-1.2**, **WR-1.3, WR-1.4,** would reduce erosion and downstream sedimentation and promote infiltration, thereby protecting groundwater recharge and the long-term sustainability of groundwater supplies. This is particularly important to rural residents and West Marin water agencies that rely on groundwater supply for part or all of their water supply.

Several policies supporting the County's clean water goal would also support groundwater as a potable supply, including Policies **WR-2.1**, **WR-2.2**, **WR-2.3**, **WR-2.4**, and **WR-2.5**. Three clean water programs would address septic systems and, by doing so, would protect local groundwater quality. One of these is Program **WR-2.d**, which would establish watershed-wide septic system maintenance programs to ensure proper septic system monitoring, repair, and function and thereby protect rural water supplies. Program **WR-2.h** would establish a county service area in Marshall to relocate septic systems away from Tomales Bay. Program **WR-2.i** would consider establishment of a septic inspection, monitoring, and maintenance district to address unincorporated areas with septic systems. These programs protect groundwater quality.

Goal **WR-3**, *Adequate Water for Wildlife and Humans*, is essentially integrative in calling for adequate water for wildlife *and* humans. This goal is supported by Policy **WR-3.1**, which would

support reduction of water waste and better matching of water source and quality to the user's needs. In rural areas, implementation of Policy **WR-3.1** could involve development of graywater, recycled water or rainwater catchments to serve non-potable uses, thereby increasing groundwater availability for potable uses. This policy would be supported by Programs **PFS-2.p** (*Graywater*), **PFS-2.m**, (*Rainwater Catchments*) and **PFS-2.n** (*Rainwater Harvesting*). **PFS-2.n** would also encourage study of groundwater recharge to assess the feasibility of using direct precipitation collection to supplement existing water sources.

While these policies and programs would reduce some of the adverse effects on the availability of groundwater supply, impacts could still occur because these programs and policies would not reduce the effects to a less-than-significant level. Therefore, this would be a significant impact and the following mitigation would be required. Cumulative impacts to groundwater supply would be less than significant. Review of UWMPs for incorporated water suppliers (NMWD-Novato and MMWD) indicates that they have no intent to develop groundwater sources. [234]

Mitigation Measure 4.9-4 In order to reduce the impacts to the availability of groundwater supply, the County would need to revise Programs **PFS-2.m** (*Promote Catchments*), **PFS-2.p** (*Investigate and Consider Appropriate Small-Scale Wastewater Use*), **WR-2.d** (*Monitor and Maintain Septic Systems*), and **WR-2.h** (*Pursue Establishment of Marshall County Service Area*), add new programs to the Water Resources section to provide programs to monitor and manage rural water supplies, or provide water supply services. In addition, the County would need to obtain funding for Programs **PFS-2.k** (*Investigate Tomales Bay Groundwater*), **PFS-2.n** (*Conduct Groundwater Recharge Study*), **PFS-2.p** (*Investigate and Consider Appropriate Small-Scale Wastewater Use*), **WR-2.d** (*Monitor and Maintain Septic Systems*), **WR-2.h** (*Pursue Establishment of Marshall County Service Area*), **WR-2.i** (*Consider Establishing a Septic Inspection, Monitoring, and Maintenance District*), and the new programs. The County would also be required to implement Programs **PFS-2.k** (*Investigate Tomales Bay Groundwater*), **PFS-2.n** (*Conduct Groundwater Recharge Study*), and the new program in the medium-term or sooner.

Mitigation Measure 4.9-4(a) Revise Programs **PFS-2.m**, **PFS-2.p**, **WR-2.d**, and **WR-2.h** of the *Draft 2005 CWP Update* and add a new program to the Water Resources section as follows:

> **PFS-2.m;** *Promote Onsite Rainwater Capture and Retention~~Catchments~~*. ~~Encourage~~ Support the use of on-site rainwater ~~catchments~~ capture, storage, and infiltration for irrigation and other non-potable uses, where appropriate. ~~and work with service providers to e~~Establish standards for rainwater quality and use, and include provisions to prevent contaminating local groundwater and surface water or damaging local septic and water systems.
>
> **PFS-2.p;** *Investigate and Consider Appropriate Small-Scale Wastewater Reduction, Treatment, and Use Technologies*. Work with water agencies to identify and resolve conflicting regulations regarding pre-treated septic drip dispersal systems and appropriate graywater use, ~~to~~ evaluate the potential of small-scale portable graywater converter systems as ~~possible~~ sources for landscaping water, and ~~to~~ modify regulations as necessary to encourage safe graywater use (such as by allowing dual systems that employ graywater to support landscaping). Include potential use of composting toilets, waterless urinals and other appropriate water saving technologies.

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[234] *Draft North Marin Water District 2005 Urban Water Management Plan,* north Marin Water District, March 2006 and *UWMP 2005,* Marin Municipal Water District, adopted January 18, 2006.

WR-2.d; *Monitor and Maintain Septic Systems and Wells*. Establish watershed-wide septic maintenance programs to ensure proper septic system monitoring, repair, and function as warranted. Establish the frequency of required inspections based on the risks to the environment and to groundwater supplies associated with the location of the septic system. For example, a high-priority system near a waterway may need to be inspected as frequently as every two years, while a system in a well drained, dry upland may need inspection only every 5-10 years. Septic program and permitting procedures must at a minimum comply with State law. Document local wells and groundwater use as part of this program, and include monitoring of groundwater quality, as warranted.

WR-2.h; ~~*Pursue*~~ *Establish~~ment of Marshall~~ Additional County Service Areas*. ~~Pursue e~~Establish~~ment of~~ a Marshall County Service Area to relocate septic systems away from Tomales Bay, and to instigate ~~establish septic~~ monitoring of on-site septic systems in a risk based, comprehensive and cost effective manner. The proposed boundary of the County Service Area should include the entire East Shore planning area. Additional County Service Areas should include the rural communities of Tomales and Nicasio. In addition to wastewater services, County service areas should provide water supply services.

WR-2.(new); *Establish a Groundwater Monitoring Program for Unincorporated County Areas.* Establish a countywide groundwater monitoring program that would include all or portions of unincorporated areas that use groundwater. Conduct periodic water level measuring and water quality sampling with regular reporting (at least annual) to the Board of Supervisors.

Mitigation Measure 4.9-4(b) The County would be required to obtain funding for Programs **PFS-2.k**, **PFS-2.n**, **PFS-2.p**, **WR-2.d**, **WR-2.h**, **WR-2.i**, and the new programs. The County would also be required to set the priority of Program **PFS-2.k**, and the new program to "medium" or higher, and revise the time frame of implementation of Program **PFS-2.n**, and the new program to the medium-term or sooner.

Significance After Mitigation Adoption of the programs listed in Mitigation Measure 4.9-4 would assist in minimizing the impacts to availability of groundwater supply, however, they would not reduce the impacts to a less-than-significant level. Therefore, this would remain a significant unavoidable impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised programs as described in Mitigation Measure 4.9-4 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency, Marin County Environmental Health Services, Marin County Department of Public Works, County Administrative Officer, Water Districts, Tomales Bay Watershed Council, Sewer Districts, and California Regional Water Quality Control Board would be responsible for recommending and overseeing implementation of appropriate programs / mitigation measures.

Impact 4.9-5 Interference with or Degradation of Water Supply

Land uses and development consistent with the Draft 2005 CWP Update would increase water demands and result in interference with water supply quantity and/or degradation of water supply quality. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in the building of new homes and businesses and an increase in water demand. To obtain some of the increased supply needed, additional groundwater pumping would occur, especially in West Marin and rural areas. This additional pumping would cause groundwater level declines in some areas, resulting in the need to

lower well pumps, deepen wells, or drill new wells as well as the potential for well competition and interference. Lower groundwater levels would lead to increased seawater intrusion near the coast and result in degrading water quality. The availability, historical use and trends, and quality of groundwater in many parts of Marin County are undocumented. Therefore, the impacts associated with increased use and interference with water supply consistent with the *Draft 2005 CWP Update* are uncertain.

As indicated in **Exhibit 4.9-34**, a large portion of the new homes and businesses would be in the urbanized areas of eastern Marin in NMWD-Novato and MMWD service areas. This new development in NMWD-Novato and MMWD service areas would place a large dependence on imported SCWA water (see **Exhibits 4.9-2** and **4.9-6**). However, the development proposed for the urbanized areas would typically occupy less land as it would consist of infill and multifamily units and, consequently, would use less water for irrigation.

Demand hardening is another result of implementation of the *Draft 2005 CWP Update* and the improvement of the efficiency of water use specified in County policies and programs that is becoming standard across the county. Demand hardening is the diminished ability or willingness of a customer to reduce demand during a supply shortage as the result of having implemented long-term conservation measures. [235] The customers have improved the efficiency of their water use until little water is wasted while living with normal water use behavior and future reductions would be more difficult. Demand hardening results in loss of the flexibility in the system to deal with shortage management because of long-term conservation. This is particularly true in many West Marin County communities where water demands already are extremely low, reflecting the previous success of water conservation programs (e.g., plumbing retrofits and water-wise landscaping), the local cool climate and often-minimal landscaping.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative water supply impact.

The same programs, policies, and mitigations presented in *Impact 4.9-1 Adequacy of Water Supply During a Normal Year* would apply to this impact as reduction of demand would lessen the water supply interference impacts discussed in the above analysis. In addition, the programs, policies, and mitigations presented in *Impact 4.9-4 Impact to Groundwater Supply* would also help reduce interference with water supply impacts associated.

Mitigation Measure 4.9-5 Same as Mitigation Measures 4.9-1(a), 4.9-1(b) and 4.9-1(c) for *Impact 4.9-1 Adequacy of Water Supply During a Normal Year* and 4.9-4(a) and 4.9-4(b) for *Impact 4.9-4 Impact to Groundwater Supply*.

Significance After Mitigation Adoption of the programs listed in Mitigation Measures 4.9-1 and 4.9-4 would assist in minimizing water demands and groundwater supply impacts and lessen interference with water supply impacts. However, these programs would not reduce the impact of interference with water supply to a less-than-significant level. Therefore, this would remain a significant unavoidable project and cumulative impact.

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235 *Long-Term Water Conservation & Shortage Management Practices: Planning that Includes Demand Hardening*, California Urban Water Agencies, June 1994.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised programs and a new program as described in Mitigation Measures 4.9-1 and 4.9-4 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency, Marin County Department of Public Works, Marin County Environmental Services, County Administrative Officer, Water Districts, Agricultural Commissioner, Farm Advisor, Marin Cities and Towns, County Parks, Marin County Open Space District, Sewer Districts, Local Agency Formation Commission, Countywide Planning Agency, Tomales Bay Watershed Council, and California Regional Water Quality Control Board would be responsible for recommending and overseeing implementation of appropriate programs / mitigation measures.

Impact 4.9-6 Secondary Impacts

Land uses and development consistent with the Draft 2005 CWP Update would result in increased use of water supplies and result in secondary impacts such as environmental impacts. This would be a significant impact.

Implementation of the *Draft 2005 CWP Update* would result in the building of new homes and businesses and consequently, an increase in water demand. The securing of additional water supplies would result in secondary impacts. Secondary impacts related to the construction of new or expanded facilities are discussed in *Impact 4.9-3 Require New or Expanded Water Supply Facilities*. Increased surface water and groundwater use would lead to alteration of instream flow regimes and subsequent effects on aquatic habitat.

Another secondary impact associated with water supplies is the conflict with local policies. The *Draft 2005 CWP Update* includes new development in water service areas that have connection moratoria (i.e., for BCPUD and CWCS). While these moratoria are not expected to be lifted in the near future, it is unclear what the water supply situation will be in 2030. It is anticipated that technological advances will allow even greater conservation of water and make alternative water supply sources such as desalination more feasible leading to the lifting of the connection moratoria.

This would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative water supply impact.

While this impact is broad, the same programs, policies, and mitigations presented in *Impact 4.9-1 Adequacy of Water Supply During a Normal Year*, *Impact 4.9-3 Require New or Expanded Water Supply Facilities*, and *Impact 4.9-4 Impact to Groundwater Supply* would reduce secondary impacts.

Mitigation Measure 4.9-6 Same as Mitigation Measures 4.9-1(a), 4.9-1(b) and 4.9-1(c) for *Impact 4.9-1 Adequacy of Water Supply During a Normal Year,* Mitigation Measure 4.9-3 for *Impact 4.9-3 Require New or Expanded Water Supply Facilities* and 4.9-4(a) and 4.9-4(b) for *Impact 4.9-4 Impact to Groundwater Supply*.

Significance After Mitigation Adoption of the programs listed in Mitigation Measures 4.9-1, 4.9-3, and 4.9-4 would assist in minimizing secondary water supply related impacts. However, these programs would not reduce secondary impacts to a less-than-significant level. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised programs and a new program as described in Mitigation Measures 4.9-1, 4.9-3, and 4.9-4 as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency, Marin County Department of Public Works, Marin County Environmental Services, County Administrative Officer, Water Districts, Agricultural Commissioner, Farm Advisor, Marin Cities and

4.10 PUBLIC SERVICES

4.10 PUBLIC SERVICES

This section addresses the following public services, utilities, energy and natural resources in the unincorporated areas of Marin County:

- Hazardous Waste Management
- Wastewater Management Services
- Solid Waste Management
- Energy
- Fire Protection and Emergency Services
- Criminal Justice Services
- Public Education Services
- Parks and Recreation Services

Existing public services, utilities, energy, and natural resources conditions are described in several technical background reports prepared by the Marin County Community Development Agency, Planning Division and included in **Appendix 1** to the Draft EIR. These reports are hereby incorporated by reference and summarized below. The reports include:

- *Marin Countywide Plan, Community Facilities Element Technical Background Report,* Revised February 2003.

- *Marin Countywide Plan, Parks and Recreation Technical Background Report,* January 2005.

- *Marin Countywide Plan, Trails Element Technical Background Report,* January 2004.

- *Marin Countywide Plan, Energy Technical Report,* March 2004.

- *Marin Countywide Plan, Geology, Mineral Resources and Hazardous Materials Technical Background Report,* March 2002, Updated November 2005.

Hazardous Waste Management – Environmental Setting

Introduction

This section provides a brief summary of the presence and regulation of hazardous materials in the County. As the use and volume of hazardous materials has increased, so has the amount of actual damages caused by them as well as the public's recognition of their potential impact on the environment and human health. Their use is prevalent and they are found in industrial, commercial, agricultural, household, and natural environments as well as in the geosphere, hydrosphere, atmosphere and biosphere around the earth. The very nature of these materials and increased public awareness about them has resulted in them becoming some of the most intensely scrutinized and highly regulated classes of materials in California. In addition to their presence and regulation, this section will evaluate their potential for impact on land development as proposed in the *Draft 2005 CWP Update*, which includes development encroachment on existing sites and releases of hazardous materials caused by environmental hazards.

Hazardous Materials Defined

A hazardous material is defined as a substance or combination of substances that, because of its quantity, concentration, or physical, chemical or infectious characteristics, may:

- Cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or,

- Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.

A hazardous material becomes a hazardous waste when either of the following occurs:

- The material has been used for its original intended purpose, or

- When there is no use or intended use for the material and it is to be discarded.

A non-hazardous substance can become a hazardous waste if during its normal use it comes to meet the definition of a hazardous material or hazardous substance. Hazardous substances are substances that have been designated in government codes and regulations or that exhibit certain characteristics such as being toxic, corrosive, flammable, reactive or explosive. Thus, there can be more hazardous waste generated in an area than there are hazardous materials consumed. Since hazardous wastes and hazardous substances fit the definition of being hazardous material, the broader term hazardous material will be used.

Hazardous materials can be released as gases, liquids and / or solids. Depending on how they are released, hazardous materials could affect the following mediums: the air, surface water (streams, lakes, bays, and ocean), groundwater and watersheds, and the soil.

Waste Streams

In addition to the known types and sources of waste, new wastes and waste streams will continue to be identified as human society learns more about the natural environment. Federal and State authorities have formally recognized a new waste stream designated as "Universal Waste". Universal Wastes are "lower risk hazardous wastes that are generated by a wide variety of people rather than the industrial businesses." Additionally, unexpected wastes, waste streams, or consequences are likely to result from new industries or industrial processes. A relatively recent example of this is the contamination of groundwater wells by metratetrabutylether (MTBE), a gasoline additive.

County Regulation and Enforcement

Hazardous materials are extensively regulated by federal, State, and County laws and regulations are constantly being revised and developed as more is learned about the impacts these materials have on environmental and human health. Most hazardous materials regulations originate at the State and federal level, with local county and city agencies enforcing these regulations.

California's Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program as required by Senate Bill 1082. The Marin County Certified Unified Program Agency (CUPA) was established to provide a unified hazardous waste and hazardous materials management program. This program deals with the day-to-day programs required to protect Marin's communities from unsafe use and practices and provide a coordinated emergency response in the case of an accidental release. The Certified Unified Program Agency (CUPA) Unified program consolidates, coordinates and makes consistent portions of the following six programs: [1]

- Hazardous Waste Generators and Hazardous Waste Onsite Treatment
- Underground Storage Tanks (UST's)
- Hazardous Material Release Response Plans and Inventories
- California Accidental Release Prevention Program
- Aboveground Storage Tanks (spill prevention control and countermeasure plan only)
- Uniform Fire Code Hazardous Material Management Plans and Inventories

Regulation and enforcement of hazardous materials in Marin County falls primarily under the CUPA and Waste Management Division within the Department of Public Works and the Community Development Agency. Waste Management provides staff support to the Marin County Solid and Hazardous Waste Joint Powers Authority (JPA). The JPA is responsible of implementation and operation of Marin County's permanent household hazardous waste collection facility.

The JPA also administers Marin County's Hazardous Waste Management Plan (HWMP), which shoulders the responsibility for managing hazardous wastes in accordance with legislated regulations.

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1 *County of Marin, Public Works – Certified Unified Program Agency*, information accessed online at http://www.co.marin.ca.us/depts/pw/main/cupa1.cfm, April 2006.

The HWMP focuses on regulating hazardous wastes by permitting, enforcement, and the unified program activities to assure the safe storage, treatment, transportation and disposal of hazardous wastes through waste reduction, siting criteria, and projected handling need policies and programs.

Environmental Health Services (EHS) protects the public health through a series of programs designed to control hazardous materials and other risks. The Solid Waste Program has been certified by the California Integrated Waste Management Board as the Local Enforcement Agency (LEA) for the County. Environmental Health Services' LEA certification allows it to permit, inspect and enforce regulations at solid waste disposal sites, transformation stations, transfer and processing stations, and material recovery facilities. EHS also oversees septic systems and medical wastes within the County.

Summary of Existing Conditions

The following information provides a general overview for monitoring hazardous materials within Marin County, including the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 as required by CEQA.

Hazardous Waste Generators and Materials Use

According to Marin County's Fiscal Year 2005-2006 Annual CUPA Summary, there are three large-quantity and 499 small-quantity generators of hazardous waste in Marin County. The County CUPA maintains a list of these generators, and the types and quantities of chemicals they produce. The vast majority of Marin County's hazardous waste is produced by "small-quantity generators," which are defined as solid quantities of less than 500 pounds or liquid quantities of less than 55 gallons of any one type or a total aggregate amount of 275 gallons. These wastes are primarily generated by businesses in the retail, manufacturing, and services sectors, which are mostly located within the City-Centered Corridor of eastern Marin County. Eight companies transport hazardous waste in Marin County. [2]

Marin County's CUPA currently regulates, inspects and permits numerous businesses in the County. These businesses have been identified based on their hazardous material registration forms and hazardous materials business plans (HMBP). Relevant classifications for listed businesses include those:

- With underground storage tanks (USTs);
- With aboveground storage tanks (ASTs);
- In the Accidental Release Program (Cal / ARP);
- Required to complete a HMBP;
- That generate hazardous waste; and / or
- Required to complete a tiered permit.

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2 *Envirofacts Information About Marin County, CA,* U.S. Environmental Protection Agency, information accessed online at http://oaspub.epa.gov/enviro/ef_home3.html?p_zipcode=Marin%2C+CA&p_type=county&x=5&y=5, April 2006.

Aerometric Information Retrieval System

Air releases are sites where pollutants are released into the atmosphere from stationary sources such as smokestacks and other vents at commercial or industrial facilities. Information on air releases is contained in the Aerometric Information Retrieval System (AIRS), a computer-based repository for information about air pollution in the United States. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. In AIRS, these sources are known as facilities, and the part of AIRS associated with data about sources is called the AIRS Facility Subsystem, or AFS. The information in AFS is used by the states to prepare State Implementation Plans, to track the compliance status of point sources with various regulatory programs, and to report air emissions estimates for pollutants regulated under the Clean Air Act. Envirofacts air release information specifically relates to industrial plants and their components (stacks, points, and segments). This data provides valuable information not only about the industrial facilities, but about the chemicals they introduce into the local air. [3] According to this data, eight facilities produce and release air pollutants in the County.

The USEPA Resource Conservation and Recovery Act Information System (RCRA Info)

This database provides a national inventory of hazardous waste handlers. The query for Marin County listed 390 facilities for the County (incorporated and unincorporated areas). This is a list of the generators, transporters, handlers, and disposers of hazardous waste in the County that have provided information for this database.

Hazardous Waste and Substances Site (Cortese) List

The Hazardous Waste and Substances Site (Cortese) List is a planning document used by State, local agencies, and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. Government Code section 65962.5 requires the California EPA to develop at least annually an updated Cortese List.

The Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List while other State and local agencies are responsible for providing additional hazardous material release information for the list. The following is the DTSC Site Mitigation and Brownfields Reuse Program information that is required to be on the Cortese List. [4]

DTSC's Site Mitigation and Brownfields Reuse Program EnviroStor database provides DTSC's component of Cortese List data by identifying Annual Workplan (now referred to State Response and / or Federal Superfund), and Backlog sites listed under Health and Safety Code section 25356. In addition, DTSC's Cortese List includes Certified with Operation and Maintenance sites.

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3 *Air Releases (AIRS/AFS), Overview*, U.S. Environmental Protection Agency, information accessed online at http://www.epa.gov/enviro/html/airs/index.html, April 2006.

4 *Brownfields* are properties that lie fallow due to actual or suspected contamination but have a potential for redevelopment or reuse. Brownfield projects result in environmental remediation of the land to make it suitable for development.

Exhibit 4.10-1
Hazardous Waste and Substances Site List for Marin County

Site Name	Site Type	Status	Address	City
Black Point Antenna Field	Military Evaluation	Active	Stonetree Lane	Novato
Fort Baker	State Response	Active	2 Miles South of Sausalito	Sausalito
Fort McDowell	Military Evaluation	Active	4 Miles North of San Francisco	Angel Island
Hamilton Army Airfield, North Antenna Field	State Response	Active	U.S. 101; 3 Miles North of Lucas Valley Road	Novato
Hamilton GSA Lot 7	State Response	Certified / Operation & Maintenance	U.S. 101; 3 Miles North of Lucas Valley Road	Novato
Hamilton GSA Phase II	State Response	Active – Restricted Use	U.S. 101; 3 Miles North of Lucas Valley Road	Novato
Marin-Sonoma Mosquito Abatement District	State Response	Certified / Operation & Maintenance – Restricted Use	201 3rd Street	San Rafael
Novato DOD Housing	State Response	Active – Restricted Use	U.S. 101; 3 Miles North of Lucas Valley Road	Novato
PG & E 4TH Street	State Response	Backlog	4th Street Between A & B Streets	San Rafael

Source: *DTSC's Hazardous Waste and Substances Site List - Site Cleanup (Cortese List)*, Department of Toxic Substances Control, EnviroStor Database, http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm, information downloaded April 2006.

Toxic Release Inventory

The Toxics Release Inventory (TRI) is a publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. According to the most recently updated information available from the EPA, which is for the year 2003, there have been no on-site and off-site, reported, disposal of or otherwise released chemicals in Marin County by all industries for that year. [5]

[5] *Toxic Release Inventory Program*, U.S. Environmental Protection Agency, information accessed online at http://www.epa.gov/tri/, April 2006.

Underground Storage Tanks (USTs)

Numerous underground storage tanks are present in the county, primarily within the City-Centered Corridor along U.S. 101. In the past, many USTs were found to be Leaking Underground Fuel Tanks (LUFTs). [6] Currently none of the USTs regulated by the Department of Public Works are known to be leaking.

Household Hazardous Waste

The Marin County Waste Management Joint Powers Authority (JPA) in conjunction with the City of San Rafael operates a program for accepting most hazardous waste materials at the Marin Recycling Center. [7] This Center allows for households and businesses with small quantities of hazardous waste to properly dispose of hazardous materials and divert this waste from entering landfills. The JPA manages all jurisdictions except Novato. The City of Novato in conjunction with Novato Sanitary District implements its own household hazardous waste program.

Superfund Sites

According to the EPA, there are three Superfund sites in the County that are listed as active; however, they are not on the National Priority List (NPL), which is a list of the worst hazardous waste sites that have been identified by Superfund. [8] These non-NPL sites include: the Hamilton Air Force Base in Novato, the RCA Antenna Farm in Bolinas, and Specification Chromium Corporation in San Rafael. The EPA indicates that the Hamilton Air Force Base and the RCA Antenna Farm are federal facilities that require lead cleanup. The Specification Chromium Corporation is listed as needing preliminary assessment to begin.

Hazardous Materials Release Threats

Human-induced safety risks have resulted from the use and disposal of hazardous materials. These conditions can be encroached upon by development, and conditions that are otherwise secure, can become destabilized by environmental hazards such as geologic, seismic, flood, and fire hazards. As with most any community, facilities that generate, use, or store hazardous materials are often located near residential areas, are near sensitive receptors (e.g., schools, hospitals, nursing homes), or near critical facilities. The potential exists for these areas to be impacted by the release of hazardous materials.

In addition to being sensitive receptor locations, some schools and all hospitals are handlers and generators of hazardous materials. The three hospitals in Marin County and the Marin Community College Campuses have a variety of hazardous materials on-site. [9] During the 1989 Loma Prieta

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6 *Geotracker*, information accessed online at http://www.geotracker.swrcb.ca.gov, April 2006.

7 *Marin Sanitary Service, Safe Disposal of Hazardous Waste*, information accessed online at http://www.marinsanitary.com/hazardous.html, March 2006.

8 *CERLIS Database*, information accessed online at http://cfpub.epa.gov/supercpad/cursites, April 2006.

9 *Technological Hazards – Hazardous Materials, Marin County Operational Area Emergency Operation Plan (MOA-EOP), Part 1, Page 4*, http://www.co.marin.ca.us/depts/ES/main/OESOverView/part1pg4.cfm, information downloaded April, 2006.

Earthquake 490 reported HAZMAT incidents occurred in the Bay Region. Of these 46.1 percent (226) of these incidents involved spills in laboratories. In addition, many of these laboratories were not in the category of "permitted facilities" and had quantities below the threshold quantities that required permits.[10] Significant potential earthquake-caused release threats are present in the community.

Public health in Marin County can be threatened by hazardous materials in two ways:

- By long-term exposure to a contaminated medium; and
- By release of highly mobile hazardous materials to highly mobile mediums. Called "secondary disasters", these events can be triggered by hazardous material releases caused by accidents and natural disasters within and adjacent to Marin County.

When hazardous materials have previously degraded Marin County's environment, it has often been the result of a long-term conditions resulting from the improper use, storage, or disposal of these materials. Many of these past conditions have been identified and mitigated by present local, State, and federal regulations.

The City-Centered Corridor, with the greatest concentration of people and industry in the County, is considered most susceptible to public health concerns and environmental degradation caused by both long-term and by secondary disasters. As population density and activities increase, so does the use of hazardous materials. The Inland Rural Corridor is considered most susceptible to public health concerns and environmental degradation caused by long-term conditions. However, one of the greatest risks for hazardous materials releases in Marin County is accidents from transportation of these materials. Additional risks include hazardous materials release during disasters (e.g., earthquakes) where the response times would be greater, sensitive environmental receptors abundant, and the roads impaired by environmental hazards such as landslides (e.g., in the Inland Rural Corridor). The Coastal and proposed Bayland Corridors are the interfaces between the land and the large bodies of water surrounding the County. These corridors are most susceptible to public health concerns and environmental degradation caused by long-term conditions. However, like the Inland Corridor, the Coastal Corridor is furthest from emergency responders and could suffer from long response times to hazardous material releases during natural disaster events. The Baylands Corridor is adjacent to the City-Centered Corridor and could therefore expect quicker response times.

Marin County Public Works Certified Unified Program Agency has the lead role in addressing potential releases and maintains hazardous materials release response plans and inventories and Uniform Fire Code hazardous materials management plans and inventories.

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10 *Hazardous Materials: Earthquake-Caused Incidents and Mitigation Approaches*, Guna Selvaduray, Earthquake Engineering Handbook, 2003.

Hazardous Waste Management – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to hazardous waste management if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- Possible interference with an emergency response plan or emergency evacuation plan. ***No significant impact, see Initial Study***.

Hazardous Waste Management – Impacts and Mitigation Measures

Impact 4.10-1 Release of Hazardous Materials

Land uses and development consistent with the Draft 2005 CWP Update would result in the transport, use or disposal of hazardous materials that could expose the public and environment to a significant hazard through either their routine use or an accidental release. This would be a significant impact.

As described in the environmental setting, hazardous materials are regularly used, transported, and disposed of in Marin County. Although, such activities are relatively well regulated and monitored, accidental release due to accidents, misuse or natural disasters (e.g., earthquakes) could occur. Additional residential, commercial, industrial, and public land uses and development consistent with the *Draft 2005 CWP Update* would increase the amount of hazardous materials transported, used or disposed of in Marin County.

The *Draft 2005 CWP Update* includes several policies and programs that could reduce the exposure of people and the environment to hazardous materials. Goal **PS-4**, Policy **PS-4.1**, and Programs **PS-4.a** through **PS-4.g** would reduce both the use of and potential for accidental release of these materials. Specifically, these programs would inventory and regulate businesses that use hazardous materials as well as regulate residential and other development in areas adjacent to these sites. In addition, such policies and programs would reduce the potential and severity of an accidental release by restricting transportation of hazardous materials to specific routes and preparing an emergency response plan. Furthermore, these programs would promote the use of alternative and less-toxic materials as well as reduce the amount of hazardous materials used at County facilities.

These policies would reduce the exposure of people and the environment to hazardous materials due to their routine use, transport, or disposal from known public, commercial, and industrial uses. However, such exposure could still occur from the use of hazardous materials by relatively less regulated residential uses. For example, as described in ***Section 4.5 Hydrology, Water Quality, and Flood Hazards***, residential use of hazardous materials (e.g., pesticides and herbicides) could adversely affect people, water quality, and biological resources when such materials are carried by stormwater into drainageways and receiving waters. Therefore, this would be a significant impact and the project would make a cumulatively significant contribution to cumulative release of hazardous materials impacts. The following mitigation would be required.

Mitigation Measure 4.10-1 In order to reduce the exposure of people and the environment to hazardous materials to a less-than-significant level, additional programs, which focus on public education, would be required.

Mitigation Measure 4.10-1(a) Add a new program to facilitate public education regarding the safe use, transport, and disposal of hazardous materials and to encourage the use of less-toxic or non-toxic materials as a substitute.

> **Program PS-4.(new)**; *Hazardous Materials Education.* Continue to educate the public about the safe use, transport, and disposal of hazardous materials and encourage (e.g., through incentive programs) the use of less-toxic substances in residential and County operations.

Mitigation Measure 4.10-1(b) Add a new program to inform and encourage the public to use the available hazardous waste disposal facilities in Marin County.

> **Program PS-4.(new)**; *Hazardous Materials Disposal.* Promote, educate, and encourage the public and businesses to properly dispose of any hazardous materials or waste at the Marin County's permanent household hazardous waste collection facility.

Significance After Mitigation Adoption and implementation of the above mitigation measure would substantially reduce the exposure of the public and the environment to hazardous materials. Such measures would ensure the continued regulation, education, and proper disposal of hazardous materials and, therefore, would reduce adverse affects from exposure to a less-than-significant project impact. However, as described in ***Section 6.2 Cumulative Impacts***, this would remain a significant unavoidable cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the described policies, programs and additional programs of Mitigation Measure 4.10-1 as part of the *Marin Countywide Plan 2005*. The Department of Public Works – Waste Management Division and the Community Development Agency would be responsible for monitoring their implementation.

Impact 4.10-2 Hazardous Emissions, Materials or Waste Near School Sites

Land uses and development consistent with the Draft 2005 CWP Update could result in schools being located within one-quarter mile of locations that use or emit hazardous materials. This would be a significant impact.

There are many sites in Marin County that use and store hazardous materials, including some schools. Additional land uses and development consistent with the *Draft 2005 CWP Update* could result in the use of hazardous materials within one-quarter mile of a school by industrial or commercial uses. Furthermore, expansion of commercial or industrial uses could increase the amount of hazardous materials and waste generated at these facilities. In addition, new schools could be sited near existing

uses that utilize such materials or at a site already contaminated by hazardous waste. As described in the environmental setting, schools are considered sensitive receptors. Many schools and other sensitive receptors in the county are located in the City-Centered Corridor where hazardous materials use, disposal, and transport would continue to be the greatest (see **Map 2-16** in *Draft 2005 CWP Update*).

As described in *Impact 4.10-1 Release of Hazardous Materials*, the *Draft 2005 CWP Update* contains policies and programs that would reduce the use, transport, and disposal of hazardous materials. In addition, the *Draft 2005 CWP Update* contains policies and programs to ensure that all persons (i.e., including sensitive receptors) in Marin County live in a safe and healthy environment.

Goal **EJ-1**; Policies **EJ-1.1**, **EJ-1.2**, **EJ-1.3**, and **EJ-1.4**; and Programs **PS-4.a**, **EJ-1.a**, **EJ-1.b**, **EJ-1.c**, **EJ-1.d**, **EJ-1.e**, **EJ-1.f**, and **EJ-1.g** would ensure safer and healthier communities as they would address hazardous waste as it relates to environmental justice. These policies and programs would compile data to create maps of areas with known toxins and pollutants, including brownfields. Such efforts would identify the proximity of schools and other sensitive receptors relative to locations of existing or proposed land uses that utilize hazardous materials. In addition, these policies and programs would support public education, require pollution analysis, and coordinate County, State, and community efforts to identify and reduce exposure of sensitive receptors.

These programs would substantially reduce hazardous waste impacts to schools and other sensitive receptors to a less-than-significant level. However, until these programs are implemented, sensitive receptors could be located near sites with hazardous materials. In addition, Policy **EJ-1.1** would not ensure that mapping would identify all sites that could pose a risk to school sites. As proposed, the policy would require mapping identify areas with "high levels" of toxins. This term is a relative one and would require clarification in order to provide a more clear policy goal. In addition, implementation of six Programs, **PS-4.a**, **EJ-1.a**, **EJ-1.e**, **EJ-1.f**, **EJ-1.g**, and **EJ-1.h,** would be required to reduce this impact substantially. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, Programs **EJ-1.e** and **EJ-1.f** would be implemented within five years. [11] However, given that Program **EJ-1.a** would require additional grants or other revenue and that the timeframe of implementation for Programs **PS-4.a**, **EJ-1.g**, and **EJ-1.h** is long-term, it cannot be certain that these programs would be implemented in a timely manner. [12]

Therefore, this would be a significant project impact. However, because impacts associated with hazardous emissions, materials or waste near school sites are typically limited to the proximity of development; there would not be a significant cumulative impact. The following mitigation would be required.

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[11] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[12] As described in Figure 4-12 Public Safety Program Implementation and Figure 4-21 Environmental Justice Program Implementation in the *Draft 2005 CWP Update*.

Mitigation Measure 4.10-2 In order to reduce hazardous materials impacts to sensitive receptors to a less-than-significant level, it would be necessary to revise Policy **EJ-1.1** *(Identify and Target Impacted Areas)* and implement programs upon adoption of the *Draft 2005 CWP Update*.

Mitigation Measure 4.10-2(a) Revise Policy **EJ-1.1** in order to ensure that mapping would locate known sources of hazardous materials.

> **Policy EJ-1.1**; *Identify and Target Impacted Areas.* Use available measurement data to map locations with ~~high levels of~~ known toxins and other health-threatening pollutants.

Mitigation Measure 4.10-2(b) In order to reduce impacts related to hazardous emissions, materials, and waste, near Marin County's schools to a less-than-significant level, the County would need to obtain funding for program **EJ-1.a** *(Investigate a Possible Nexus)* and revise the time frame of implementation for programs **PS-4.a** *(Regulate Development Near Waste Sites)*, **EJ-1.g** *(Deny Pollution-Source Proposals)*, and **EJ-1.h** *(Require Pollution Analysis)* to the medium-term or sooner.

Significance After Mitigation If adopted and implemented, Mitigation Measure 4.10-2 and Mitigation Measure 4.10-1 would result in continued monitoring of sites that use or are contaminated by hazardous materials, provide public education, and coordinate efforts to site schools and other sensitive receptors away from hazardous materials. Revision of Policy **EJ-1.1,** which replaces the term "high levels" with "known" would provide a clearer policy goal. These measures would substantially reduce hazardous materials impacts to schools and other sensitive receptors to a less-than-significant level.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the revised policy and programs as part of the *Marin Countywide Plan 2005*. The Department of Public Works – Waste Management Division and the Community Development Agency would be responsible for monitoring their implementation.

Impact 4.10-3 Development on a Hazardous Waste Site

Land uses and development consistent with the Draft 2005 CWP Update would not be located on a site currently included on a list of known hazardous waste sites compiled pursuant to Government Code Section 65962.5. However, unknown hazardous waste could be encountered at a future development site, which would subsequently require such a listing. This would be a significant impact.

As described in the setting section, the list of hazardous waste sites compiled pursuant to Government Code Section 6596.5. (i.e., Cortese List) does not identify any contaminated sites in the unincorporated area that could be developed consistent with the *Draft 2005 CWP Update*. As described in *Impact 4.10-2 Hazardous Emissions, Materials or Waste Near School Sites,* the *Draft 2005 CWP Update* contains policies and programs (i.e., Goal **EJ-1**; Policies **EJ-1.1**, **EJ-1.2**, **EJ-1.3**, and **EJ-1.4**; and Programs **PS-4.a**, **EJ-1.a**, **EJ-1.b**, **EJ-1.c**, **EJ-1.d**, **EJ-1.e**, **EJ-1.f**, and **EJ-1.g)** that would compile data to create maps of areas with known toxins and pollutants, including brownfields. Such efforts would identify the proximity of sensitive receptors relative to locations of existing or proposed land uses that utilize hazardous materials.

While these programs would substantially reduce hazardous waste impacts to sensitive receptors, as discussed in *Impact 4.10-2 Hazardous Emissions, Materials or Waste near School Sites*, it would be necessary to revise Policy **EJ-1.1** to make its intent clearer. This would be a significant impact. However, because impacts associated with development on hazardous waste sites are typically limited

to the proximity of development there would not be a significant cumulative impact. The following mitigation would be required.

Mitigation Measure 4.10-3 Revise Policy **EJ-1.1** (*Identify and Target Impact Areas*) in order to ensure that mapping would locate known sources of hazardous waste.

> **Policy EJ-1.1**; *Identify and Target Impacted Areas.* Use available measurement data to map locations with ~~high levels of~~ known toxins and other health-threatening pollutants.

Significance After Mitigation Adoption of the revised policy in Mitigation Measure 4.10-3 would reduce this impact to a less-than-significant level.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting this revised policy as part of the *Marin Countywide Plan 2005*. The Department of Public Works – Waste Management Division and the Community Development Agency would be responsible for monitoring implementation.

Wastewater Management Services – Environmental Setting

Twenty sanitary districts provide wastewater management services throughout Marin County. West Marin relies largely on septic tanks.[13] These districts provide various services such as sewage collection, treatment, and disposal of sewage, wastewater recycling, system maintenance, and garbage collection. Most facilities and treatment plants described below have experienced capital improvement programs or renovation within the last ten to 20 years.

Sanitary Treatment Plants and Service Populations

Seven main agencies operate eight wastewater treatment plants that treat wastewater from the twenty sanitary districts. **Exhibit 4.10-2** depicts the service population, capacities, and current flow rates for each agency. Although some development in the unincorporated area utilizes septic tanks or is not associated with a sanitary district, most of the housing units and nonresidential floor area feed into the agencies listed in this exhibit.

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[13] *Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County,* The Marin County Community Development Agency, Planning Division, January 2003.

Exhibit 4.10-2
Agency Service Populations and Sanitary Treatment Plant Design Capacities[a]

Agency	Service Population [b]	Capacity (MGD) [c]	Flows [b] (MGD)	Capacity Remaining (percent)	Capacity Reached (Year)
Sausalito / Marin City Sanitary District	27,260	1.80	1.30	13	N / A
Sewerage Agency of Southern Marin	28,000	3.60	2.50	28	N / A
Sanitary District #5	9,500	0.98	0.77	21	N / A
Central Marin Sanitation Agency	120,000	10.0	8.0	20	N / A
Las Gallinas Valley Sanitary District	32,000	2.92	2.33	20	Estimated 2035
Novato Sanitary District (Novato)	60,000 in District area	4.53	3.60	21	Estimated 2025
Novato Sanitary District (Ignacio)		2.02	1.60	21	Estimated 2025
Bolinas Public Utilities District	1,500	0.065	0.035	54	2000

a Dry-weather Capacities
b Population and flow numbers current in 2005
c Million gallons per day

Source: Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County, The Marin County Community Development Agency, Planning Division, January 2003. Updated numbers provided by Kristin Drumm, Marin County Development Agency Planner, March 2006.

The Sewerage Agency of Southern Marin (SASM) and its member agencies (i.e., the Richardson Bay Sanitary District, the City of Mill Valley, Tamalpais Community Services District, Alto Sanitary District, Almonte Sanitary District, and Homestead Valley Sanitary District) service southern Marin County. Sanitary District #5 provides wastewater treatment services to the remainder of southern Marin County including the Tiburon area, the Sausalito / Marin City Sanitary District, and the private Seafirth treatment plant, which serves approximately 100 homes between Corte Madera and Tiburon. In 2005, the Marin County Local Agency Formation Commission (LAFCO) recommended the ten agencies serving southern Marin County consolidate into fewer agencies to serve their customers better, to position the agencies to meet future regulations more effectively, and to realize immediate and long-term cost savings.

The Central Marin Sanitary Agency and its three-member sanitary districts service a portion of central Marin County. The Las Gallinas Valley Sanitary District also has a treatment plant in central Marin County. The Novato Sanitary District treats wastewater from its district with two wastewater treatment plants (i.e., the Novato and Ignacio facilities).

West Marin is largely unincorporated and has one treatment plant operated by the Bolinas Public Utilities District, which serves the community of Bolinas. While Dillon Beach and Tomales Village Community Services have small treatment plants, they are not included in the exhibit but are explained later in this section.

Sewerage Agency of Southern Marin

The Sewerage Agency of Southern Marin (SASM) and its six member agencies provide wastewater collection, treatment, reclamation, and disposal services to approximately 28,000 residents in southern Marin County. The City of Mill Valley contracts with the SASM to provide operation, maintenance, and management of all SASM facilities. Each member agency is responsible for administering the sewage collection system within its district. Wastewater is then transported to the SASM treatment plant in Mill Valley. The six member agencies receive a capacity allocation based upon 1980 estimates of service requirements. The plant has a dry-weather flow processing capacity of 3.6 million gallons per day (MGD), which meets the Regional Waster Quality Control Board specifications. The average daily dry-weather flow in 2005 was 2.5 MGD. Treated wastewater at the SASM treatment plant is discharge via a deep-water outfall into Raccoon Strait. SASM recycles about four million gallons of water a year by irrigating an adjacent park. [14] The SASM also operates a dump station at the treatment plant that receives hauled septic wastes.

Exhibits 4.10-3 and **4.10-4** show the 20 local sanitary districts, the number of housing units, and square feet of nonresidential floor area they serve in both the unincorporated and incorporated areas of Marin County. **Exhibit 4.10-3** additionally describes the distribution of proposed housing units including the three land use scenarios considered by the *Draft 2005 CWP Update*.

Sanitary District #5

Sanitary District #5 provides sewage collection, treatment and disposal for approximately 9,500 residents in Belvedere and parts of Tiburon. The district is responsible for the operation and maintenance of two sewage treatment facilities, its nine pumping stations and approximately 11 miles of collection system. After treatment, the effluent is discharged 400 feet offshore into Raccoon Strait, utilizing the same outfall line as the SASM plant in Mill Valley. The plant has a dry-weather flow processing capacity of 0.98 MGD. The average daily dry-weather flow in 2005 was 0.77 MGD. However, the small secondary treatment plant that serves a subdivision near Paradise Cove is running at near capacity. Major capacity upgrades are needed to provide services for additional homeowners currently on septic systems or others in the area. While the treatment plant is designed to handle wet-weather flows of up to 6.3 MGD, wet-weather infiltration averages less than five MGD.

Sausalito / Marin City Sanitary District

The Sausalito / Marin City Sanitary District (SMCSD) provides wastewater conveyance and treatment services to 27,260 people in the City of Sausalito, Marin City, parts of Tamalpais Valley, Muir Woods, and the Marin Headlands area. The SMCSD maintains the collection system in Marin City while the City of Sausalito and the Tamalpais Community Services District are responsible for the maintenance of their respective collection systems. The SMCSD treatment plant has an average day dry-weather design flow capacity of 1.8 MGD and wet weather flow capacity of 5.5 MGD. Plant effluent is discharged to the Central San Francisco Bay via a deep-water outfall pipe. Based on 2005 data, the plant discharged an average day dry-weather flow of 1.3 MGD.

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[14] *Marin Municipal Water District 2005 Urban Water Management Plan*, Marin Municipal Water District, Adopted January 18, 2006.

Exhibit 4.10-3
Existing and Projected Housing Units Served by Sanitary District

Sanitary District	UNINCORPORATED				INCORPORATED	
	Existing Housing Units	Scenario 1 Housing Units	Scenario 2 Housing Units	Scenario 3 Housing Units	Existing Housing Units	Buildout Housing Units
Almonte	718	892	854	842	0	0
Alto	480	481	481	481	0	0
Bel Marin Keys [a]	0	1	1	1	0	0
Belvedere	0	0	0	0	1,027	1,044
Bolinas	594	886	886	886	0	0
Homestead Valley	1,056	1,148	1,148	1,148	0	0
Las Gallinas Valley	4,199	5,084	5,071	5,177	8,369	10,138
Mill Valley	0	0	0	0	6,350	6,847
Murray Park [b]	89	102	102	102	0	0
Novato	1,854	1,863	1,863	1,863	20,600	21,405
Richardson Bay	2,376	2,938	2,866	2,844	1,876	1,911
San Quentin [b]	45	45	45	45	0	0
San Rafael	591	683	683	683	15,740	19,302
Sanitary District #2	288	330	330	330	4,363	4,881
Sanitary District #5	106	111	111	111	1,896	1,982
Sanitary District #1	3,887	4,372	4,285	4,258	15,726	16,433
Sausalito-Marin City	1,751	2,309	2,228	2,202	4,195	4,289
Tamalpais [a]	2,446	2,781	2,724	2,705	0	0
Tomales [b]	28	32	32	32	0	0
Tomales Village [a]	62	82	82	82	0	0
Not in a District	6,753	8,575	8,923	8,923	528	900
Total	***27,323***	***32,715***	***32,715***	***32,715***	***80,670***	***89,132***

a Bel Marin Keys, Tamalpais and Tomales Village are Community Service Districts
b Murray Park, San Quentin, and Tomales are Sewer Maintenance Districts

Source: Marin County Community Development Agency, November 2006.

Exhibit 4.10-4
Existing and Projected Nonresidential Floor area Served by Sanitary District

Sanitary District	UNINCORPORATED		INCORPORATED	
	Existing (Square Feet)	Draft 2005 CWP Update (Square Feet)	Existing (Square Feet)	Buildout (Square Feet)
Almonte	63,351	73,231	0	0
Alto	58,550	58,550	0	0
Bel Marin Keys [a]	0	0	0	0
Belvedere	0	0	95,083	95,083
Bolinas	37,546	38,173	0	0
Homestead Valley	12,946	12,946	0	0
Las Gallinas Valley	250,979	292,468	5,803,626	5,953,806
Mill Valley	0	0	1,346,390	1,319,370
Murray Park [b]	0	0	0	0
Novato	41,680	41,680	8,193,035	15,482,807
Richardson Bay	404,796	489,796	58,064	86,650
San Quentin [b]	1,682	1,682	0	0
San Rafael	9,935	9,935	12,110,228	12,657,073
Sanitary District #2	4,508	17,508	2,706,807	3,292,520
Sanitary District #5	0	0	399,936	453,322
Sanitary District #1	266,567	472,571	2,927,895	3,193,720
Sausalito-Marin City	454,459	480,901	2,117,794	2,275,725
Tamalpais [a]	92,547	104,397	0	0
Tomales [b]	35,186	35,186	0	0
Tomales Village [a]	647	647	0	0
Not in a District	1,469,170	2,311,659	247,087	621,677
Total	***3,204,549***	***4,441,330***	***36,005,945***	***45,431,753***

a Bel Marin Keys, Tamalpais, and Tomales Village are Community Service Districts
b Murray Park, San Quentin, and Tomales are Sewer Maintenance Districts

Source: Marin County Community Development Agency, November 2006.

Central Marin Sanitation Agency

The Central Marin Sanitation Agency (CMSA) treats wastewater from the San Rafael and Ross Valley areas. Its member agencies include Sanitary District #1 in Ross Valley, Sanitary District #2 in Corte Madera, the City of Larkspur, and the San Rafael Sanitation District, all of which serve a population of approximately 120,000 people. The 44 square mile service area includes most of the City of San Rafael (excluding Terra Linda and Santa Venetia, which are part of the Las Gallinas Sanitary District), Larkspur, Ross, San Anselmo, Kentfield, Greenbrae, Fairfax, and Corte Madera. The plant, located in San Rafael, was designed to process up to 30 MGD of wastewater in wet weather but is officially rated to process ten MGD during dry weather. Average dry-weather flow in 2005 was 8.0 MGD or 80 percent of capacity. After treatment, effluent is discharged through a seven-foot diameter outfall extending more than 8,000 feet into San Francisco Bay. CMSA has limited onsite reclaimed water uses. [15] The CMSA does not manage or monitor individual septic tanks but the facility does receive waste removed from septic tanks in Marin County by commercial septage haulers, portable toilet waste, and grease from restaurants. The total amount of hauled waste processed at the CMSA plant in 2000 was 653,400 gallons. The CMSA is evaluating ways to keep residual particles suspended in order to reduce accumulation in the outfall pipeline as well as ways to improve the control of odors from the facility's sewage treatment processes.

Some areas in Sanitary District #1 are still served by septic tank. As these septic tanks begin to fail, it is the property owner's responsibility to provide sewer service when connection to a sewer line is physically feasible. In 1996, the District developed guidelines for the installation of both private and public sewer systems that other sanitary districts within Marin County have adopted. [16]

The original sewers in San Rafael were installed in the late 1800s. About two-thirds of the sewers in use within the San Rafael Sanitation District (SRSD) were installed prior to the 1960s before watertight pipeline materials became available. The SRSD has been updating sewers since the 1960s and continues to address the necessary improvements to both the gravity sewer and the force main systems. The estimated cost of needed improvements is $15.9 million.

Las Gallinas Valley Sanitary District

The Las Gallinas Valley Sanitary District (LGVSD) services approximately 32,000 residents in a seventeen square mile area. Its average dry-weather flow capacity is 2.92 MGD with a current dry-weather flow average of approximately 2.33 MGD. The LGVSD has seen a reduction in dry-weather flow due to its success in reducing inflow / infiltration into the sewer system. After treatment, the District either discharges wastewater into Miller Creek, a tributary of San Pablo Bay, in the wintertime or reclaims it during the summer. In cooperation with Marin Municipal Water District, reclaimed wastewater is used in four ways: pasture irrigation, filling of storage ponds, storage pond evaporation, and a cooperative effort between both agencies in treating the secondarily treated wastewater through the tertiary treatment stage and sending it back to customers within the District as landscape irrigation

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15 *Marin Municipal Water District 2005 Urban Water Management Plan,* Marin Municipal Water District, Adopted January 18, 2006.

16 *Sanitary District #1 Standard Specifications and Drawings* were adopted or are used by several Districts including the Las Gallinas Valley Sanitary District, the San Rafael Sanitation District, Richardson Bay Sanitary District, and others. Nichols•Berman communication with Barry Hogue, District Manager, Sanitary District #1, October 30, 2006.

water. The Civic Center currently uses treated wastewater for landscape irrigation as well for toilet flushing in the jail facility.

Novato Sanitary District

The Novato Sanitary District (NSD) provides wastewater collection, treatment, and disposal services for approximately 18,500 residents. The NSD operates two treatment plants that are located in Novato and Ignacio. The Novato plant, which was upgraded in 1984, has a maximum dry-weather flow capacity of 4.53 MGD and a daily dry-weather average of 3.60 MGD. The Ignacio plant, which was updated in 1986, has a dry-weather flow capacity of 2.01 MGD and a daily dry-weather average of 1.60 MGD. Both plants discharge treated wastewater into the near shore waters approximately 1,100 feet beyond Hamilton Air Force Base during wet weather months. During dry weather, the treated wastewater is used to irrigate 1,000 acres of District-owned or leased pasturelands. The irrigation program, which has been operating since 1986, reclaims an average of over 40 percent of the average annual dry-weather flow and has proven to be a financial success for the District. [17]

Bolinas Public Utilities District

Bolinas Community Public Utility District (BCPUD) has a service population of 1,500 residential, commercial, and institutional properties. In 1975, responding to an order from the State of California to cease and desist disposing of the system's effluent in the channel of Bolinas Lagoon, BCPUD constructed a pump station, a force main, and a treatment facility. [18] The treatment plant was designed to treat 0.065 MGD and had an average flow of 0.035 MGD in 2005. The facility is an integrated pond system that uses no chemicals in the treatment process, relying instead on a biological process of methane fermentation, with aeration and recirculation for odor control. Following primary and secondary treatment, the effluent is spray irrigated onto a 90-acre parcel of land adjacent to Mesa Road. In 1990, BCPUD completed an infiltration / inflow correction project to eliminate unwanted stormwater runoff and seawater intrusion. While the project reduced infiltration / inflow by 70 percent, the District still experiences capacity problems in years of above average rainfall and has continued the moratorium on new service connections enacted in 1990 as a requirement for Clean Water Grant Program funding. One-third of the community is linked to the sewerage system. The remaining units use septic systems. Septic tanks in the District are periodically pumped and the effluent is hauled to the treatment plant. The District accepts up to three 1,200-gallon loads per day from District residents only.

Dillon Beach

The North Marin Water District provides sewer service to 199 residential connections in Dillon Beach. The gravity system flows to a lift station with a capacity of 144,000 gallons per day. Flows from the sewerage lift station are discharged into two three-million gallon storage and treatment ponds. Treated effluent is discharged to an 11-acre subsurface disposal field.

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[17] *Novato Sanitary District, Recycled Water Program*, information accessed online at http://www.novatosan.com/waste/recycled-water.html, February 2006.

[18] *Bolinas Community Public Utility District, Sanitary Sewer System*, information accessed online at http://www.bcpud.org/, February 2006.

Tomales

The community of Tomales provides sewage collection and service system for existing residences and commercial establishments, school facilities and can accommodate approximately 50 new residential units.

Wastewater Management Services – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to wastewater management if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Result in the determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Wastewater Management Services – Impacts and Mitigation Measures

Impact 4.10-4 Increased Wastewater Treatment Demand
Development in unincorporated Marin County would increase wastewater treatment demand to service providers. While sufficient capacity is projected to meet this demand, implementation of the Draft 2005 CWP Update would generate wastewater flows that would exceed the capacity of the Bolinas Community Public Utilities District. This would be a significant impact.

Provision of adequate wastewater system capacity in urban areas of Marin County is largely the responsibility of public agencies that are not under the jurisdiction of the County. These agencies must not only maintain their systems and facilities to serve existing users, but also must expand as needed to accommodate projected growth within each sanitary district. It is not possible to ensure that the districts would be able to provide service to projected growth 15 to 30 years into the future due to funding limitations, permitting, and environmental entitlements. This analysis focuses on whether each district would have adequate wastewater capacity to serve development consistent with buildout of the *Draft 2005 CWP Update* land use plan. The determinations made are based on existing flows and capacities reported to the Community Development Agency by wastewater service providers in Marin County.

Exhibit 4.10-5 describes existing and projected unincorporated and incorporated residential growth that would occur in each of Marin County's 20 sanitary districts. As explained in the environmental setting, these districts collect, treat, and dispose of wastewater by various means. The three scenarios described represent different options under which housing units would be distributed in the unincorporated area.[19] The exhibit also describes the range of net change each district could experience under the three options and thus, the greatest amount of residential development projected to occur. Similarly, **Exhibit 4.10-6** illustrates the projected range of square feet of nonresidential floor area that would be developed with implementation of the *Draft 2005 CWP Update.*

These exhibits show that districts serving the City-Centered Corridor area would be most affected by new land uses and development. Incorporated areas would accommodate approximately 75 percent of the additional nonresidential square footage projected to occur through 2030.

Exhibit 4.10-7 lists the seven main wastewater agencies that treat wastewater in Marin County. The exhibit also describes the ability of these district's wastewater treatment plants to accommodate projected wastewater flows generated by land uses and development consistent with the *Draft 2005 CWP Update*.

With the exception of the Bolinas Community Public Utility District, the wastewater treatment plants described in **Exhibit 4.10-7** serve development in both unincorporated and incorporated areas. Analysis of wastewater capacities below evaluates the ability of wastewater service providers to accommodate the incremental growth that would occur in unincorporated Marin County with implementation of the *Draft 2005 CWP Update*. Projected flows were calculated using buildout growth described in **Exhibits 4.10-5** and **4.10-6**. Capacities and wastewater flows reported in millions of gallons per day (MGD) have been rounded to three decimal places. Actual future flows and capacities provided by the various districts are reported in gallons per day (GPD) in parentheses. Cumulative flows, which include both those of the *Draft 2005 CWP Update* in the unincorporated area and those of the incorporated cities and towns, are discussed in ***Section 6.2 Cumulative Impacts***.

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[19] Refer to **Exhibit 3.0-14** for an explanation of development Scenarios 1, 2, and 3.

Exhibit 4.10-5
Draft 2005 CWP Update Housing Units Sanitary Service Impacts by Sanitary District

Sanitary District	UNINCORPORATED					INCORPORATED		
	Existing Housing Units	Scenario 1 Housing Units	Scenario 2 Housing Units	Scenario 3 Housing Units	Range of Net Change	Existing Housing Units	Buildout Housing Units	Net Change
Almonte	718	892	854	842	+136	0	0	0
Alto	480	481	481	481	1	0	0	0
Bel Marin Keys [a]	0	1	1	1	+1	0	0	0
Belvedere	0	0	0	0	0	1,027	1,044	+17
Bolinas	594	886	886	886	+292	0	0	0
Homestead Valley	1,056	1,148	1,148	1,148	+92	0	0	0
Las Gallinas Valley	4,199	5,084	5,071	5,177	+872 to 978	8,369	10,138	+1,769
Mill Valley	0	0	0	0	0	6,350	6,847	+497
Murray Park [b]	89	102	102	102	+13	0	0	0
Novato	1,854	1,863	1,863	1,863	+9	20,600	21,405	+805
Richardson Bay	2,376	2,938	2,866	2,844	+468 to 562	1,876	1,911	+35
San Quentin [b]	45	45	45	45	0	0	0	0
San Rafael	591	683	683	683	+47 to 92	15,740	19,302	+3,562
Sanitary District # 02	288	330	330	330	+42	4,363	4,881	+518
Sanitary District #05	106	111	111	111	+5	1,896	1,982	+86
Sanitary District #01	3,887	4,372	4,285	4,258	+398 to 485	15,726	16,433	+707
Sausalito-Marin City	1,751	2,309	2,228	2,202	+451 to 558	4,195	4,289	+94
Tamalpais [a]	2,446	2,781	2,724	2,705	+259 to 335	0	0	0
Tomales [b]	28	32	32	32	+4	0	0	0
Tomales Village a	62	82	82	82	+20 to 23	0	0	0
Not in a District	6,753	8,575	8,923	8,923	+1822 to 2170	528	900	+372
Total	***27,323***	***32,715***	***32,715***	***32,715***	***+5392***	***80,670***	***89,132***	***+8,462***

a Bel Marin Keys, Tamalpais and Tomales Village are Community Service Districts
b Murray Park, San Quentin, and Tomales are Sewer Maintenance Districts

Source: Marin County Community Development Agency, November 2006.

Exhibit 4.10-6
Existing and Proposed Nonresidential Floor Area by Sanitary District

Sanitary District	UNINCORPORATED			INCORPORATED		
	Existing (Square Feet)	Draft 2005 CWP Update (Square Feet)	Net Change (Square Feet)	Existing (Square Feet)	Buildout (Square Feet)	Net Change (Square Feet)
Almonte	63,351	73,231	+9,880	0	0	0
Alto	58,550	58,550	0	0	0	0
Bel Marin Keys [a]	0	0	0	0	0	0
Belvedere	0	0	0	95,083	95,083	0
Bolinas	37,546	38,173	+627	0	0	0
Homestead Valley	12,946	12,946	0	0	0	0
Las Gallinas Valley	250,979	292,468	+41,489	5,803,626	5,953,806	+150,180
Mill Valley	0	0	0	1,346,390	1,319,370	-27020
Murray Park [b]	0	0	0	0	0	0
Novato	41,680	41,680	0	8,193,035	15,482,807	+7,289,772
Richardson Bay	404,796	489,796	+85,000	58,064	86,650	+28,586
San Quentin [b]	1,682	1,682	0	0	0	0
San Rafael	9,935	9,935	0	12,110,228	12,657,073	+546,845
Sanitary District # 2	4,508	17,508	+13,000	2,706,807	3,292,520	+585,713
Sanitary District #5	0	0	0	399,936	453,322	+53,386
Sanitary District #1	266,567	472,571	+206,004	2,927,895	3,193,720	+265,825
Sausalito-Marin City	454,459	480,901	+26,442	2,117,794	2,275,725	+157,931
Tamalpais [a]	92,547	104,397	+11,850	0	0	0
Tomales [b]	35,186	35,186	0	0	0	0
Tomales Village [a]	647	647	0	0	0	0
Not in a District	1,469,170	2,311,659	+842,489	247,087	621,677	+374,590
Total	***3,204,549***	***4,441,330***	***1,236,781***	***36,005,945***	***45,431,753***	***+9,425,808***

a Bel Marin Keys, Tamalpais and Tomales Village are Community Service Districts
b Murray Park, San Quentin, and Tomales are Sewer Maintenance Districts

Source: Marin County Community Development Agency

Exhibit 4.10-7
Existing Wastewater Treatment Capacity and Projected Wastewater Flows

Agency	*2005 Service Population (Persons)*	*Total Capacity* [a] *(MGD)*	*2005 Flows (MGD)*	*2005 Remaining Capacity (MGD)*	*Additional Flows of Draft 2005 CWP Update for Unincorporated Development* [b] *(MGD)*	*2030 Remaining Capacity (MGD)*
Sausalito / Marin City Community Service District	27,260	1.80	1.30	0.50	0.164	+0.336
Sewerage Agency of Southern Marin	28,000	3.60	2.50	1.10	0.361	+0.739
Sanitary District #5 (Tiburon)	9,500	0.98	0.77	0.21	0.001	+0.209
Central Marin Sanitation Agency	120,000	10.0	8.00	2.00	0.387	+1.613
Las Gallinas Valley Sanitary District	32,000	2.92	2.33	0.59	0.227	+0.363
Novato Sanitary District [c]	60,000	6.55	5.20	1.35	0.002	+1.348
Bolinas Community Public Utility District	1,500	0.065	0.035	n / a [d]	0.059	n / a [d]

a Dry-weather Capacities in million gallons per day (MGD)
b Figures in MGD are rounded to three decimal places. Data that are more exact are provided in gallons per day GPD in the text descriptions that follow this exhibit. The additional flows calculated are related to projected development in the unincorporated areas only. Cumulative flows (i.e., including those of the incorporated cities and towns) of future development are analyzed in ***Section 6.2 Cumulative Impacts***.
c Data represent combined capacities for both the Novato and the Ignacio treatment plants.
d Bolinas Community Public Utility District currently has a moratorium on additional wastewater hookups because of lack of treatment capacity and limitations on water.

Source: Nichols Berman and the Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County, The Marin County Community Development Agency, Planning Division, January 2003. Updated numbers provided Marin County Development Agency, November 2006.

The Sausalito-Marin City Sanitary District has current remaining capacity to treat an additional 0.50 MGD (500,000 GPD). Projected development in the unincorporated area of 558 housing units and 26,442 square feet of nonresidential floor area would generate approximately 0.164 MGD (164,000 GPD) of additional wastewater.[20] [21] Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

The Sewerage Agency of Southern Marin (SASM) and its six member agencies have current remaining capacity to treat an additional 4,624.7 equivalent dwelling units (EDUs) or 1.1 MGD (1,100,000 GPD).[22] [23] Projected development in the unincorporated area of 1,164 housing units and 106,730 square feet of nonresidential floor area would generate approximately 0.361 MGD (360,000 GPD) of additional wastewater. Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

Sanitary District #5 (Tiburon) has current remaining capacity to treat an additional 0.21 MGD (210,000 GPD). Projected development in the unincorporated area of five housing units and zero square feet nonresidential floor area would generate approximately 0.001 MGD (1,000 GPD) of additional wastewater. Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.[24]

The Central Marin Sanitation Agency has current remaining capacity to treat an additional 2.00 MGD (2,000,000 GPD).[25] Projected development in the unincorporated area of 619 housing units and 219,004 square feet of nonresidential floor area would generate approximately 0.387 MGD (387,000 GPD) of additional wastewater. Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

The Las Gallinas Valley Sanitary District has current remaining capacity to treat an additional 0.59 MGD (590,000 GPD). Projected development in the unincorporated area of 885 housing units and

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[20] This analysis assumes the maximum number of housing units under the three possible land use scenarios in order to give the most conservative estimate of wastewater treatment demand under the *Draft 2005 CWP Update*.

[21] Sausalito-Marin City Sanitary District did not provide a response to request for information on ability to handle development related to the *Draft 2005 CWP Update*. The calculations provided are based on available capacity found in the *Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County*, The Marin County Community Development Agency, Planning Division, January 2003.

[22] Email communication from Stephen Danehy, Acting General Manager, Sewerage Agency of Southern Marin, to Kristin Krasnove, Planner, Marin County Community Development Agency, June 5, 2006.

[23] One EDU is approximately equal to one housing unit.

[24] Email communication from Robert L. Lynch, Interim District Manager, Sanitary District #5, to Kristin Krasnove, Planner, Marin County Community Development Agency, June 6, 2006. Additional communication with Nichols·Berman on June 14, 2006.

[25] The Central Marin Sanitary District did not provide a response to request for information on ability to handle development related to the *Draft 2005 CWP Update*. The calculations provided are based on available capacity found in the *Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County*, The Marin County Community Development Agency, Planning Division, January 2003

41,489 square feet of nonresidential floor area would generate approximately 0.227 MGD (227,000 GPD) of additional wastewater.[26] Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

The two wastewater treatment plants of the Novato Sanitary District have current remaining capacity to treat an additional 1.35 MGD (1,350,000 GPD).[27] Projected development of nine housing units and zero square feet of nonresidential floor area would generate approximately 0.002 MGD (2,000 GPD) of additional wastewater. Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

The Bolinas Community Public Utility District (BCPUD) has moratorium on any new sewer service connections. This moratorium was enacted in 1986 due to capacity problems as a requirement of the Clean Water Grant Program funding. In 1990, the BCPUD completed an infiltration / inflow correction program to eliminate unwanted stormwater runoff and seaflow intrusion, which greatly reduced capacity problems. However, the district continues the sewer connection moratorium because it still experiences capacity problems during periods of above-average rainfall. Therefore, the BCPUD would be unable to treat additional wastewater flows generated by new land uses and development (i.e., 292 housing units and 627 square feet of nonresidential floor area) consistent with the *Draft 2005 CWP Update*.

The *Draft 2005 CWP Update* contains policies and programs that would reduce wastewater capacity impacts by addressing water conservation and alternative wastewater systems. Program **PFS-3.a** would reduce wastewater volume by urging water districts to consider volumetric billing, tiered water rate structures, and to coordinate with waste disposal providers to reduce the volume of wastewater that must be treated. Policy **PFS-3.2** would promote alternative wastewater systems in order to enhance water quality through use of alternative wastewater treatment methods.

Policies **WR-3.1** and **PFS-2.1** would reduce the waste of potable water through efficient technologies, conservation efforts, design and management practices, and by better matching the source and quality of water to the user's needs. Program **PFS-2.a** would support and integrate water conservation efforts through integrated planning of programs and complementary land use and building regulations. Program **PFS-2.b** would minimize the demand for water in new development. This program would incorporate water, wastewater, and stormwater infrastructures on a least-cost basis, factoring in relevant environmental, economic, and social costs and consider water-based services (e.g., application of state-of-the-art technology and practices) that reduce demand and draw on alternative supplies to be equivalent to new supplies.

Goal **PFS-1**; Policies **PFS-1.1** and **PFS-1.4;** and Programs **PFS 1.a**, **PFS-1.b**, and **PFS-1.d** would help ensure that adequate wastewater facilities are provided by reducing water demand, wastewater treatment, and stormwater management through integrated and cost-effective design and technology standards for new development and re-development. In addition, they would require fair-share

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[26] Letter from Al Petrie, District Manager, Las Gallinas Valley Sanitary District, to Kristin Krasnove, Planner, Marin County Community Development Agency, June 5, 2006.

[27] The Novato Sanitary District did not provide a response to request for information on ability to handle development related to the *Draft 2005 CWP Update*. The calculations provided are based on available capacity found in the *Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County*, The Marin County Community Development Agency, Planning Division, January 2003.

contributions from new development and coordination with LAFCo and cities so that wastewater facilities would be planned for and in place before new development would occur.

Policies **WR-3.2 and PFS-2.2** and their implementing programs would assess and mitigate the impacts of new development on potable water supplies and water available for wildlife. These programs would also work with local water agencies to mitigate increases in water demand due to new development by supporting water efficiency programs that decrease demand by a similar amount.

Program **CD-5.d** would require the County to work with cities and towns through the Countywide Planning Agency to communicate regularly with water and wastewater service providers regarding development activities, growth projections, and capacity issues.[28] Program **CD-5.e** would calculate density at the lowest end of the land use designation range for subdivisions proposed in areas without public water and sewer service.

These policies and their implementing programs would reduce the amount of wastewater generated by new land uses and development consistent with the *Draft 2005 CWP Update.* However, the Bolinas Community Public Utility District would have insufficient capacity to accommodate projected growth without renovation, expansion or construction of new facilities. While this district's moratorium on new land uses and development would ensure that existing land uses and development have adequate wastewater service, except during prolonged rainfall, projected development would still exceed the treatment capacity of this facility.

Increased wastewater treatment demand would represent a significant project impact and the project would make a cumulatively significant contribution to a cumulative wastewater treatment impact. The following mitigation measure would therefore be required.

Mitigation Measure 4.10-4 In order to reduce this impact to a less-than-significant level, the County shall continue to cooperate with the Bolinas Community Public Utilities District to maintain the existing moratorium on new development and deny discretionary projects until such time the district is able to construct new or expanded facilities with sufficient capacity to accommodate such growth.

Significance After Mitigation Adoption of the relevant *Draft 2005 CWP Update* policies and programs and the continuation of the moratorium on development with the Bolinas Community Public Utilities District would reduce adverse effects of increased wastewater treatment demand to a less-than-significant project impact. However, as discussed in ***Section 6.2 Cumulative Impacts***, this would remain a significant unavoidable cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the proposed policies and programs as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency and the Bolinas Community Public Utilities District would be responsible to maintain the existing moratorium and denial of discretionary projects.

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[28] The Countywide Planning Agency is a panel that reviews land use policy and is comprised of representatives from the Marin County Board of Supervisors and each of the 11 cities and towns.

Impact 4.10-5 New or Expanded Wastewater Facilities

Land uses and development consistent with the Draft 2005 CWP Update may result in the need for new or improved wastewater treatment facilities, the construction of which could result in adverse effects to the environment. However, the Draft 2005 CWP Update contains policies that would substantially reduce construction related impacts resulting from development of new wastewater treatment facilities. Therefore, this would be a less-than-significant impact.

As described in the *Impact 4.10-4 Increased Wastewater Treatment Demand*, land uses and development consistent with the *Draft 2005 CWP Update* and that of the general plans of Marin County's cities and towns would increase the demand for wastewater treatment and ultimately, new or improved facilities. These facilities could include wastewater collection, treatment, and disposal facilities as well as related infrastructure (e.g., pipelines, pumphouses, etc). Additionally, as water quality standards and the regulations are continually updated and strengthened, it would be reasonable to assume retrofitting, expansion, or new wastewater facilities would be required to comply with disposal requirements.

Some of the treatment facilities listed in **Exhibit 4.10-7** (e.g., the Sewerage Agency of Southern Marin) are approaching an age where upgrades are needed. [29] It is reasonable to assume that routine equipment replacement, retrofit would continue to occur during the next 25 to 30 years, and that new or expanded facilities may be necessary to meet future regulatory requirements.

However, other facilities such as the Las Gallinas Valley Sanitary District wastewater treatment plant have been recently upgraded. The Las Gallinas Valley Sanitary District upgraded its facilities in 2006 in order to meet the requirements of its NPDES permit from the San Francisco Bay Regional Water Quality Control Board. The District expects to complete additional improvements (i.e., replace or rehabilitate existing equipment) in 2007 to increase its wet weather capacity. [30] As such, district does not anticipate expanding the facility to serve projected development consistent with the *Draft 2005 CWP Update.* [31]

The Bolinas Community Public Utilities District would be unable to accommodate additional sewer connections as existing capacity is currently exceeded during periods of prolonged rainfall. New facilities or improvements to their existing integrated pond system would need to be constructed in order to achieve sufficient capacity to accommodate projected growth.

The construction of these facilities could result in adverse physical effects to the environment including additional traffic, erosion and sedimentation of drainageways, and noise and dust associated with construction activities. However, site-specific impacts of these facilities cannot be determined until such time that they are proposed and undergo environmental review.

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[29] *Community Facilities Element Technical Background Report*, County of Marin Community Development Agency, February 2003. This document describes the current conditions, recent upgrades, and expected future upgrades for each of the wastewater treatment facilities listed in **Exhibit 4.10-7**.

[30] Nichols•Berman communication with Mark Williams, District Manager, Las Gallinas Valley Sanitary District, October 30, 2006.

[31] Letter from Al Petrie, District Manager, Las Gallinas Valley Sanitary District, to Kristin Krasnove, Planner, Marin County Community Development Agency, June 5, 2006.

As discussed in the previous impact, the *Draft 2005 CWP Update* contains a number of policies and programs that would reduce the demand for wastewater treatment and ensure that adequate facilities are planned for and constructed. However, additional wastewater facilities and infrastructure would be needed to accommodate projected growth in the Bolinas Community Public Utilities District service area. In addition, new or expanded facilities may be required to meet future water quality standards and treatment requirements.

The *Draft 2005 CWP Update* includes a number of policies that would substantially reduce construction related impacts from new or expanded wastewater facilities. Policies **BIO-4.1** *(Restrict Land Use in Stream Conservation Areas)* and **BIO-4.2** *(Comply with SCA Regulations)* would reduce such impacts to riparian corridors (e.g., erosion and sedimentation and loss of sensitive habitat) by establishing development setbacks in Streamside Conservation Areas (SCAs). Policies **WR-2.1** *(Reduce Toxic Runoff)*, **WR-2.2** *(Reduce Pathogen, Sediment, and Nutrient Levels)*, **WR-2.3** *(Avoid Erosion and Sedimentation)*, and **WR-2.4** *(Design County Facilities to Minimize Pollution Impact)* would reduce the volume of urban run-off from pollutants, maintain water quality standards, and avoid erosion and sedimentation from grading and construction activities for new development and County facilities. Policy **AIR-1.3** *(Require Mitigation of Air Quality Impacts)* would require discretionary projects to incorporate the best available air quality mitigation in order to reduce dust, greenhouse gases, and other harmful emissions. Policy **NO-1.3** *(Regulate Noise Generating Activities)* would require measures to minimize noise exposure from construction-related activities.

Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.10-5 None Required.

Solid Waste Management Services – Environmental Setting

Solid waste is generated from a mix of residential, commercial, and industrial sources in the county. In 2002, 71 percent of the 410,607 tons of solid waste from Marin County was diverted from landfills through recycling, composting, and other waste diversion methods.[32] California's diversion rate average was 48 percent during the same period. Marin County disposed of 2.75 pounds of solid waste per resident in 2002, down from a high of 3.75 pounds per resident in 1998. Solid waste collection is handled by 22 municipal agencies. Each agency contracts with one of five private haulers, except for one special district, Novato, which provides its own service.

Approximately 18 solid waste sites exist in Marin County with one active disposal site, Redwood Landfill, located north of Novato. Additional active sites include a materials recovery facility, a large-volume transfer station and a composting facility. The remaining sites are closed or inactive and no longer receive solid waste.

The Redwood Landfill, a permitted Class III disposal site is located along the western margin of the Petaluma Valley, bordered by the Sonoma Mountains to the east and by other highlands to the west.

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[32] *Countywide Profile for Marin County*, California Integrated Waste Management Board, information accessed online at http://www.ciwmb.ca.gov/Profiles/County/CoProfile1.asp?COID=21, February 2006.

Man-made and natural sloughs surround the facility, including the San Antonio Creek, Mud Slough, West Slough and South Slough, all tributaries of the Petaluma River, which flow into San Pablo Bay.

The landfill is situated on almost 420 acres, of which 222.5 acres are used for disposal and accept waste from residential, commercial, and institutional customers as well as green and wood waste, scrap metal, and inert waste. See **Exhibit 4.10-8** for the list and percentages of types of materials disposed of by residents of Marin County.

Household disposal of 129,407 tons of solid waste, which accounted for 54 percent of total overall disposal in 1999 with Marin County businesses contributing 110,236 tons or 46 percent of the total. **Exhibit 4.10-9** illustrates the types of materials disposed of by businesses of Marin County. [33]

Exhibit 4.10-8
Marin County Household Disposal by Overall Materials [a]

Material	***Percentage***	***Actual Tons***
Other Organic [b]	45.0	47,191
Paper	27.5	28,788
Plastic	8.8	9,277
Metal	4.6	4,853
Construction and Demolition [c]	4.5	4,697
Glass	4.0	4.233
Mixed Residue	4.0	4,196
Household Hazardous Waste [d]	0.3	339
Special Waste [e]	1.2	1,300
Total	***99.9*** [f]	***104,874***

a Based on 1999 CIWMB estimates of 1998 disposal rates
b Includes food and yard waste, etc.
c Includes concrete, asphalt paving and roofing, lumber, etc.
d Includes paint, vehicle and equipment fluids, batteries, etc.
e Includes ash, sewage solids, treated medical waste, tires, etc.
f Total does not add to 100 percent due to rounding differences.

Source: *Countywide Profile for Marin County*, California Integrated Waste Management Board, information accessed online at http://www.ciwmb.ca.gov/Profiles/County/CoProfile1.asp?COID=21, February 2006

[33] 1999 totals do not match 1999 estimates included in the exhibits because the estimates were based on 1998 disposal rates.

Exhibit 4.10-9
Marin County Business Disposal by Overall Materials [a]

Material	*Percentage*	*Actual Tons*
Paper	33.3	61,246
Other Organic [b]	31.8	58,623
Construction and Demolition	10.8	19,942
Plastic	8.9	16,454
Metal	6.2	11,372
Glass	3.0	5,562
Mixed Residue	0.6	1,062
Household Hazardous Waste [d]	0.2	458
Special Waste [e]	2.6	4,813
Total	***97.4***	***179,532***

a Based on 1999 CIWMB estimates of 1998 disposal rates
b Includes food and yard waste, etc.
c Includes concrete, asphalt paving and roofing, lumber, etc.
d Includes paint, vehicle and equipment fluids, batteries, etc.
e Includes ash, sewage solids, treated medical waste, tires, etc.

Source: Countywide Profile for Marin County, California Integrated Waste Management Board, information accessed online at http://www.ciwmb.ca.gov/Profiles/County/CoProfile1.asp?COID=21, February 2006

Redwood Landfill Expansion Plans [34]

USA Waste California, Inc. has submitted expansion plans and a permit request to the Marin County Environmental Health Services Division, acting as the Local Enforcement Agency and the San Francisco Bay Area Regional Water Quality Control Board to increase the capacity and extend the life of the Redwood Landfill. Based on the remaining capacity currently permitted at the Redwood Landfill, its site life is approximately 20.5 years, with its earliest possible closure as 2024. The proposed expansion plans estimate the landfill could extend site life by as much as 13 years to 2037, depending upon permitted revisions to the rate of fill. Alternatives for expansion evaluated in the project's EIR could extend site to as long as 2051.

The proposed physical and operational changes to the Redwood Landfill facility are not covered under existing permits and approvals issued from 1992 through 2002. Although some elements of the

34 *Redwood Landfill Solid Waste Facilities Permit Revision, Final Supplemental Environmental Impact Report, Volume I: Revisions to the Draft Subsequent Environmental Impact Report,* SCH No. 1991033042, Prepared for County of Marin by Environmental Science Associates, July 2005.

landfill expansion plans have already been implemented, an Environmental Impact Report (EIR) 35 addressed all the revisions implemented and planned for since the last time the current permits were issued. **Exhibit 4.10-10** illustrates the permits that are involved in the expansion plans:

Exhibit 4.10-10
Permits and Issuing Agencies Involved in Redwood Landfill Expansion Plans [a]

Permit Needed	*Issuing Agency*	*Related Expansion Plan*
Solid Waste Facilities Permit	MCEHSD [b]	Revised permit to incorporate physical/operational changes
Biosolids Co-Composting Registration Permit	MCEHSD and CIWMB [c]	Composting materials are currently accepted at site
Waste Discharge Requirements (WDR) & NPDES	RWQCB [d]	Changes in type & quantities of waste received and management of contact water
Permit to Operate	BAAQMD [e]	Increased emissions for landfill & traffic, green & wood processing, increased composting, stockpiles and alternative daily cover

a Exhibit does not include all permits necessary to operate the facility. Only those pertaining to proposed expansion.

b Marin County Environmental Health Services Division

c State of California Integrated Waste Management Board

d San Francisco Bay Area Regional Water Quality Control Board

e Bay Area Air Quality Management District

Source: *Redwood Landfill Solid Waste Facilities Permit Revision, Final Supplemental Environmental Impact Report, Volume I: Revisions to the Draft Subsequent Environmental Impact Report, SCH No. 1991033042*, Prepared for County of Marin by Environmental Science Associates, July 2005.

The expansion plans that affect the amount of waste that can be accepted by the landfill include the following:

- Changes to the landfill design, including increasing the landfill's capacity and modifying the landfill's final contours. These changes will increase the total capacity of the landfill from the currently permitted 19.1 million cubic yards to 34.8 million cubic yards, enabling the landfill to accept waste from areas outside of Marin County. This increase would be achieved by changing the landfill contours by increasing to the steepness of the side slopes and decreasing the width and frequency of the benches on the slopes. The height would not increase while the footprint of the landfill would increase. However, the larger volume and mass associated with the proposed greater capacity means that the static and dynamic forces the landfill will exert on the underlying Bay Mud and the perimeter levee will increase.

35 *Redwood Landfill Solid Waste Facilities Permit Revision, Final Supplemental Environmental Impact Report, Volume I: Revisions to the Draft Subsequent Environmental Impact Report,* SCH No. 1991033042, Prepared for County of Marin by Environmental Science Associates, July 2005.

- Changes to waste operations, including changes in the quantity and types of waste received. Currently, the Class III landfill accepts nonhazardous waste that includes residential waste, agricultural waste, commercial waste, and construction and demolition wastes. The landfill has requested permits to expand its recycling and composting programs, which would process additional green & wood materials. Additional requests include changes in the facility's sludge processing.

- Changes to the environmental controls at the landfill, including changes to the permitted design of the leachate collection and removal system, and perimeter levee reconstruction, changes in surface water management, changes in the landfill gas management, changes in the landfill cover design, and changes in the approach taken to remediate an unpermitted waste disposal area on the site.

In July, August, and September of 2003, the Marin County Planning Commission held hearings and accepted comment letters on the first draft of the EIR. Because of public comments on the draft EIR, the landfill was asked to submit additional data and provide additional water quality testing. The final EIR was made available to the public for comment during the final months of 2005. [36] The MCEHSD oversees the landfill's operation locally and is responsible for compliance with its Solid Waste Facility Permit. The MCEHSD will also submit a draft proposed permit revision to the California Integrated Waste Management Board for concurrence regarding the landfill's permit application to expand its operations. The Redwood Landfill can appeal conditions placed in the permit, such as required mitigation measures, to the County Board of Supervisors.

Marin County Integrated Waste Management Plan

The California Integrated Waste Management Act (CIWMA) requires all cities and counties to develop Integrated Waste Management Plans to outline how each agency was to meet the 25 percent and 50 percent mandates of waste reduction by the year 2000. In response, Marin County's public agencies, private waste haulers, and facility operators developed Marin County's Integrated Waste Management Plan, which was adopted in April 1998. [37]

In 1996, the partnership forged with the MOU brought Marin's cities / towns and the County to form the Marin Hazardous and Solid Waste Joint Powers Authority (JPA). The JPA provides household hazardous waste collection, and recycling and disposal information to ensure Marin's compliance with State recycling mandates and other education for the citizens and businesses of Marin County. The JPA is comprised of the cities and towns of Belvedere, Corte Madera, Fairfax, Larkspur, Mill Valley, Novato, Ross, San Anselmo, San Rafael, Sausalito, and Tiburon, and the County of Marin. In 1997, the CIWMB recognized the JPA as a Regional Agency. This Regional Agency status allows the JPA members to report to the State as one political body (instead of 12) as was previously required.

The Marin County Integrated Waste Management Plan implements recycling programs necessary to meet the State's 25 percent and 50 percent recycling mandates and incorporates a Countywide Siting Element (CSE) and Regional Summary Plan (RSE). The County prepared and adopted its CSE in 1995 in accordance with provisions of the California Integrated Waste Management Act. The CSE

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[36] Final EIR for the *Redwood Landfill Solid Waste Facilities Permit Revision* is expected to be certified in early 2007.

[37] *About the Joint Powers Authority*, Marin Hazardous and Solid Waste Joint Powers Authority, information accessed online at http://www.marinrecycles.org/more_info/about_jpa_history.htm, February 2006.

was developed to document the waste disposal capacity needed to accommodate solid waste generated for disposal by Marin County and its cities / towns for a 15-year period, (i.e., 1995 through 2010).

Goals and policies to guide Marin County's disposal practices are set forth in the CSE. Capacities of solid waste disposal facilities coupled with future annual countywide solid waste disposal estimates are presented to assess the need for expansion of existing facilities and / or siting of new facilities within the next 15 years. In addition, criteria and a process to evaluate proposed disposal sites are also detailed in the CSE.

Following the establishment of the JPA, the County in conjunction with the JPA has updated the Integrated Waste Management Plan approximately every five years. In addition, they issue a Regional Integrated Waste Management Plan Report (RIWMP Report) to both update the Integrated Waste Management Plan and to serve as a current planning document summarizing waste management problems facing Marin. The RIWMP Report identifies actions necessary to comply with CIWMA requirements for documenting source reduction and recycling efforts. In addition, the RIWMP Report assesses solid waste disposal capacity requirements to meet the County's disposal needs through the subsequent 15-year period. The current five-year RIWMP Report was issued in November 2003 and indicated that Marin County disposal capacity would continue to be provided by the Redwood Landfill with an estimated remaining disposal capacity of 39 years.

Solid Waste Management – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to solid waste management if it would:

- Be served by a landfill with insufficient disposal capacity to accommodate Marin County's solid waste disposal needs. In conformance with requirements of the Regional Integrated Waster Management Plan (RIWMP) Countywide Siting Element, insufficient disposal capacity is specified as less than 15 years of permitted disposal capacity at the landfill.

Solid Waste Management – Impacts and Mitigation Measures

Impact 4.10-6 Increased Solid Waste Disposal Demand

Implementation of the Draft 2005 CWP Update would not affect the ability of the County to provide at least 15 years of permitted disposal capacity. The increase in the amount of solid waste generated in Marin County under the Draft 2005 CWP Update would not exceed the capacity of the Redwood Landfill, which accepts 90 percent of Marin County's solid waste. The Draft 2005 CWP Update would be consistent with the Regional Integrated Waste Management Plan (RIWMP) Countywide Siting Element. Therefore, this would be a less-than-significant impact.

As part of the County's *Integrated Waste Management Plan*, the Countywide Siting Element (CSE) demonstrates the ability to provide at least 15 years of permitted disposal capacity for all jurisdictions within the county. If the County cannot show 15 years of disposal capacity, it must show a plan to obtain that capacity, or to transform / divert its waste. The County's *Integrated Waste Management Plan* indicates adequate capacity beyond 15 years and into the foreseeable future. The *Draft 2005*

CWP Update would not alter the population projections of the *Integrated Waste Management Plan* to the extent that it would exceed solid waste capacity. [38]

As discussed in the environmental setting, expansion plans for the Redwood Landfill are currently under environmental review with local and State permits pending. Estimates vary on the date the landfill would reach its capacity. Under current permit conditions, expansion plans estimate the landfill could reach capacity in approximately 20.5 years, or 2024. The Redwood Landfill project applicant, USA Waste California, Inc., a holding company for the California holdings of Waste Management Inc., submitted expansion plans and a permit request to the Marin County Environmental Health Services Division (MCEHSD) and the California Integrated Waste Management Board to increase the capacity and extend operations at the landfill to 2037. Depending on if or when the expansion is approved and which expansion alternative selected, the facility's capacity could be extended to as long as 2051.

In July, August, and September of 2003, the Marin County Planning Commission held hearings and accepted comment letters on the Draft EIR. Subsequently, the County required the landfill to submit additional data and conduct additional water quality tests. The Final EIR was made available for public comment during the final months of 2005. The Marin County Planning Commission will consider certification of the Final EIR in early 2007. If certified, the MCEHSD, which oversees part of the landfill's operation, would consider permit approval in the spring of 2007. [39]

The Draft EIR for the Redwood Landfill identified 45 significant impacts related to aesthetics, air quality, biological resources, geology, water quality, land use, and public health and safety that could be mitigated to a less-than-significant-level. In addition, the Draft EIR found the project would have five significant unavoidable impacts to air quality:

- Equipment and truck operations associated with an increase in incoming materials at the landfill would generate additional criteria air pollutant emissions;
- Landfill operations, including vehicle and equipment travel on unpaved surfaces, would generate fugitive dust;
- Project would increase the amount of landfill gas generated and could exceed the capacity of the landfill gas collection and treatment system;
- Emissions of air pollutants from the landfill gas treatment system, as well as fugitive landfill gas emissions, would increase. The combined emissions from project operations would exceed Bay Area Air Quality Management District significance criteria for three air pollutants: reactive organic gasses (ROG), nitrous oxide (NO_x) and large particulate matter (PM-10); and
- Landfill project would incrementally add to cumulative air pollutant emissions.

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38 The projected population of the *Draft 2005 CWP Update* would be less than one percent greater than that projected by the *1994 CWP*. Considering source reduction and recycling programs, the per capita waste generated by this difference in projected population is negligible. Therefore, the County's solid waste capacity would not change with implementation of the *Draft 2005 CWP Update*.

39 Nichols·Berman communication with Cynthia Barnard, Supervising Environmental Health Specialist, Marin County Environmental Health Services, September 12, 2006.

The *Draft 2005 CWP Update* contains policies and programs to reduce solid waste generation and related adverse effects to the environment. Goal **PFS-4** would strive to treat and safely process solid waste in a manner that protects natural resources from pollution. Policies associated with this goal include Policy **PFS-4.1**, which would decrease the amount of solid waste generated and increase recycling and reuse of materials. Policy **PFS-4.2** would require the use of waste processing and disposal techniques that prevent the contamination or other impairment of natural resources. Policy **PFS-4.3** would plan for the transformation or disposal of wastes generated that cannot be reduced, recycled or composted.

Several proposed programs would reduce the generation of solid waste during the construction phase of development. Program **EN-3.c** would require building projects to recycle or reuse a minimum of 50 percent of unused materials. Program **DES-1.d** would develop an urban wood utilization program to reduce wood waste and to educate residents on the benefits of its reuse. Policy **MIN-1.l** would promote the use of alternative (e.g., recycled) materials and optimize recycling of construction and demolition waste.

Policy **CD-5.2** would assign financial responsibility for growth by requiring new development to pay its fair share of the costs of public facilities, services, and infrastructure. This would include but not be limited to transportation, incremental water supply, sewer and wastewater treatment, solid waste, flood control and drainage, schools, fire and police protection, and parks and recreation facilities.

These policies and their implementing programs would reduce the amount of solid waste generated by land uses and development consistent with the *Draft 2005 CWP Update*. Although the future expansion of the Redwood Landfill remains uncertain, the estimated disposal capacity is at least 20.5 years of permitted disposal capacity, and potentially as many as 51 years depending on expansion alternatives. Disposal capacity remains above the CIWMA and RIWMP 15-year capacity siting requirements with an estimated 39 year (as of 2003) Plan projected disposal capacity.

Based on the existing permitted disposal rates, the remaining capacity at the Redwood Landfill, and the RIWMP capacity siting criteria, the solid waste disposal needs for the projected population under the *Draft 2005 CWP Update* would be met by existing landfill conditions unless future population growth occurs much faster than projected in the *Draft 2005 CWP Update*. Such a growth rate is not anticipated. Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.10-6 None Required.

Energy – Environmental Setting

CEQA requires that EIRs discuss the potential energy impacts of projects, including avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. [40] Energy conservation and efficiency goals can be achieved by:

- Decreasing overall per capita consumptions;
- Decreasing reliance on fossil fuels such as natural gas and oil; and
- Increasing reliance on renewable energy sources.

The production and use of energy is closely tied to development. Patterns of land use and types of transportation systems strongly influence the need for and use of energy. By adopting general and other land use plans that establish land use patterns and circulation systems, the County can influence the amount of energy that will be used at the local level. The County regulates smaller, often renewable sources of power and can promote local energy independence by eliminating regulatory barriers to these types of technologies. The County can and has adopted energy conservation and efficiency standards that reduce the demand for energy. [41] [42]

Energy Supply

California's major sources of energy are petroleum (i.e., gasoline and oil), electricity, and natural gas. The California Energy Commission (CEC) [43] indicates that California's petroleum resources in 2001 came from in-state (49.4 percent), foreign sources (29.3 percent) and Alaska (21.3 percent). In 1999, natural gas resources in California came from the Southwest (46 percent), Canada (28 percent), in-state (16 percent), and the Rocky Mountains (ten percent). The gross electricity production by resource type in California in 2000 included natural gas at 38.10 percent, nuclear at 15.52 percent, and hydroelectric at 14.99 percent. Imports from the northwest and southwest added 6.69 percent and 2.85 percent, respectively, while geothermal was 4.8 percent, and biomass and waste accounted for 2.17 percent. California has insufficient pipeline capacity to meet its wintertime peak demands and utilities have compensated by stockpiling natural gas in the summertime. [44]

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[40] *Guidelines for Implementation of the California Environmental Quality Act, Energy Conservation,* California Code of Regulations, Title 14, Division 6, Chapter 3, Appendix F.

[41] *General Plan Guidelines 2003,* State of California Governor's Office of Planning and Research, 2003.

[42] For more information about Marin County's current energy efficiency programs is available on their website at http://www.co.marin.ca.us/depts/CD/main/comdev/sustainNav.cfm

[43] California Energy Sources, California Energy Commission website, information accessed at http://www.energy.ca.gov/html/energysources.html, February 2006.

[44] *Marin Countywide Plan, Energy Technical Report, Implementing Sustainable Energy Policies Throughout the General Plan,* The Marin County Community Development Agency, Planning Division, (no date).

Marin County meets virtually all of its electricity and natural gas needs through imported resources.[45] Pacific Gas and Electric (PG&E) is the sole distributor and principal supplier of electricity and natural gas in the county.[46] Since there is no electricity generation within Marin County, the unique geographic isolation of the County requires all electric power to be transmitted from the North, and the East via the Solano, Napa, and Sonoma areas to the PG&E Ignacio substation. Natural gas is also transported through a single pipeline through Marin County leaving the county vulnerable to supply disruptions that could result from either natural or unnatural events. The changing structure of the energy industry requires the pursuit of local energy supply solutions.

Energy Usage

The residents of Marin County account for 49 percent of the electricity usage and 72 percent of the direct natural gas usage. The commercial sector uses 33 percent of the electricity and 16 percent of the natural gas. Together, they account for more than 80 percent of the County's energy use. The County's agricultural and industrial base is small, accounting for approximately two percent of the County's energy demand. **Exhibit 4.10-11** shows Marin County's total electricity and natural usage arranged by sector.

Exhibit 4.10-11
Marin County Energy and Natural Gas Use Percentage by Sector in 2000

Sector	***Electricity Usage (Percent)***	***Natural Gas Usage (Percent)***
Residential	49	72
Commercial	33	16
Transportation, Communication and Utility	11	5
Agricultural	Less than 1	0
Industrial	1	1
Unclassified	6	6
Total	***100***	***100***

Source: *Marin Countywide Plan, Energy Technical Report, Implementing Sustainable Energy Policies Throughout the General Plan,* Marin County Community Development Agency, Planning Division, (no date)

Novato and San Rafael account for 54 percent of the electricity and 47 percent of the natural gas used in the County. Nine percent of the electricity and four percent of the natural gas is used by the County's unincorporated areas. **Exhibit 4.10-12** illustrates the energy usage arranged by jurisdiction.

Policymakers have opportunities to limit the demand for new resources and increase the use of local renewable resources to accommodate growth at the county level through measures such as efficient

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45 Other resources include propane, wood, solar electric, which contribute less than one percent to Marin's energy supply.

46 Some electricity is supplied under contracts with Energy Service Providers (ESP) but is still distributed by PG&E. Such contracts were let under the now-suspended Direct Access rules established by California's restructuring legislation.

land use planning and better building standards. Other local trends that may have an impact on energy demand include:

- Location of new residential development in warmer microclimates, where homes would air conditioning and high water use for landscaping;
- Increased size of new and remodeled homes;
- Increased number of appliances such as refrigerators, televisions, computers, and cellular telephones; and
- An aging population that spends more time at home, increasing residential energy use.

Exhibit 4.10-12
Marin County Energy Use by Jurisdiction in 2000

Jurisdiction	*Customer Count* [a]	*Electricity 1,000 (Kwh)* [b]	*Electricity Usage (Percent)*	*Natural Gas (1,000 Therms)*	*Natural Gas Usage (Percent)*
Belvedere	1,160	10,088	0.7	1,103	1.2
Corte Madera	4,860	82,029	5.6	7,235	7.7
Fairfax	4,266	31,862	2.2	2,646	2.8
Larkspur	7,032	71,623	4.9	4,806	5.1
Mill Valley	14,398	131,581	9.0	10,031	10.7
Novato	24,815	313,921	21.6	16,822	17.9
Ross	999	12,994	0.9	1,281	1.4
San Anselmo	7,002	59,520	4.1	5,107	5.4
San Rafael	33,757	469,653	32.3	25,956	27.6
San Quentin	11	12,896	0.9	6,591	7.0
Sausalito	7,381	75,851	5.2	4,091	4.4
Tiburon	5,452	50,402	3.5	4,105	4.4
Unincorporated County	8,554	132,781	9.1	4,144	4.4
Total	***119,687***	***1,455,201***	***100***	***93,919***	***100***

a Residential and commercial customers
b Kwh = kilowatts per hour. A kilowatt-hour is used if you turn on a 100-watt light bulb for ten hours.

Source: Marin Countywide Plan, Energy Technical Report, Implementing Sustainable Energy Policies Throughout the General Plan, The Marin County Community Development Agency, Planning Division, (no date)

Energy Conservation and Efficiency Programs

Because of the increasing cost of energy, the decreasing reliability of energy supply and the fluctuations in public policy at the State and federal levels, Marin County has included local sustainable energy strategies into the *Draft 2005 CWP Update*.

State Programs

Renewable Portfolio Standard – California adopted a Renewable Portfolio Standard (RPS) in 2002, mandating an increase in the amount of electricity provided from renewable energy sources. The RPS requires each utility to provide at least 20 percent of its electricity supply from renewable generation by 2010.

Title 24 – California law requires minimum energy efficiency standards for all new and remodeled (with limitations) residential and commercial buildings. The original standards were adopted in 1978 and have been updated five times, the last in 2005. [47] The California Energy Commission (CEC) is in the process of updating the standards again by 2008. The standards are adopted by the CEC and enforced by local building departments. California has offered various energy efficiency incentive programs including tax credits, rebates, low-interest loans, and technical assistance for building measures and appliances exceeding Title 24 standards. These programs change over time and are administered through multiple entities such as the California Energy Commission, California Public Utilities Commission, PG&E and others. State and federal law specifically mandates funding for special need programs such as low-income weatherization. These fall into the incentive category because they are optional for the end use and vary greatly in how well they are utilized on the local level.

Solar Access – State law requires protection of solar access (i.e., the ability of sunlight to reach a solar collector unimpeded by trees, fences, buildings, or other obstruction) but enforcement is the responsibility of local government.

California's Community Choice Law – The State also passed legislation in 2002 (AB 177) that allows local governments to aggregate the retail electric customers in their jurisdictions for the purpose of purchasing power. Local governments may not take over the local distribution system but may enter into contracts to provide the energy component of the electric bill. This law provides a means by which local governments can choose to increase the use of renewable resources above what the utilities are required to buy. It also allows local governments to administer energy efficiency programs in their jurisdictions.

County Programs

Single Family Dwelling Energy Efficiency Ordinance – In 2002, Marin County adopted Ordinance 3356 in 2002 requiring all new and remodeled homes larger than 3,500 square feet to meet the Title 24 requirements of a 3,500 square foot home through increased energy efficiency and / or renewable energy. This ordinance is limited to homes built in the unincorporated areas of the County.

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[47] California Energy Efficiency Standards for Residential and Non-residential Buildings, California Energy Commission, information accessed at http://www.energy.ca.gov/title24/ in March 2006.

Solar Access – Marin County adopted an ordinance in 1982 to protect passive or active solar design elements and systems from wintertime shading by neighboring structures and trees. [48]

BEST (Building Energy Efficient Structures Today) – Fast track permitting and fee waivers for projects that either exceed Title 24 by 20 percent, install a renewable energy system that meets 75 percent of a building's needs, or comply with the BEST checklist. The BEST program is administered by Marin County's Community Development Agency. [49] Additional agency programs include:

- Over-the-counter approval of solar electric and water heating systems if the collectors are flush mounted to roof.
- Technical assistance for energy and green building design based on the LEED rating system, *Alameda County Green Building Guidelines* and the Environmental Building News' *Green Spec*.
- More than $52,000 of rebates for installation of specific energy efficiency and renewable energy measures were issues by the agency in 2002. This program is expected to save more than $100,000 in energy costs and reduce carbon dioxide emissions by 920,000 pounds per year.

Energy – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to energy resources if it would:

- Substantially increase the demand for existing energy sources, or conflict with adopted policies or standards for energy use;
- Use of non-renewable resources in a wasteful and inefficient manner; or
- Result in the need for new systems or substantial alterations to power, natural gas or communication systems infrastructure. ***No Significant Impact; see Section 2.6 Effects of No Signficance for further discussion of this criterion***.

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48 Ordinance No. 2738 was adopted by the Board on October 26, 1982. The ordinance modified Title 20 of the Marin County Code pertaining to solar access (Section 20.20.030).

49 The BEST library that includes more than 50 books and periodicals on energy efficiency, green building and sustainable living can be found in the Reference section of the Civic Center library located at 3501 Civic Center Drive #427 in San Rafael.

Energy – Impacts and Mitigation Measures

Impact 4.10-7 Energy Consumption and Land Use Patterns

Implementation of the Draft 2005 CWP Update would increase energy consumption and require additional energy resources in order to meet this demand. However, the proposed land use pattern would focus future development within or adjacent to existing developed areas and reallocate residential and commercial uses to the City-Centered Corridor. This land use pattern would reduce the future reliance upon single occupancy motor vehicles, a major user of energy. As a result, this would be a less-than-significant impact.

Increased demand for energy would be a byproduct of all future land uses and development consistent with the *Draft 2005 CWP Update*. Increased energy consumption would require additional sources of energy to supply the demand. PG&E is the sole distributor of electricity and natural gas in Marin County. Accordingly, Marin County would continue to be vulnerable to supply disruptions and price increases. In 2000-2001, such disruptions cost local residents and businesses about $60 million more than in previous years. [50]

Energy is consumed for heating and electricity in homes and businesses, for manufacturing and industrial purposes, for public infrastructure and service operations, and for agriculture, resource extraction and rural uses. The motor vehicle is also a substantial user of energy resources. As a result, land use patterns can significantly affect energy consumption in either a positive or a negative manner. For example, compact and multi-use development can reduce transportation energy demands by allowing residential development in proximity to shopping and employment centers, thereby reducing the number and / or distance of vehicle trips.

The land use patterns proposed in the *Draft 2005 CWP Update* would not be substantially different from existing land use patterns. While historical land use patterns have resulted in scattered communities, the proposed land use plan would focus most residential and commercial development within the City-Centered Corridor, limiting future growth in rural areas. By encouraging denser residential, commercial, and industrial development within urban areas, the concentration of population, employment, and services allows for less frequent use of and reliance upon single-occupancy vehicles as a primary mode of transportation. Because automobile travel is a major user of energy, a reduction in reliance upon such travel would result in reduced levels of energy consumption.

Increased energy consumption resulting from the implementation of the *Draft 2005 CWP Update* would increase greenhouse gas emissions over existing levels. As discussed in *Impact 4.3-6 Increase in Greenhouse Gas Emissions*, the largest contributors to these emissions in Marin County are vehicular traffic and energy use in buildings. [51] This is in part due to the projected increase in daily vehicle miles (VMT) traveled. As shown in **Exhibit 4.2-23**, daily VMT are expected to increase from an existing 7.0 million to approximately 8.8 million with the buildout of the *Draft 2005 CWP Update*.

The County has set a target for a 20 percent reduction in the total electricity consumption by 2015 while increasing the percentage of electricity generated by renewable sources to 25 percent by 2010

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[50] Section 3.6 Energy and Green Building of the *Draft 2005 CWP Update*.

[51] See ***Section 4.3 Air Quality***.

and 40 percent by 2015.[52] In order to achieve this target, the County has implemented its Energy Efficiency and Green Building Program, which promotes renewable energy sources by offering incentives to business and residential customers who install solar energy systems, exceed Title 24 requirements by 20 percent, and / or meet the Building Energy Efficient Structures Today (BEST) checklist of requirements.

The *Draft 2005 CWP Update* contains goals, policies, and implementing programs that address this increased demand in several ways, including smart growth and compact land use patterns, promotion and support for non-automobile travel, and a reduction in automobile use, energy efficiency and conservation measures, and support for utilization of renewable energy resources, and education programs.

Implementation of the *Draft 2005 CWP Update* would ensure a compact land use pattern thereby reducing future energy consumption. Goal **CD-1**, Policy **CD-1.1**, and Program **CD-1.a** (Section 3.4 Community Development of the *Draft 2005 CWP Update*) would concentrate urban development in the City-Centered Corridor where infrastructure and facilities could be made available more efficiently by updating the Development Code as necessary to ensure such. Policies **CD-1.3**, **CD-2.2**, and **CD-2.3** and Program **CD-1.c** would further concentrate future development within the City-Centered Corridor. As described in ***Chapter 3.0 Description of the Proposed Project*** and ***Section 4.1 Land Use, Population, and Housing***, these policies would calculate density at the low end of the permitted range (i.e., primarily in West Marin) and reallocate the additional units through the creation of the Housing Bank and Housing Overlay District to the City-Centered Corridor in order to reduce impacts to sensitive habitat, Ridge and Upland Greenbelt, and other areas.

While overall energy consumption would continue to increase as growth occurs, the *Draft 2005 CWP Update* would reduce the reliance upon single-occupancy vehicles. Goal **CD-3**, Policies, **CD-3.1**, **CD-3.2**, and Programs **CD-3.a** and **CD-3.b** would facilitate employment opportunities that minimize the need for automobile trips, such as live-work, telecommuting, satellite work centers, and home occupations, and mixed-use development strategies.

In addition, policies and programs of the *Draft 2005 CWP Update* would promote the use of alternative modes of transportation. Goal **TR-1**, Policy **TR-1.1**, and Programs **TR-1.a**, **TR-1.b**, **TR-1.c**, and **TR-1.d** (Section 3.9 Transportation of the *Draft 2005 CWP Update*) would improve the operating efficiency of the transportation system by reducing vehicle travel demand, providing opportunities for alternative modes of travel, and supporting live-work opportunities. Goal **TR-2**; Policies **TR-2.1**, **TR-2.2**, and **TR 2.4**; and Programs **TR-2.a** through **TR-2.n** would increase bicycle and pedestrian access, provide new bicycle facilities and routes, and pursue additional funding for these projects. Goal **TR–3**, Policies **TR-3.1** through **TR-3.6**, and Programs **TR-3.a** through **TR-3.g** would strive to provide efficient, affordable public transportation service throughout the county, development of mixed-use intermodal hubs, promote transit oriented development, and other measures to reduce reliance on single-occupancy motor vehicles.

Additionally, the *Draft 2005 CWP Update* contains measures that would reduce other types of energy consumption. Goal **EN-1** (Section 3.6 Energy and Green Building of the *Draft 2005 CWP Update*) would aim to reduce the total and per-capita non-renewable energy waste and peak electricity demand through energy efficiency and conservation. Policy **EN-1.1** would integrate energy efficiency and

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[52] *Measuring Marin County's Ecological Footprint*, prepared for the County of Marin Community Development Agency by Justin Kitzes, M.S. and Steve Goldfinger, Ph.D., February 2006.

conservation requirements that exceed State standards into the development review and building permit process. Policy **EN-1.2** would offer incentives such as expedited permit processing, reduced fees, and technical assistance to encourage energy efficiency technology and practices.

Goal **EN-2** would strive to utilize local renewable energy resources and shift imported energy to renewable resources. Policy **EN-2.1** would reserve opportunities for development of renewable energy resources. Policy **EN-2.2** would integrate technically and financially feasible renewable energy requirements into development and building standards. Policy **EN-2.3** would facilitate renewable technologies through streamlined planning and development rules, codes and processing, and other incentives.

Pumping and treating water for Marin County is very energy intensive.[53] Implementation of Programs such as **PFS-2.a** and **PFS-2.b** (Section 3.11 Public Facilities and Services of the *Draft 2005 CWP Update*) that would support and integrate water conservation efforts and minimize the demand for water in new development, would reduce the amount of energy required to pump and treat water in Marin County.

Finally, the *Draft 2005 CWP Update* would promote energy education programs to assist in reducing the demand for energy resources. Education programs designed to teach people about energy conservation and efficiency measures would help change behaviors and values relative to energy consumption. Policy **EN-1.3** would continue to provide information, marketing, training, and education to support energy efficiency and conservation. Policy **EN-2.4** would provide information, marketing, training, and education to support renewable resource use.

These policies and programs would ensure that increased demands for energy resources would be minimized. Furthermore, implementation of the *Draft 2005 CWP Update's* compact land use plan would not result in the wasteful, inefficient use, or unnecessary consumption of energy. Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.10-7 None required.

Impact 4.10-8 Energy Consumption from Building Construction and Retrofit

Land uses and development consistent with the Draft 2005 CWP Update could result in inefficient and excessive use of energy resources from building constriction and retrofit. This would be a significant impact.

Building design and retrofit measures could make a building more energy efficient. Because the design and retrofit of commercial and industrial building is different from that of residential buildings, there would be a greater potential for energy savings in commercial and industrial facilities. This would be particularly true due to the large amounts of energy that nonresidential facilities typically use for the manufacturing process, space heating and cooling, refrigeration, and lighting. Furthermore,

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53 *Measuring Marin County's Ecological Footprint*, prepared for the County of Marin Community Development Agency by Justin Kitzes, M.S. and Steve Goldfinger, Ph.D., February 2006.

because commercial and industrial buildings typically would be much larger than residential structures, there are more opportunities for the reduction of energy demands. [54]

Passive heating, cooling, and lighting techniques could be used to not only reduce energy demands, but also substantially reduce operating costs. Techniques include high levels of insulation; interior massing; careful placement of windows, skylights, and doors; natural ventilation; deliberate design of lighting; use of energy efficient appliances, windows, and doors; and appropriate landscaping. While new construction provides the simplest opportunity for implementation of such techniques, older buildings could also benefit from energy efficiency retrofits that include passive heating and cooling or lighting. New construction would also provide the opportunity for optimal solar access through building siting and orientation. Proper orientation would further reduce the amount of energy required to heat and cool buildings.

Existing provisions of the Marin County Code as well as numerous policies and implementing programs in the *Draft 2005 CWP Update* would support energy efficiency in new and retrofit construction. Goal **EN-1** (Section 3.6 Energy and Green Building of the *Draft 2005 CWP Update*) would aim to reduce the total and per-capita non-renewable energy waste and peak electricity demand through energy efficiency and conservation. Policy **EN-1.1** would integrate energy efficiency and conservation requirements that exceed State standards into the development review and building permit process. To implement these policies, Programs **EN-1.a** and **EN-1.b** would require the County to adopt a permanent sustainable energy planning process and adopt energy efficiency standards for new and remodeled buildings. Such programs would allow the County to apply consistent energy conservation standards for all new development and building retrofit.

Policy **EN-1.2** would offer incentives such as expedited permit processing, reduced fees, and technical assistance to encourage energy efficiency technology and practices. Policy **EN-1.3** would provide information, marketing, training, and education to support energy efficiency and conservation. Policy **EN-1.4** would integrate energy efficiency and conservation into all County functions.

Goal **EN-3** would strive to integrate green building requirements into the development review and building permit process. Policy **EN-3.1** through **EN-3.4** would initiate green building programs, offer incentives to encourage green building practices, integrate these practices into all County functions, and provide public education. The *Draft 2005 CWP Update* contains ten programs (i.e., **EN-3.a** through **EN-3.j**) that would provide a comprehensive approach to implementing these policies. These programs include but are not limited to requiring green building practices for residential and nonresidential development, adopting Leadership in Energy and Environmental Design (LEED) standards for public design, and educational programs to property owners and development professionals.

Such programs would combine to reduce the energy demand, water use, amount of materials and wood use, and carbon dioxide emissions of buildings. In addition, green building practices would result in a number of other benefits including protecting watersheds, reducing pressure on forest and

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[54] For more information on energy efficiency and building retrofit, see Marin County's Building Energy Efficient Structures Today (BEST) program online at http://www.co.marin.ca.us/depts/CD/main/comdev/advance/BEST/index.cfm or at the Marin County Civic Center Library. The BEST library that includes more than 50 books and periodicals on energy efficiency, green building, and sustainable living.

mineral resources, and create healthier buildings that have less expensive operating costs and higher resale values. [55]

Although energy usage would continue to increase overall, these policies and their implementing programs would reduce the level of energy consumption related to future building construction, and retrofit. However, implementation of programs **EN-1.a**, **EN-1.b,** and **EN-3.a** through **EN-3.j** would be required to reduce this impact to a less-than-significant level. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, all but Programs **EN-1.a** and **EN-3.h** would be implemented within five years. [56] Given the additional funding required for Programs **EN-1.a** and **EN-3.h**, it cannot be certain that these programs would be implemented in a timely manner. [57] Therefore, this would represent a project significant impact and the project would make a cumulatively considerable contribution to a cumulative energy demand impact. The following mitigation would be required.

Mitigation Measure 4.10-8 In order to reduce energy impacts related to energy consumption from building construction and retrofit to a less-than-significant level, the County would be required to obtain additional funding for and implement **EN-1.a** *(Establish a Permanent Sustainable Energy Planning Process)* and **EN-3.h** *(Adopt LEED Standards for Public Buildings)* in a timely manner.

Significance After Mitigation Since it cannot be certain that additional funding would be obtained and because responsibility for implementation of these programs would also depend on community based organizations and energy providers (e.g., PG&E), there is no guarantee that these programs would be implemented. Therefore, this would remain a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the programs described in Mitigation Measure 4.10-8 as part of the *Marin Countywide Plan 2005*.

Fire Protection and Emergency Services – Environmental Setting

Fire services in Marin County are provided by 16 fire protection districts, including the Marin County Fire Department. The County provides fire protection to areas outside of District boundaries. Most of the fire protection districts have mutual aid agreements.

Fire district regulations are uniformly applied to new development located in County unincorporated areas. Ministerial applications (e.g. building permits) are required to meet only the standards of the

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55 Energy and Green Building section of the Built Environment Element, *Draft 2005 CWP Update*, August 2005.

56 As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

57 As described in **Figure 3–19** Energy Program Implementation in the *Draft 2005 CWP Update*.

County Fire Code. The Marin County Fire Department requires residential sprinklers in all new construction. In the case of discretionary permits (e.g. subdivisions, design review, etc.), County planning staff reviews applications and may recommend that more restrictive regulations be required as conditions of permit approval. The Marin County Fire Department estimates that approximately half of all development applications are discretionary in nature.

Fire protection services are generally adequate; however, in some areas the narrow winding roads make access difficult. [58] All paid fire suppression personnel throughout the County either are trained paramedics or maintain emergency medical technical status. [59]

Fire flow improvements, paid for by Marin County residents served by the Marin Municipal Water District (MMWD), have been completed in Tam Valley, San Rafael, Larkspur, Tiburon, Ross, San Anselmo, San Geronimo Valley, Fairfax, and Mill Valley. As of January 2006, MMWD spent over $41.7 million in funds from fees to improve fire flow as well as district capital funds to install larger diameter piping and retrofit tanks and treatment plants for seismic stability. [60]

The Marin County Fire Department

The Marin County Fire Department (MCFD) serves an area of 251 square miles, a State Responsibility Area of 198,945 acres and a population of approximately 14,000. The MCFD serves the unincorporated areas of the county not protected by fire protection districts or federal park agencies. The department has six fire stations throughout the county and maintains a staff of 84.5 paid employees, which is enhanced during fire season by the hiring of 45 seasonal firefighters and additional support staff. The MCFD has mutual aid agreements with all the local fire protection districts.

Many of the MCFD facilities are aging and require upgrades. In January 2006, plans for a new Throckmorton Ridge Fire Station were being considered because the existing 60-year-old facility is too small to accommodate a new fire engine, current staffing and safety requirements. Local fire protection districts are summarized by planning areas below. The districts are illustrated on **Map 3-31** in the *Draft 2005 CWP Update*.

Novato Planning Area

The Novato Planning Area is protected by the Novato Fire Protection District with five fire stations, [61] 96 full-time personnel and approximately ten volunteers. Twenty personnel, including a battalion chief, staff the stations 24 hours a day. Outdated equipment has been replaced per the District's Business Plan, adopted in 2003. The District participates in the Marin County Aid plan and has automatic aid agreements with the San Antonio Volunteer Fire Company and Lakeville volunteers, as

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58 *Community Facilities Element Technical Background Report Provision of Services in Marin County,* The Marin County Community Development Agency, Planning Division, Revised September 2003. This report is available through the Marin County Community Development Agency.

59 Larkspur's firefighters are required to be EMT certified per their website - http://www.ci.larkspur.ca.us/3056.html.

60 *MMWD Begins Eldridge Avenue Area Project in Mill Valley,* News Release issued by the Marin Municipal Water District, January 3, 2006. http://www.marinwater.org/controller?action=opennews&id=48.

61 Station 5 opened in summer 2004 per NPFD website accessed online at www.novatofire.org/stations.

well as mutual aid from Petaluma and the California Department of Forestry and Fire Protection. The District can respond to 71 percent of all calls in five minutes or less.

Las Gallinas Valley and San Rafael Basin Planning Areas

The Las Gallinas Valley and San Rafael Basin Planning Areas are protected by the San Rafael Fire Department (SRFD) and the Marinwood Fire Department (MFD). SRFD has six stations with 75 fire suppression staff and 15 administrative staff, with a maximum response time of eight minutes to all calls. MFD has one station with 34 employees, including a chief, three captains and seven firefighters and 15 volunteers. MFD response time is 5.5 minutes maximum. The SRFD and the MFD work closely together under a joint powers agreement. The SRFD does dispatching for Marinwood fire calls. The two agencies are functionally consolidated but maintain separate administrations. The SRFD provides paramedic services for Marinwood and County Service Areas 13 and 19, which includes Lucas Valley.

Upper Ross Valley Planning Area

The Upper Ross Valley Planning Area is protected by the Ross Valley Fire Department (RVFD) and the Ross Fire Department (RFD). The RVFD serves the spheres of influences of the Towns of Fairfax, San Anselmo, including Oak Manor and all of the unincorporated property in the Upper Ross Valley. RVFD has three stations and 26 firefighters with an average response time of 3.5 minutes. However, approximately 16 percent of the RVFD jurisdiction is beyond a five-minute response time with a maximum of eight minutes to remote areas. The extended response time is a function of distance as well as steep, winding, narrow roadways. The RVFD is integrated into the Marin County Fire Rescue Mutual Aid Plan and has a written contract with the County to provide protection to additional areas as needed. The Department additionally responds to provide protection to Ross and San Rafael as needed. The RFD has one station that protects the Town of Ross with three captains, three paid firefighters and seven volunteers. Response time for the RFD is three to five minutes and automatic aid is available from the RVFD for certain streets and structures. In 1985, the RVFD attempted to consolidate with the RDF but the Ross Town Council rejected the offer. The Ross Valley Paramedic Authority (RVPA) provides advanced life support services to the RVFD area as well as the jurisdictions of Corte Madera, Larkspur, Kentfield, Ross, San Anselmo, and Fairfax. A rescue unit, staffed by two firefighters / paramedics from Marin County Fire Department under contract with the RVPA, is stationed at the Ross Fire Department and is available to serve the Ross Valley as needed.

Lower Ross Valley Planning Area

The Lower Ross Valley Planning Area is protected by the Corte Madera Fire Department (CMFD), the Larkspur Fire Department (LFD), the Kentfield Fire Protection District (KFPD) and the Marin County Fire Department (MCFD) out of the Marin City and Woodacre stations. CMFD has two stations (one leased to Marin Ambulance and used during major emergencies) with 17 paid staff members and ten to 15 volunteers. CMFD serves the Town of Corte Madre and has a response time of less than five minutes, except to the area at the top of Christmas Tree Hill because of the area's steep topography. A new engine and ambulance were purchased for CMFD in 2002. CMFD has an automatic aid agreement with LFD. LFD has two stations with 18 paid personnel and a maximum response time of six minutes. The KFPD covers the unincorporated communities of Kentfield, Kent Woodlands, Del Mesa, and parts of Greenbrae with a staff of 11 full-time paid firefighters and 15 to 20 volunteers plus one administrative secretary. KFPD has a response time of less than four minutes for 80 percent of the District. However, typical response times for class to the upper Kent Woodlands area can be as high as nine minutes. There are modest gaps in water systems service some small areas of the KFPD. The KFPD maintains multiple mutual aid agreements with the Marin County Fire Chief's Association and

a zone drop agreement with the Larkspur Fire Department. Response times to some of the developed unincorporated areas along Lucky Drive are not adequate. The County relies on mutual aid from several local jurisdictions.

Richardson Bay / Southern Marin Planning Area

The Richardson Bay / Southern Marin Planning Area is protected by four agencies: the Southern Marin Fire Protection District (SMFD), the Mill Valley Fire Department (MVFD), the Tiburon Fire Protection Department (TFPD) and the Marin County Fire Department (MCFD)

The SMFD is an independent special district established by the Marin County Board of Supervisors in 1999 and was formed by a merger of the Alto-Richardson Bay Fire Protection District and the Tamalpais Fire Protection District. In February 2004, the City of Sausalito Fire Department joined with SMFD, operating together in a Limited Joint Powers Agreement. [62] The Fire District serves the communities of Tamalpais Valley, Almonte, Homestead Valley, Alto, Strawberry, approximately one-third of the town of Tiburon, as well as the City of Sausalito. The District covers 11.5 square miles, a population of approximately 27,700 and over 14,100 homes and commercial properties.

The District has 56 full-time employees including a chief, an assistant chief, a deputy chief, three battalion chiefs, nine captains, three lieutenants, 36 firefighters / engineers (15 of who are also paramedics) and two administrative staff. The District also maintains a staff of ten reserve firefighters.

In addition to the District jurisdiction, SMFD provides paramedic ambulance service to the City of Mill Valley, the Golden Gate National Recreation Area, Muir Beach, Muir Woods National Monument and the Mount Tamalpais State Park. The District also provides a regional rescue unit that serves all of the above areas and the Tiburon peninsula and the Golden Gate Bridge area. The SMFD has mutual aid agreements with many neighboring fire districts and departments, as well as the statewide mutual aid system. The SMFD also has joint powers agreements with the Southern Marin Emergency Medical Paramedics System (SMEMPS) and the Marin Emergency Radio Authority (MERA). Most of the developed areas within the SMFD are within a five-minute response time, with the exception of the hillside and / or dangerous areas where street configurations make access difficult. A portion of Homestead Valley is outside the five-minute range. There are also areas in the Homestead and Tamalpais Valleys where water flow is less than 1,000 gallons per minute and have poor vehicle access.

The MVFD serves the town of Mill Valley and certain areas of the town's sphere of influence with two fire stations staffed with 25 firefighters and seven volunteers. Parts of Mill Valley are outside the five-minute response time because of steep grades, which can be an arduous climb for pumper engines. Some of the town's aged water mains can carry only 500 gallons per minute rather than the 1,500 gallons per minute used for insurance purposes. Developers are required to increase the capacity of these mains and extend them if hydrants are farther than 300 feet from a residence. The Marin Municipal Water District began replacing nearly one mile of pipe in Mill Valley as part of the district's Fire Flow Master Plan in January 2006. The project, to be completed in June 2006, is designed improve the system's fire-fighting capacity and overall reliability. Approximately 4,800 feet of 6-inch and 8-inch welded steel pipe replaces mains in the Eldridge Avenue area of Mill Valley, the

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[62] Updated information not included in technical background report. Information found on SMFD website: http://southernmarinfire.org.

oldest pipe dating back to 1905.[63] The MVFD is a member of the SMEMP and provides an Advanced Life Support engine at the city hall station as part of that program. The MVFD works with the city and other outside agencies to remove flammable vegetation and dead oak trees from the area as part of its vegetation management program.

The TFPD is responsible for the delivery of fire protection and emergency services to the Town of Tiburon, City of Belvedere, and an unincorporated area of the county. This primarily residential community has a population of approximately 10,800. In addition to the 5,000+ homes on the peninsula, there are two large yacht clubs and several assembly size restaurants located on the waterfront down town. TFPD has two stations with 20 full-time firefighters and 18 volunteer firefighters.[64] The TFPD has automatic aid agreements with the SMFD and the Corte Madera Fire Department. It also participates in the Marin County MUS as well as the statewide mutual aid system. Most development in the TFPD is within a five-minute response time, except for hillside areas where street configurations make access difficult. The ridge top neighborhoods around Mount Tiburon Road, Sugarloaf Drive and parts of Belvedere are slightly outside the five-minute response time as well as the San Francisco State University Romberg Center on Paradise Drive, which is a seven-to-eight-minute response time. Paradise Drive also has inadequate fire flow capabilities and was not included in the recent MMWD Improvement Project.

West Marin Planning Area

The West Marin Planning Area is served by five fire protection districts with seven stations:

- The Bolinas Fire Protection District (BFPD)
- The Inverness Volunteer Fire Department (IVFD)
- The Stinson Beach Fire Protection District (SBFPD)
- The Muir Beach Volunteer Fire Department (MBVFD)
- Marin County Fire Department (MCFD)

The fire stations are located in Point Reyes Station (MCFD), Inverness (IVFD), Marshall (MCFD), Tomales (MCFD), Bolinas (BFPD), Stinson Beach (SBFPD), and Muir Beach (MBVFD). Paramedic services are provided by two units from the MCFD. The City of Petaluma provides paramedic service to the northwestern corner of Marin County. The fire departments in West Marin are largely staffed by volunteers. Each district, except for Muir Beach, employs a fire chief with some departments paying support staff.

The BFPD protects the community of Bolinas, approximately ten and a half square miles and employs a paid fire chief, a paid captain and firefighter, and about eighteen volunteer firefighters, most are certified EMTs. The Department's rescue / command vehicle is staffed 24 hours per day by either a paid firefighter or a qualified volunteer Duty Officer. BFPD dispatching is handled by MCFD. A

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63 *MMWD Begins Eldridge Avenue Area Project in Mill Valley*, News Release issued by the Marin Municipal Water District, January 3, 2006. http://www.marinwater.org/controller?action=opennews&id=48.

64 Personnel numbers updated from website http://www.tiburonfire.org/default.aspx.

paramedic ambulance is provided by MCFD from Point Reyes Station, approximately twenty minutes away. During the summer months, MCFD staffs a second paramedic ambulance in Stinson Beach to serve the Bolinas and Stinson Beach communities by agreement with the SBFPD, the BFPD and the County of Marin, reducing the response time for Advanced Life Support services to about ten minutes. In January 2006, the BFPD, in conjunction with the Coastal Health Alliance and Bolinas Family Practice, were in the process of constructing a new fire station and medical clinic on the site of the existing fire station property. [65] The new facility is expected to be complete by 2007.

The IVFD serves the unincorporated community of Inverness of 1,600 acres and 700 residents plus tourist population. The IVFD has one paid full-time equivalent position shared by a fire chief, training / maintenance officer and another maintenance officer with 15 volunteer firefighters. However, the fire house is not staffed on a regular basis. The IVFD and the Inverness Public Utilities District (IPUD) share an aging facility that is open during business hours on weekdays. All IPUD water district employees are also fire department volunteers. The IVFD service area has a high wildfire risk factor. There are four areas of deficiency in the IVFD: volunteer recruitment, firehouse and equipment inadequacies, water supply inadequacies, and financial strains. The IVFD maintains mutual aid agreements with neighboring districts.

The SBFPD serves the Stinson Beach community out of two stations with a staff of a chief, an ambulance corps director, an office manager and approximately 30 volunteers. The SBFPD has an average response time of five minutes and maintains mutual aid agreements with the MCFD and the BFPD. The County provides paramedic services. The SBFPD acquired a new type 3 fire truck in 2002.

The MBVFD serves the Muir Beach area and surrounding community with an all-volunteer staff that includes an elected fire chief, assistant fire chief and 13 firefighters. The MBVFD is generally the first emergency responder to the Muir Woods National Monument and has an average response time of five minutes. Several of the District's volunteers are qualified in cliff-side rescue.

Wildland / Urban Interface

Wildland fires play an integral role in many forest and rangeland ecosystems. However, decades of efforts directed at extinguishing all fires on public lands have disrupted the natural fire regimes that once existed. As more and more communities develop and grow in areas that are adjacent to fire-prone lands in what is known as the wildland / urban interface, wildland fires pose increasing threats to people and their property. Areas around Mount Tamalpais have not burned since 1945 resulting in a forest overstocked with trees and brush with high concentrations of dead material. Sudden Oak Death has created additional tinder that amplifies the threat of wildland fire to homes and communities on the urban interface in Marin County.

The National Fire Plan (NFP) was developed in August 2000 by the USDA Forest Service and the Department of the Interior, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The NFP addresses five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability. The NFP funds several community partnerships in Marin County to achieve greater wildland fire protection in the vicinity of

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[65] Updated information on new BFPD firehouse found on BFPD website: http://www.bolinasfire.org/.

Point Reyes National Seashore, Golden Gate National Recreation Area, and neighboring open space lands.

These projects are a collaborative effort to reduce fuels and protect communities from wildland fire. Protection of human life is the foremost objective, followed by the protection of property. Administration of these projects is accomplished through a cooperative agreement between the National Park Service and FIRESafe MARIN, a non-profit organization dedicated to reducing wildland fire hazards and improving fire safety awareness in Marin County.[66] Recent projects include:

- Increased protection for Fairfax and San Anselmo through fuels treatment along a key section of the wildland-urban interface was funded in 2004 in coordination with Marin Municipal Water District's fuel break system. This project is identified in MMWD's Mount Tamalpais Vegetation Management Plan.

- Projects to improve emergency access and egress along rural roads to increase protection for Shallow Beach and Paradise Ranch Estates, neighborhoods in Inverness Park were funded 2003-2005.

- A shaded fuel break was completed in 2004 to protect the community of Kent Woodlands, a neighborhood in Kentfield which borders public open space lands.

- A series of community meetings in California in the communities of Inverness, Point Reyes Station, Marshall, Stinson Beach, Bolinas, and Olema, during summer 2005 have provided numerous opportunities for residents to learn about defensible space in the context of disaster preparedness.

- A fuel management program was initiated for a neighborhood in the community of Nicasio in 2004.

- A strategic fuel break, bisecting Point Reyes National Seashore, was successfully initiated during fall 2005 when two adjacent units, totaling 46 acres of coyote brush mixed with grass, were treated with prescribed fire along Limantour Road.

However, 22 communities in Marin County remain on the NFP's "Communities at Risk" list. Established in 2001, the list directs funds to communities at risk of wildfire threat based on fuel hazards, probability of fires, and housing located in or near wildland fuels. The California Department of Forestry has also determined most of Marin County to be a "Very High" fire threat based on a combination of potential fire behavior and expected fire frequency.[67] The *Draft 2005 CWP Update* includes a map of the urban-wildland interfaces zones and another indicating fire risk throughout the County.[68]

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66 National Park Service website: http://www.nps.gov/fire/public/pub_fir04_pore_fy04projects.html.

67 A detailed explanation of the CDF fire threat ratings and a map of the ranked California communities can be found at http://frap.cdf.ca.gov/projects/wui/index.asp.

68 **Map 2-13**, the Urban – Wildland Interface Zone Map and **Map 2-15**, the Fire Risk map both contained in the *Draft 2005 CWP Update* were created with information provided by Marin County Fire Department.

Fire Protection and Emergency Services – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to Fire Protection and Emergency Services if it would:

- Result in the need for new or altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable response times or other performance objectives; or

- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Fire Protection and Emergency Services – Impacts and Mitigation Measures

Impact 4.10-9 Increased Demand for Fire Protection and Emergency Services Facilities
Implementation of the Draft 2005 CWP Update would increase the demand for County fire protection and emergency services and may result in the need for new or improved facilities, the construction of which could result in adverse effects to the environment. However, the Draft 2005 CWP Update contains policies that would substantially reduce construction related impacts resulting from the development of these facilities. Therefore, this would be a less-than-significant impact.

The Marin County Fire Department has determined that implementation of the *Draft 2005 CWP Update* would require additional equipment and staff including at least one fulltime position in the Fire Prevention staff and at least six new Fire Suppression / Emergency Services staff in order to meet acceptable response times and service ratios. [69] New or expanded fire protection facilities would be required to accommodate additional staff and equipment. [70]

Specifically, the Hicks Valley Fire Station and the Tomales Fire Station would need to be expanded, renovated or replaced in order to maintain an acceptable level of service associated with projected growth. Such facilities would be required as new fire trucks and rigs are built larger than in years past and cannot fit into existing bays in the firehouses. Furthermore, if the additional staff required includes females, separate sleeping quarters would need to be constructed.

The Woodacre Fire Station acts as headquarters for administrative staff, the Emergency Command Center, and the vehicle maintenance facility. Additionally, it houses a working fire station that serves and protects the communities of Woodacre, Nicasio, Lucas Valley, Forest Knolls, Lagunitas, and the San Geronimo Valley. The addition of fire prevention staff to maintain acceptable levels of service would require the expansion, renovation, or replacement of this facility.

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[69] Ken Massucco, Fire Chief, Marin County Fire Department, letter to the Marin County Community Development Agency, dated March 18, 2004 and Nichols•Berman Communication with Fire Marshal Scott Alber, May 30, 2006.

[70] Ken Massucco, Fire Chief, Marin County Fire Department, letter to the Marin County Community Development Agency, dated March 18, 2004 and Nichols•Berman Communication with Fire Marshal Scott Alber, May 30, 2006.

Development of a new Throckmorton Ridge Fire Station underwent environmental review and is currently under construction. The existing station was demolished in July 2005 and the new facilities are expected to be completed by early 2007. Firefighters currently live and work out of on-site trailers.

The *Draft 2005 CWP Update* contains measures that would provide for adequate fire protection services. Policy **CD-5.2** would assign financial responsibility for growth by requiring new development to pay its fair share of the costs of public facilities, services, and infrastructure, including fire protection services and facilities.

The *Draft 2005 CWP Update* also contains a number of policies and programs that would promote fire safety and reduce the demand for fire protection services. Goal **EH-4** and Policies **EH-4.1** through **EH-4.3** would help protect people and property from fire hazards by ensuring adequate fire protection is included in new construction and retrofit, that hazardous vegetation is removed near structures, and that the County adopts a fire management plan. Such policies and their implementing programs would ensure that buildings would be fire resistant, that fuel loads would be reduced, and that proactive measures would be taken to mitigate identified fire hazards. Policy **EH-4.4** would ensure that there are an adequate number of trained and certified emergency medical technicians to address any increased demand for medical services.

However, implementation of the *Draft 2005 CWP Update* would still require new or expanded fire protection facilities, the construction of which could result in adverse physical effects to the environment. The effects include additional traffic, erosion and sedimentation of drainageways, and noise and dust associated with construction activities. However, site-specific impacts of these facilities cannot be determined until such time that they are proposed and undergo environmental review.

The *Draft 2005 CWP Update* includes a number of policies that would substantially reduce construction related impacts from new or expanded fire protection and emergency service facilities. Policies **BIO-4.1** *(Restrict Land Use in Stream Conservation Areas)* and **BIO-4.2** *(Comply with SCA Regulations)* would reduce such impacts to riparian corridors (e.g., erosion and sedimentation and loss of sensitive habitat) by establishing development setbacks in Streamside Conservation Areas (SCAs). Policies **WR-2.1** *(Reduce Toxic Runoff)*, **WR-2.2** *(Reduce Pathogen, Sediment, and Nutrient Levels)*, **WR-2.3** *(Avoid Erosion and Sedimentation)*, and **WR-2.4** *(Design County Facilities to Minimize Pollution Impact)* would reduce the volume of urban run-off from pollutants, maintain water quality standards, and avoid erosion and sedimentation from grading and construction activities for new development and County facilities. Policy **AIR-1.3** *(Require Mitigation of Air Quality Impacts)* would require discretionary projects to incorporate the best available air quality mitigation in order to reduce dust, greenhouse gases, and other harmful emissions. Policy **NO-1.3** *(Regulate Noise Generating Activities)* would require measures to minimize noise exposure from construction-related activities.

Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.10-9 None Required.

Impact 4.10-10 Wildland Fire Hazards

Implementation of the Draft 2005 CWP Update would expose people and structures to the risk of loss, injury, or death involving wildland fires. This would be a less-than-significant impact.

As described in the environmental setting, 22 communities in Marin County are considered "Communities at Risk" by the National Fire Plan because of the proximity of housing to areas susceptible to wildland fires. The California Department of Forestry rates portions of Marin County either as a *high*, *very high*, or *extreme* fire hazard. [71] Many of the high risk areas in Marin County are interspersed with developed areas. New land uses and development consistent with the *Draft 2005 CWP Update* would expose people and structures to wildland fires throughout the county, especially in areas with steep slopes, high fuel loads (i.e., dense vegetation) or inadequate emergency access.

However, the *Draft 2005 CWP Update* would also reallocate 1,694 residential units to the City-Centered Corridor primarily from West Marin. The majority of West Marin is designated by the County as a *high* fire risk. [72] While many areas in the City-Centered Corridor are considered a *high* or *very high* fire risk, much of the development would occur as infill in areas of relatively low wildland fire risk. Therefore, this reallocation of units would minimize the exposure of people and structures to wildland fires as well as reduce the demand for fire protection services in West Marin.

In addition, the *Draft 2005 CWP Update* contains policies and programs to reduce exposure to wildland fire hazards. Goal **EH-4** and Policies **EH-4.1** through **EH-4.3** would help protect people and property from fire hazards by ensuring adequate fire protection is included in new construction and retrofit, that hazardous vegetation is removed near structures, and that the County adopts a fire management plan. Such policies and their implementing programs would ensure that buildings would be fire resistant, that fuel loads would be reduced, and that proactive measures would be taken to mitigate identified fire hazards. Policy **EH-4.4** would ensure that there are an adequate number of trained and certified emergency medical technicians to address any increased demand for medical services.

Furthermore, the *Draft 2005 CWP Update* contains 16 implementing programs to prevent loss, injury, and death from wildland fires. These include measures that would provide for design review, fire protection techniques (e.g., sprinklers, fire resistant building materials, and reduction of fuel loads), and the adoption of new more restrictive regulations in areas of very high fire risk.

Program **EH-4.c** would continue to require submittal of development applications to the County Fire Department or local fire district for review. Such a measure would ensure that fire department recommendations are incorporated into project design as conditions of approval as necessary to ensure fire safety.

Program **EH-4.e** would continue to require installation of automatic fire sprinkler systems in all new structures and existing structures undergoing substantial remodeling. This program would substantially reduce damage to structures, especially in areas where emergency access is impaired or response times are prolonged.

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[71] Marin County uses a different ranking system than the California Department of Forestry. The County system uses four relative categories to determine fire risk: *low*, *moderate*, *high*, and *very high*.

[72] Marin County uses a different ranking system than the California Department of Forestry. The County system uses four relative categories to determine fire risk: *low*, *moderate*, *high*, and *very high*.

Program **EH-4.f** would continue to require Class A fire-resistant roofing for any new roof or major replacement of an existing roof. Program **EH-4.h** would require clearance of vegetation to establish defensible space around structures. Where high fire risk areas are interspersed with developed areas, maintaining defensible space can substantially minimize fire risk by reducing fuel loads. [73]

Program **EH-4.k** would require the County to work with fire departments in Marin County to prepare and adopt regulations for new development and significant remodels in urban-wildland interface areas. The Marin County Fire Department, along with various fire protection districts and city / town fire departments, has developed an Urban-Wildland Interface (UWI) Fire Code that is currently under review. The Novato Fire Department has already adopted a UWI Fire Ordinance.

The UWI Fire Code would place additional requirements for new development and renovations to existing buildings that are in designated high fire risk areas. The code would mitigate fire hazards by addressing the spread of fire from wildlands to structures as well as the spread of structural fires to wildland fuels.

These policies and programs would continue to reduce the exposure of people and structures to loss, injury, or death from wildland fire hazards. However, they would not eliminate this risk, especially in areas of very high fire risk (i.e., those with steep slopes, high fuel loads, and / or inadequate emergency access). More protection would be afforded in these areas if the UWI Fire Code (Program **EH-4.k**) were adopted and implemented. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, it can be assumed that Program **EH-4.k** would be implemented in a timely manner. [74] Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative wildland fire hazards impact. No mitigation would be required.

Mitigation Measure 4.10-10 None required.

Criminal Justice Services – Environmental Setting

Marin County Sheriff's Office

Marin County Sheriff's Office (MCSO) is responsible for crime prevention and law enforcement in the unincorporated areas of Marin County. MCSO has a staff of 202 sworn deputies and 115 law enforcement professionals with a budget of more than $33 million. The MCSO also maintains the Martin County jail, provides bailiffs (deputies) and security to the county's courts, operates a countywide communications division, which includes dispatching services for police, fire and medical units and manages the County's Office of Emergency Services. The MCSO is divided into three

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[73] Nichols·Berman communication with Scott Albers, Fire Marshall, Marin County Fire Department, June 2006.

[74] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

Bureaus: Bureau of Field Services, Bureau of Detention Services and Bureau of Administrative and Support Services, which includes the Communications Division. The Bureau of Field Services is comparable to a police department as it provides the full range of law enforcement services, including Special Units, with the exception of traffic investigations.

The California Highway Patrol (CHP) provides traffic enforcement and investigates traffic accidents in the unincorporated areas and on all the State roads in the incorporated areas. The average response time to calls for service is under five minutes, except to the Point Reyes area, where it is under 15 minutes due to the size of the beat area, traffic, road conditions, and weather / fog conditions. The ratio of officers per 1,000 residents in unincorporated areas nationwide is 1.7. In the Pacific region, it is 1.3 officers per 1,000 residents. The MCSO currently operates at 1.3 officers per 1,000 residents in the unincorporated area.

The Patrol division operates out of four Sheriff's stations located in Marin City, Kentfield, Civic Center, and Point Reyes Station. The MCSO is solely responsible for crime prevention and law enforcement services to the entire West Marin Planning Area. The patrol division staff includes five lieutenants, ten sergeants, 58 deputies, two parking enforcement officers, and two senior sheriff's service assistance. These personnel are dispersed throughout the Sheriff's stations and provide law enforcement services to the unincorporated area seven days a week, 24 hours a day. The Patrol Division has contracts with the Marin County Open Space District to provide a deputy to patrol the open space areas throughout the county. The Kent Woodlands Community Service District also contracts for a deputy who provides patrol and law enforcement services to that community eight hours a day. The Marin County Housing Authority also pays the Patrol Division to provide a two-person walking beat in the Housing Authority area of Marin City. One patrol deputy is assigned to the Patrol boat to patrol the bay waters within the county boundaries. The MCSO also has contracts with the City of Belvedere and the Town of Ross to provide a lieutenant to each community to be the Chief of Police. Members of the Volunteer Services Division staff the patrol boat, crew the airplane, provide patrol reserves and mounted deputies. Local police districts in Marin County are summarized by planning areas below.

Novato Planning Area

The City of Novato's Police Department services the incorporated areas of the Novato Planning Area with 62 full-time sworn officers, including the Chief of Police out of one police station. The 28 square mile area within the incorporated city limits of Novato has a population of approximately 49,500 people. Thirty-five officers, seven sergeants and four traffic officers are assigned to patrol duties. Nine officers and one sergeant are assigned to the investigations bureau. The city is divided into four geographical areas or beats for patrol purposes. The unincorporated areas are serviced by the MCSO.

Las Gallinas and San Rafael Basin Planning Area

The incorporated areas of the Las Gallinas and San Rafael Basin Planning Area are protected by the San Rafael Police Department (SRPD) with one station located in downtown San Rafael. SRPD staff includes 76 sworn officers with seven beats patrolled by 37 officers. Four motor officers are assigned to traffic duty and eight positions are assigned to the investigations unit. Two full-time bicycle patrol officers patrol the downtown areas and one officer is assigned to the schools as a School Resource Officer. The unincorporated areas are serviced by the MCSO out of their Station #3 at the Marin County Civic Center, which is staffed by 16 sworn officers, four supervisors and three lieutenants.

Upper Ross Valley Planning Area

The Upper Ross Valley Planning Area has three local police departments with the unincorporated areas serviced by the MCSO out of the Kentfield substation. The Fairfax Police Department (FPD) performs law enforcement activities in the approximately two square miles of the Fairfax service area, which has a population of 7,200 people. The department is staffed with a chief, three sergeants, one detective / juvenile officer, one K-9 officer, six patrol officers, one community service officer, one reserve officer, four dispatchers and four reserve dispatchers. The average response time to calls is three minutes and there are informal mutual aids agreements between the FPD, the CHP, the MCSO and other nearby police departments. The Town of Ross Public Safety Department provides patrol, traffic enforcement, crime prevention services, and general criminal investigation services with the incorporated town limits of Ross. A chief, two sergeants, six officers and one School Resource Officer staff the Department. Average response time to calls is two minutes. Dispatch services are provided by MCSO. The Town of San Anselmo and its 12,500 residents receive police protection from the San Anselmo Police Department staffed by 25 full-time employees, including 18 sworn police officers, one chief, two lieutenants, four sergeants, eight patrol officers, one juvenile officer, one detective and one motorcycle officer. Response time to calls averages less than three minutes. The Town of Ross and the College of Marin police departments contract with the Town of San Anselmo to provide dispatch services.

Lower Ross Valley Planning Area

The incorporated areas of the Lower Ross Valley Planning Area are services by the Twin Cities Police Authority, which has an annual budget of $3.8 million with 44 employees (33 sworn) and works out of three police facilities. The Authority provides police services and public safety dispatching to the communities of Corte Madera and Larkspur with approximately 21,000 residents in an 8 square mile suburban area. The unincorporated areas of Lucky Drive and the Greenbrae Boardwalk are regularly patrolled by the MCSO.

Richardson Bay Planning Area

The incorporated areas of the Richardson Bay Planning Area receive law enforcement services from four local police departments: the City Police Department in Belvedere, the Mill Valley Police Department (MVPD), the Sausalito Police Department (SPD), and the Tiburon Police Department (TPD). The one square mile of incorporated Belvedere is protected by five patrol officers, one sergeant and one chief. MCSO provides dispatch services and average response time is two to three minutes. Tiburon's largest crime problem is residential burglaries and the City Police Department increased staffing and implemented an aggressive neighborhood alert program. The Chief of MVPD oversees the operations of 19 sworn positions, including two captains, four sergeants, two detectives (one of which is the sergeant in charge of Investigations and the other is the Juvenile Resource officer), two corporals, nine patrol officers and two reserve officers. Non-sworn personnel include two parking enforcement officers, one community service officer, three administrative clerks, one reserve officer, one volunteer and a chaplain.[75] Dispatch services are provided to MVPD by the MCSO. The incorporated areas of Sausalito are protected by the SPD and its 26 full-time employees and 24 volunteers. The staff includes one chief, two captains, five sergeants, one investigator, 13 patrol officers, three parking services officers, one administrative aide, and one administrative clerk. The MCSO provides dispatch services to the SPD and the average response time to emergency calls is

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[75] Updated with information from the MVPD website: http://www.millvalleypd.org/about.html.

approximately two minutes. The Tiburon Police Department protects the town with 15 to 16 sworn officers, including the Chief, one lieutenant, five sergeants, and eight patrol officers. Dispatch services are provided by the MCSO and the incorporated area is divided into two beats. The unincorporated area is protected by a MCSO substation in Marin City.

West Marin Planning Area

The West Marin Planning Area is served by the Marin County Sheriff's Office.

Jails

The Marin County jail, which opened in 1994, is located on the Civic Center grounds and houses both male and female adults who are either awaiting trial or are already sentenced for criminal and / or civil violations. The Marin County Sheriff's Office is responsible for staffing and operating the County jail. The bed capacity is 294. [76] The County jail contracts with the U.S. Marshall's Service to house federal inmates who are waiting for legal action in the U.S. District Courts.

Crime Rates

State and county crime trends are affected by demographics, economic conditions and values, lifestyles, and residential patterns, as well as by the provision of law enforcement. Numerous factors can influence crime rates, including the ages of residents, the density and size of jurisdictions, the mobility of residents, economic and family conditions, strength and effectiveness of the law enforcement agencies, crime reporting practices, and the laws and criminal justice policies of the jurisdictions. The crime rate for California peaked in 1980, declined for four years, and began to increase in 1985. Since 1995, the crime rate has been in a general decline with the violent crime rate decreasing by 43 percent between 1995 and 2004. The State's property crimes rate has dropped 29 percent in the same period. [77] **Exhibit 4.10-13** depicts the crime rates for Marin County following similar trends, with violent crimes decreasing by 36 percent and property crimes dropping by 13 percent between 1994 and 2003.

Exhibit 4.10-13
Marin County Crime Rates, 1994-2003, (Crimes per 100,000 Population)

Type of Crime	Year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Violent Crimes	344	344	329	298	340	311	257	233	193	221
Property Crimes	1,657	1,692	1,452	1,427	1,325	1,147	1,152	1,406	1,283	1,447
Total	***2,001***	***2,036***	***1,781***	***1,725***	***1,665***	***1,458***	***1,402***	***1,639***	***1,476***	***1,668***

Source: *Reported Crimes and Crime Rates by Category and Crime, Marin County*, State Department of Justice, State Attorney General's Office, accessed online at http://caag.state.ca.us/cjsc/datatabs1.htm, January 2006.

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76 There are 230 beds for males and 64 beds for females.

77 *Reported Crimes and Crime Rates by Category and Crime, Marin County*, State Department of Justice, State Attorney General's Office, accessed online at http://caag.state.ca.us/cjsc/datatabs1.htm, January 2006.

Criminal Justice Services – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to Criminal Justice Services if it would:

- Result in the need for new or altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times and / or other performance objectives.

Criminal Justice Services – Impacts and Mitigation Measures

Impact 4.10-11 Demand for Additional Criminal Justice Facilities

Implementation of the Draft 2005 CWP Update would increase the demand for police and detention services provided by the Marin County Sheriff's Department and may result in the need for new or improved facilities, the construction of which could result in adverse effects to the environment. However, the Draft 2005 CWP Update contains policies that would substantially reduce construction related impacts resulting from development of these facilities. Therefore, this would be a less-than-significant impact.

As discussed in ***Chapter 3.0 Description of the Proposed Project***, implementation of the *Draft 2005 CWP Update* would add an additional 7,161 residents to unincorporated Marin County by 2030. As discussed in the environmental setting, the current level of service ratio for Marin County Sheriffs Department is 1.3 deputies per 1,000 residents. Accordingly, the Marin County Sheriff's Department would be required to add approximately seven additional deputies to maintain its current level of service ratio in the unincorporated area.

In terms of facilities required to meet this demand, the County is in the early stages of planning for development of a new Public Safety building that would house the Sheriff's Department, the Office of Emergency Services, the County Coroner, and other related services.[78] The *Civic Center Master Design Guidelines* identifies locations on the existing Marin County Civic Center site where this facility could be constructed.

The *Civic Center Master Design Guidelines* identifies several constraints to site development. For parking and circulation issues, two constraints were identified: Civic Center Drive at Peter Behr Road would operate unacceptably with the development of the Marin Center project and the Public Safety Building and parking would be inadequate to serve both uses. Site development could also adversely affect scenic views to and from the site the Civic Center. Additionally, Marin Municipal Water District indicated that the County is currently exceeding its water entitlements, which means that water service would be a constraint to site development for any project on the Civic Center campus.

While no new jail or detention facilities would be required or are anticipated, no planning information was available from the Marin County Sheriff's Department in order to determine the need for new

[78] Civic Center Master Design Guidelines, County of Marin Administrator's Office, December 2005, available online at http://www.co.marin.ca.us/depts/AD/Main/MasterPG.cfm

Sheriff's substations.[79] However, it would be reasonable to expect that such facilities would require remodel, expansion, or replacement by new facilities by 2030.

The *Draft 2005 CWP Update* contains a number of goals that would help decrease crime and ensure adequate criminal justice facilities are planned for and constructed. Goals **PS-1** and **PS-2**; Policies **PS-1.1**, **PS-1.2**, **PS-2.1**, and **PS-2.2**; and Programs **PS-1.a** through **PS-1.e** would strive to create safe neighborhoods and decrease crime by encouraging community involvement in crime control, ensuring adequate lighting, providing counseling, neighborhood cleanup, and other means. Goal **PS-3**, **PS-3.1**, and Programs **PS-3.a** through **PS-3.j** would ensure that the County, its citizens, businesses, and services would be prepared for effective response and recovery in the event of emergencies or disasters.

Implementing these policies and their associated programs while protecting and serving population growth consistent with the *Draft 2005 CWP Update*, would require expanded or additional facilities for the Marin County Sheriff's Office. The construction of these facilities could result in adverse physical effects on the environment including additional traffic, erosion and sedimentation of drainageways, and noise and dust associated with construction activities. However, site-specific impacts of these facilities cannot be determined until such time that they are proposed and undergo environmental review.

The *Draft 2005 CWP Update* includes a number of policies that would substantially reduce construction related impacts from new or expanded criminal justice facilities. Policies **BIO-4.1** *(Restrict Land Use in Stream Conservation Areas)* and **BIO-4.2** *(Comply with SCA Regulations)* would reduce such impacts to riparian corridors (e.g., erosion and sedimentation and loss of sensitive habitat) by establishing development setbacks in Streamside Conservation Areas (SCAs). Policies **WR-2.1** *(Reduce Toxic Runoff)*, **WR-2.2** *(Reduce Pathogen, Sediment, and Nutrient Levels)*, **WR-2.3** *(Avoid Erosion and Sedimentation)*, and **WR-2.4** *(Design County Facilities to Minimize Pollution Impact)* would reduce the volume of urban run-off from pollutants, maintain water quality standards, and avoid erosion and sedimentation from grading and construction activities for new development and County facilities. Policy **AIR-1.3** *(Require Mitigation of Air Quality Impacts)* would require discretionary projects to incorporate the best available air quality mitigation in order to reduce dust, greenhouse gases, and other harmful emissions. Policy **NO-1.3** *(Regulate Noise Generating Activities)* would require measures to minimize noise exposure from construction-related activities.

This would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.10-11 None Required.

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[79] Nichols·Berman communication with David Speer, Facilities Planning and Development Manager, Marin County Administrator's Office, June 2006.

Public Education Services – Environmental Setting

There are 19 school districts in Marin County: 15 elementary districts, two high school districts, and two unified districts. The districts vary significantly in size, ranging in enrollment from 16 students in the smallest district to more than 5,000 in the largest. [80] There are 77 public schools in Marin County, including 44 elementary schools, 11 middle / junior high schools, eight high schools, two continuation schools, eight alternative education / independent study schools, [81] and four charter schools. [82]

K-12 enrollments increased from 1993-2000 steadily in Marin County's public schools. The 1992-93 total enrollment was 26,534, which grew to 28,789 in 1999-2000 and then declined slightly to 28,703 in 2000-2001. Since then, enrollment has remained steady in the mid-28,000. The State Department of Finance has projected that public K-12 school enrollment in the county will range from 28,134 in 2006-07, to 27,521 in 2012-13. [83]

The average class size in Marin County was 27.4 during the school year 2003-04. In 2002-03, the racial and ethnic makeup of the students showed that 70.3 percent of the students were Caucasian, 16.6 percent were Hispanic, 5.8 percent were Asian, 0.4 percent were Pacific Islander, 0.6 percent were Filipino, and 0.3 percent were Native American. The graduation rate [84] of Marin County students was 96.4 percent in 2001-02, compared to 86.9 percent statewide during the same year.

In 1986, California school districts were given authority to collect development fees and use those fees for constructions of permanent facilities. [85] The development fees are only a supplement to State funds. Therefore, although the fees help mitigate the impact of new development, schools continue to be largely dependent of State funding sources. Marin County has cooperated with the school districts that are collecting fees by requiring proof that these fees have been paid before issuing a building permit. The following Marin County school districts are collecting development fees: Kentfield, Larkspur, Mill Valley, Reed Union, Ross Valley, San Rafael Elementary, and Novato Unified. Collecting fees enables the school districts to build new facilities or expand existing facilities in order

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80 *Marin County Office of Education Statistical Bulletin,* May 11, 2005, Enrollment as of October, 2004.

81 Alternative schools include 4 alternative schools, 1 special education school, 4 continuation schools and juvenile court school.

82 Countywide Profile, California Department of Education, accessed online at http://www.ed-data.k12.ca.us/Navigation/fsTwoPanel.asp?bottom=%2FArticles%2FArticle%2Easp%3Ftitle%3DAbout%2520this%2520site, January 2006.

83 *Projected California Graded Public K-12 School Enrollment by County by School Year,* Demographic Research Unit, State Department of Finance, accessed online at www.dof.ca.gov/HTML/DEMOGRAP/K12g.HTM.

84 Based on definition provided by the National Center for Education Statistics, Source: http://data1.cde.ca.gov/demographics, accessed online January 2006.

85 California Government Code Section 65970 et. seq.

to accommodate projected growth. The school districts' enrollment projections consider enrollment trends, pending development projects and age-specific population projections.

Public Education Services – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to Public Education Services if it would:

- Result in the need for new or altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable performance objectives.

Public Education Services – Impacts and Mitigation Measures

Impact 4.10-12 Demand for Public Education Services

Implementation of the Draft 2005 CWP Update would generate a demand for school services beyond the existing public school capacity and would result in the need for additional facilities, the construction of which could cause adverse affects to the environment. However, the Draft 2005 CWP Update contains policies that would substantially reduce construction related impacts resulting from development of these facilities. Therefore, this would be a less-than-significant impact.

For the 2004-05 school year, 28,565 students were enrolled in Marin County public schools. [86] While a projection of the number of students generated by new development consistent with the *Draft 2005 CWP Update* is not available, the State Department of Finance projects 27,448 students for the 2014-15 school year, a decline of 1,117 students. Despite the State's estimates for declining enrollment, enrollment at schools within the City-Centered Corridor would likely increase due to the redirection of residential units to it, primarily from West Marin.

Although long-term planning information is not available from the Marin County Office of Education for all school districts, it has been determined (i.e., through interviews with officials of various school districts) that implementation of the *Draft 2005 CWP Update* would require new or expanded facilities in several areas. For example, two of the school districts located in the City-Centered Corridor, the Mill Valley Elementary School District and Dixie School District, would require new or expanded facilities. [87] Both school districts are currently at or near capacity but plan to accommodate growth of five percent or less.

The *Draft 2005 CWP Update* includes a number of policies and programs that would help ensure sufficient capacity in Marin County schools for future residents. Policy **EDU-1.1** would require that the County coordinate with the school districts to determine appropriate locations and layouts for

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86 *Statistical Bulletin 5-05, Enrollment as of October 2004*, Marin County Office of Education, May 11, 2005.

87 Nichols•Berman communication with Kathy Hattner, Executive Assistant to the Superintendent, Mill Valley School District, and Dr. Thomas Lohwasser, Superintendent of Dixie School District, May 25, 2006.

future facilities. Program **EDU-1.c** would encourage school districts to lease facilities not currently needed for teaching and to reserve those sites for future school needs. Interim uses could include childcare centers, recreation centers, community meeting places, private schools, offices, and art studios. Policies **EDU-2.1** and **EDU-2.2** would enhance preschool, school, and after-school educational programs and well as expand adult education.

Despite these policies and programs, implementation of the *Draft 2005 CWP Update* would still generate additional students that could exceed the existing capacity of Marin County schools. The construction of new or expanded facilities to meet this demand could result in adverse physical effects to the environment including additional traffic, erosion and sedimentation of drainageways, and noise and dust associated with construction activities. However, site-specific impacts of these facilities cannot be determined until such time that they are proposed and undergo environmental review.

The *Draft 2005 CWP Update* includes a number of policies that would substantially reduce construction related impacts from new or expanded school facilities. Policies **BIO-4.1** *(Restrict Land Use in Stream Conservation Areas)* and **BIO-4.2** *(Comply with SCA Regulations)* would reduce such impacts to riparian corridors (e.g., erosion and sedimentation and loss of sensitive habitat) by establishing development setbacks in Streamside Conservation Areas (SCAs). Policies **WR-2.1** *(Reduce Toxic Runoff)*, **WR-2.2** *(Reduce Pathogen, Sediment, and Nutrient Levels)*, **WR-2.3** *(Avoid Erosion and Sedimentation)*, and **WR-2.4** *(Design County Facilities to Minimize Pollution Impact)* would reduce the volume of urban run-off from pollutants, maintain water quality standards, and avoid erosion and sedimentation from grading and construction activities for new development and County facilities. Policy **AIR-1.3** *(Require Mitigation of Air Quality Impacts)* would require discretionary projects to incorporate the best available air quality mitigation in order to reduce dust, greenhouse gases, and other harmful emissions. Policy **NO-1.3** *(Regulate Noise Generating Activities)* would require measures to minimize noise exposure from construction-related activities.

Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.10-12 None Required.

Parks and Recreation Services – Environmental Setting

In Marin County, there are three federal [88] and seven State lands [89] accessible for recreation purposes as well as 459 acres of County-owned parks and 1,491 acres of local parks owned by local municipalities. [90] There are also a handful of facilities operated by private non-profit organizations. In addition, 464 linear miles of trails are open to the public, including 26 miles of paved pathways.

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88 *County of Marin Parks and Recreation in Marin County Map*, accessed online at http://gisprod1.co.marin.ca.us/park/viewer.htm, January 2006.

89 *California State Parks in Marin County*, list accessed online at http://www.parks.ca.gov/parkindex/results.asp, January 2006.

90 *Marin Countywide Plan Parks and Recreational Technical Background Report*, The Marin County Community Development Agency, Planning Division, January 2005.

Marin County has many open space and watershed lands that, in general, are protected for environmental purposes and are not available for active recreation. **Exhibit 4.10-14** provides a summary of publicly accessible acreage in Marin County. Point Reyes National Seashore and Golden Gate National Recreational Area provide approximately 85 percent of the parkland.

Exhibit 4.10-14
Park Acreage in Marin County

Agency	*Acres*
Federal [a]	97,590.98
State [b]	14,266.89
County [c]	458.60
City	1490.90
Total [d]	***113,807.37***

a Federal lands include Golden Gate National Recreation Area (26,000 acres), Point Reyes National Seashore (71,068 acres) and Muir Woods National Monument (522.98 acres)
b State lands include Angel Island (740 acres), China Camp (1,640 acres), Marconi Conference Center (62 acres), Mount Tamalpais (6,300 acres), Olompali Historic Park (824 acres), Samuel P. Taylor (2,700+ acres) and Tomales Bay Day Use Park (2,000 acres).
c County acreage includes publicly accessible lands only and excludes open space or protected areas such as the 283 acres of wetlands in McInnis Park.
d Total excludes private and non-profit public accessible lands.

Sources: Marin Countywide Plan Parks and Recreation Technical Background Report, the Marin County Community Development Agency, Planning Division, January 2005. California State Park total acreage confirmed by Kim Schneider of the California State Park Service, January 30, 2006. Additional information sourced online at http://www.parks.ca.gov/parkindex/ , January 2006. National Park total acreage confirmed by Michael Feinstein of the National Park Service Public Affairs Department, January 31, 2006. Additional information sourced online at http://www2.nature.nps.gov/stats/acrebypark03cy.pdf, January 2006.

County-owned parks provide a variety of recreational opportunities such as natural areas, trails, water features, picnic areas and specialized facilities, (i.e.; boat launches and the Civic Center facilities). The 458.6 acres of County-owned parks in Marin County is well below the recommended standard [91] of 20 acres per thousand residents. County regional park acreage meets the standard only in central Marin, in the Las Gallinas Planning Area where McInnis Park is located. However, the total acreage of park land throughout the county, including federal, State and local parks exceeds the recommended standard acreage. In four of seven planning areas, local parks, as shown in **Exhibit 4.10-15**, meet Quimby Act standards, which require three to five acres of parkland for every 1,000 residents.

91 Standard quoted taken from *Planning and Design Criteria*, de Chiara and Koppelmann, 1982.

Exhibit 4.10-15
Local Park Acreage by Planning Area Compared with Quimby Act Standards [a]

Planning Area	***Existing Local Park Acreage***	***Acres Required at 3 acres per 1000 Residents***	***Surplus (+) or Deficit (-)***
Novato	216.40	163.55	+52.85
Las Gallinas [b]	61.00	76.69	-15.69)
San Rafael Basin	126.90	104.47	+22.43
Upper Ross Valley	82.80	72.59	+10.21
Lower Ross Valley	70.80	88.94	-18.14)
Richardson Bay	132.00	130.84	+1.16
West Marin	26.00	53.22	-27.22)
Total Marin County [d]	***715.90***	***690.30***	***+25.60***

a Excludes schools
b Excludes McInnis Park, which was defined as a countywide regional park by source.

Source: *Marin Countywide Plan Parks and Recreation Technical Background Report*, the Marin County Community Development Agency, Planning Division, January 2005. The report utilized information from Marin County Parks and Recreation Facilities Inventory, updated April 1990; U.S. Census, 1990.

Trails and Open Space

Marin County has 34 open space preserves providing 14,675 acres of ridgelands, baylands and environmentally sensitive lands with 175 miles of trails and fire roads available for public use. [92] Because many of these open space lands are located near residential communities, the Marin County Open Space District works in cooperation with the Marin County Fire Department and local fire departments to reduce fire hazards. Development of trails is the responsibility of the public entity accepting a dedicated easement. Often the entity is a public agency other than the County, such as Marin Municipal Water District, Golden Gate National Recreation Area or the State Parks system. Trails cost between $2.00 and $8.00 per linear foot to construct, not including the cost of parking, fencing, posting and other needed amenities. [93] Trails maintenance is the responsibility of the public entity accepting a dedicated easement or the underlying property owner if the dedication has not been accepted. Trails sometime require seasonal closures, repair of amenities such as benches and signs, drainage, the clearing of brush and surface repair. A number of volunteer organizations in the county assist in maintaining the trails.

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92 *Marin Count Open Space District Year in Review 2004-2005*, Marin County Open Space District, Department of Parks and Open Space, December 2005.

93 *Marin Countywide Trails Element Technical Background Report*, the Marin County Community Development Agency, Planning Division, January 2004.

Parks and Recreation Services – Significance Criteria

This analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant impact related to Parks and Recreation Services if it would:

- Increase the demand for existing neighborhood and regional parks or other recreational facilities, or affect existing recreational opportunities; or

- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Parks and Recreation Services – Impacts and Mitigation Measures

Impact 4.10-13 Increased Demand for Park and Recreation Services and Facilities

Implementation of the Draft 2005 CWP Update would require new or expanded Community and Neighborhood Parks in order to achieve recognized park planning standards. Construction of these facilities could result in adverse physical effects on the environment. However, the Draft 2005 CWP Update contains policies that would substantially reduce construction related impacts resulting from development of these facilities. Therefore, this would be a less-than-significant impact.

Although 30 percent of the acreage in Marin County is dedicated to open space, federal, State, and local parklands, the County lacks local or neighborhood parklands in several planning areas. The Quimby Act requires three to five acres of parkland for every 1,000 residents. **Exhibit 4.10-16** shows how projected population increases consistent with the *Draft 2005 CWP Update* would reduce surpluses and exacerbate deficits of existing parklands described in **Exhibit 4.10-15** for each of the seven planning areas.

As shown in **Exhibit 4.10-16**, if school lands are not included in the total parklands for unincorporated Marin County, three planning areas currently do not meet State requirements for local parklands: Las Gallinas, Lower Ross Valley and West Marin. In addition, based on buildout projections in the *Draft 2005 CWP Update*, the Richardson Bay Planning Area would not meet the requirements and the total parkland acreage for Marin County would be deficient by 36.96 acres of parkland.

However, policies and programs included in the *Draft 2005 CWP Update* would help ensure that existing and future residents of Marin County have sufficient parks and recreation facilities. Policy **PK-1.1** would mandate development of park and recreation facilities and programs to complement local, State, and national parks and open space in Marin County to provide for active recreation, passive enjoyment, and protection of natural resources. Policy **PK-1.2** would require planning and development of any needed new park and recreation facilities and programs to meet the desires of the community and protect environmental resources. Additionally, Policy **CD-5.1** would ensure that provision, timing and funding of public services meets the needs of appropriate growth in the county.

Exhibit 4.10-16
Parkland Needs Assessment

Planning Area	***Existing Local Parkland*** [a] ***(Acres)***	***Existing Surplus (+) or Deficit (-)*** [b] ***(Acres)***	***Projected Population Increase***	***2005 CWP Update Surplus (+) or Deficit (-) (Acres)***
Novato	216.40	+52.85	1,314	+49.54
Las Gallinas [c]	61.00	-15.69	4,044	-27.89
San Rafael Basin	126.90	+22.43	1,236	+19.20
Upper Ross Valley	82.80	+10.21	583	+8.61
Lower Ross Valley	70.80	-18.14	1,596	-22.74
Richardson Bay	132.00	+1.16	6,632	-18.44
West Marin	26.00	-27.22	6,056	-45.24
Total	***715.90***	***+25.60***	***20,424***	***-36.96***

a Excludes school lands.
b Based on the Quimby Act State standard of three acres of local parkland for every 1,000 people.
c Excludes McInnis Park, which was defined as a countywide regional park by source.

Source: Nichols·Berman and Marin Countywide Plan Parks and Recreation Technical Background Report, the Marin County Community Development Agency, Planning Division, January 2005. The report utilized information from Marin County Parks and Recreation Facilities Inventory, updated April 1990; U.S. Census, 1990.

In summary, implementation of the *Draft 2005 CWP Update* would result in deficiencies in parkland acreage and require new or expanded parks and recreational services and facilities to achieve park planning standards. The construction of these facilities could result in adverse physical effects to the environment including additional traffic, erosion and sedimentation of drainageways, and noise and dust associated with construction activities. In addition, as previously discussed, Goal **TR-2**; Policies **TR-2.1**, **TR-2.2**, and **TR 2.4**; and Programs **TR-2.a** through **TR-2.n** would increase bicycle and pedestrian access, provide new bicycle facilities and routes, and pursue additional funding for these projects. Construction of these recreational facilities (e.g., the renovation of tunnels along the planned north-south bikeways [Policy **TR-2.i**]**)** could have adverse affects on the environment. However, site-specific impacts of these facilities cannot be determined until such time that they are proposed and undergo environmental review.

The *Draft 2005 CWP Update* includes a number of policies that would substantially reduce construction related impacts from new or expanded park facilities. Policies **BIO-4.1** *(Restrict Land Use in Stream Conservation Areas)* and **BIO-4.2** *(Comply with SCA Regulations)* would reduce such impacts to riparian corridors (e.g., erosion and sedimentation and loss of sensitive habitat) by establishing development setbacks in Streamside Conservation Areas (SCAs). Policies **WR-2.1** *(Reduce Toxic Runoff)*, **WR-2.2** *(Reduce Pathogen, Sediment, and Nutrient Levels)*, **WR-2.3** *(Avoid Erosion and Sedimentation)*, and **WR-2.4** *(Design County Facilities to Minimize Pollution Impact)* would reduce the volume of urban run-off from pollutants, maintain water quality standards, and avoid

erosion and sedimentation from grading and construction activities for new development and County facilities. Policy **AIR-1.3** *(Require Mitigation of Air Quality Impacts)* would require discretionary projects to incorporate the best available air quality mitigation in order to reduce dust, greenhouse gases, and other harmful emissions. Policy **NO-1.3** *(Regulate Noise Generating Activities)* would require measures to minimize noise exposure from construction-related activities.

Therefore, would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact. No mitigation would be required.

Mitigation Measure 4.10-13 None Required.

4.11 CULTURAL RESOURCES

4.11 CULTURAL RESOURCES

Cultural Resources – Environmental Setting

Cultural resources are the remains and sites associated with human activities and include prehistoric and ethnohistoric Native American archaeological sites, historic archaeological sites, historical buildings, and elements or areas of the natural landscape that have traditional cultural significance. [1]

While an EIR is a disclosure document, information about the specific location of archaeological sites and sacred lands is specifically restricted from disclosure under the *State CEQA Guidelines* section 15120(d) pursuant to Government Code section 6254. Therefore, this discussion is a general summary of the cultural resources setting prepared for this EIR.

Cultural resources impacts are most closely related to the *Draft 2005 CWP Update* Socioeconomic Element, Historical and Archaeological Resources section.

PALEONTOLOGICAL RESOURCES

Paleontology is the study of the forms of life existing in prehistoric or geologic times, as represented by the fossils of plants, animals, and other organisms. [2] Paleontological remains are fairly common in Marin County. They include plants, invertebrates, and vertebrates ranging in age from approximately 140 million years to less than 8,000 years before the present. Within the county, paleontological remains have been primarily recovered from the Pleistocene, Pilocene, Holocene and Miocene geologic time periods. [3]

ARCHAEOLOGICAL RESOURCES

Overview

Existing archaeological resources and conditions are described in the *Marin Countywide Plan Cultural Resources Technical Background Report*, February 2003, included in **Appendix 1** to the Draft EIR. The background report is incorporated by reference and summarized below.

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1 *What do Cultural Resources Mean to Property Owners?*, Anthropological Studies Center, Sonoma State University, http://www.sonoma.edu/projects/asc/defaultpage/owners.html, December 30, 2002.

2 *The American Heritage® Dictionary of the English Language, Fourth Edition.*

3 University of California Museum of Paleontology Collections Database, Marin County query, accessed online at http://bscit.berkeley.edu/cgi/ucmp_query?stat=BROWSE&query_src=ucmp_BrowseUSstates&table=ucmp_loc&where-state_prov=California&where-county=Marin+County&orderby=county, March 2006.

Archaeology is the systematic study of past human life and culture by the recovery and examination of remaining material evidence, such as graves, buildings, tools, and pottery.[4] Several kinds of archaeological deposits are found in Marin County, including settlements and villages, hunting camps, quarries, rock art sites, and trails associated with Native American settlement of the areas. Spanish, Mexican, and American era deposits are also present. The more recent historic era deposits frequently overlie the earlier Native American sites. In Marin County this generally involves the study of the Native American inhabitants of the land from roughly 8,000 years ago to the early 1800's when the county was settled by American, Spanish, and Mexican colonists, and most Native Americans were brought into the mission system.

History

Centuries before the North Bay region became important in European struggles for empire and profit, the Coast Miwok Native Americans inhabited Marin County. The Coast Miwok depended heavily on the gathering of shellfish, primarily mussels and clams. Living sites were generally along the shoreline or near bays and lagoons. The Coast Miwok may have appeared around 500 B.C. The Coast Miwok Indians' territory stretched as far north as Bodega Bay, as far east as the town of Sonoma and included all of present day Marin County. More than 600 village sites have been uncovered and identified in the Miwok territory and, of those, more than 100 have been discovered on the Peninsula.[5]

Archeological evidence indicates that the Miwok people chose to inhabit areas near small bays, lagoons and streams. The Peninsula had an abundance of food and the Miwok's daily activities included large game and bird hunting, fishing, and acorn gathering and processing. The Miwok had a rich cultural heritage that included basket-making, dances and ceremonies, and a complex and intricate language. This is evidenced by the fragments of their culture that have been discovered and still remain on the Peninsula, including hunting, fishing and cooking tools and remnants used in basket and bead making.[6]

Documentation of Archaeological Sites

The State of California has officially recorded 630 archaeological sites in Marin County.[7] These deposits have received the traditional "trinomial" designation.[8] There are also potentially an unknown number of unrecorded sites. These sites are associated with all times periods of human occupation of the area. Generally, human occupation tends to reoccur at the same locations over time.

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4 *The American Heritage® Dictionary of the English Language, Fourth Edition.*

5 *The Coast Miwok Indians of the Point Reyes Peninsula*. Point Reyes, California: Point Reyes National Seashore Association, Sylvia Barker Thalman, 1993.

6 *The Natural History of the Point Reyes Peninsula*. Point Reyes, California: Point Reyes National Seashore Association, Jules G. Evens, 1993.

7 *Marin Countywide Plan Cultural Resources Technical Background Report*, Marin County Community Development Agency, Planning Division, February 2003.

8 CA-Mm-xxx, a three-part number indicating the state, county, and sequential numbering of archaeological sites.

The Regional Office of the California Historic Resources Information System (CHRIS) issues "primary" or "P" numbers to all phenomena reported to them. Primary numbers can be assigned to archaeological sites, historical buildings, or any other artifact, feature, or site reported to the CHRIS. The primary number system effectively removes any distinction that existed between the built or architectural environment and the archaeological environment. There are 2595 "P" numbers assigned to prehistoric-period archaeological sites, historic-period archaeological sites, historic building and structures in Marin County.[9] Every archaeological site has or is receiving a "P' number, along with every building over 50 years old (potentially), and any other physical occurrence reported to the CHRIS. Primary numbers have been issued to abandoned equipment, individual artifacts, and other movable objects. This presents a potential problem to the inventory when portable items, not just assemblages of items, are officially recognized.

The distribution of known archaeological sites in Marin County is tilted toward the urban areas and the Point Reyes Peninsula. Throughout the historic period the more urbanized eastern part of the county was the center of activities, and this has been a concentrating force on the locations chosen for examination by archaeologists. The earliest attempts to systematically map the archaeological sites of the county occurred after the turn of the 20th century. These early mapping efforts were concentrated along the shoreline of the San Francisco Bay, particularly in areas accessible by train. Later work appears to have been occasioned by discoveries at construction sites that were covered by local newspapers, or by telephone calls and letters to the anthropology department at UC Berkeley and San Francisco State University. Since the 1950s, the Point Reyes area has attracted researchers due to its relatively untouched state and convenience to major universities. In the 1960s, there was a major effort to gather information in conjunction with the movement to create the Point Reyes National Seashore.

Only a few researchers have examined the central part of the county and the extent of that coverage is limited. The many large, privately held parcels in central Marin County have generally not changed use in many decades. These areas are not open for examination by archaeologists, and the distribution and frequency of recorded archaeological sites does not accurately reflect the distribution of all sites. Examination of the mapped archaeological site locations would not accurately reflect the distribution of prehistoric populations, only the distribution of archaeologists.

Location of Archaeological Sites

The location of archaeological sites is not random. Locations correspond to a favorable combination of environmental conditions. Each culture views the available locations differently but all are subject to the same human physical needs of water, environmental protection, and food sources. Once the important variables have been identified, the general locations of archaeological deposits can be predicted through modeling. Settlements and village locations tend to be well watered, level or fairly level, protected from the wind and other elements, and centrally located to the resources that support the settlement. Quarry sites can only be located where the geological resources to be exploited can be found. Hunting camps tend to be more isolated from the settlements in use at the time the camp was established.

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9 Nichols • Berman communication with Leigh Jordan, Coordinator, Northwest Information Center, The California Historical Resources Information System, March 24, 2006. "P" numbers are issued to documents received by the Regional Office of the California Office of Historic Preservation. "P" numbers are not necessarily properties not previously cited and they may overlap with the previously recorded archaeological sites. Historic buildings include residential and industrial buildings. Historic structures include bridges, railroad grades, etc.

Archaeological Sites Types in Marin County

Of the 630 archaeological sites recorded in Marin County, all types of sites and cultural eras are represented and they break down into the following groups:

Permanent Settlements

Village sites can be best represented by the large, often prominent, shellmounds found on the coast and along the shore of San Francisco Bay and its minor offshoots. These sites were often massive, covering two or more acres and many feet deep. Mrn-39, on Belvedere Island, appears to have been more than nine meters deep in some places. Mrn-17 on DeSilva Island was about the same. These deposits commonly formed prominent mounds along the shore, near reliable freshwater sources, and near exploitable ecological niches. They were commonly associated with salt and brackish marshes and estuaries. These sites were large, permanently occupied villages with populations of 300 or more individuals. The earliest record of major damage to these sites lies in an early requirement of Marin County to use shell from these mounds for road constructions.

Less prominent but often as complex, are the earth mounds found in the interior parts of the county. Where the shellmounds were obviously associated with marshes and other locations where shellfish and other marine resources are available, the earth mounds tended to be located where upland resources are concentrated. These sites were often found by oak groves, near but not too near, game trails, and other concentrations of food resources. As with the shellmounds, upland earth mounds were usually near permanent water sources, and were chosen for access to the resources important to the inhabitants of the site. Although they were not typically as deep as shellmounds, researchers have recorded earth mounds more than two acres in size and over three meters deep. Depths of more than one meter (40 inches) were most common.

Seasonal Camps

A varying population, with seasonal highs and lows, occupied large villages. Some large villages hosted seasonal gatherings that could triple the normal village population. The temporary camps associated with these seasonal gatherings tended to be scattered around the main villages; located up or down stream from the village, or on other suitable sites where seasonal water was available. Additionally, during the spring and summer, the population tended to disperse to smaller camps distributed where seasonal resources were available. These deposits tended to look like smaller, less complex versions of the large village sites.

Hunting Camps and Special Use Sites

In addition to the seasonal camps, some sites were associated not with habitation, but with the acquisition and preparation of food. These sites differed with the type of resource exploited. They were typically located near oak groves for acorns, buckeye, other plant material or an animal population. These deposits were often small in size, usually less than half an acre and often less than a quarter acre in surface area and usually less than one meter deep. The sites were often near a water source and stones for grinding acorns into flour.

Quarries and Extractive Sites

These sites were near the location of the exploited resource such as outcrops of chert, a siliceous stone used for knives and sharp edged tools, or chlorite schist, a soft rock commonly called “soapstone,” used for making bowls, ornaments and a variety of other uses. Quarries were also associated with basalt and other economic stone resources.

Trails and Petroglyphs

Petroglyphs are found on chlorite schist and other soft rocks throughout Marin County. Several different kinds of petroglyphs have been found and the type is often associated with specific rock formations. The small "pecked" oval glyphs called "PCN" petroglyphs are most commonly found on chlorite schist. The largest single occurrence of these is on Ring Mountain, although they are found throughout the county where suitable stone is found. Cupule petroglyphs are commonly found on chlorite schist, sandstone and a variety of other stones. The vertical scratches associated with the more recently past are often found overlapping the two other forms. There is only one prehistoric trail feature in the records: Mrn-488 in the Novato vicinity, near Indian Valley College.

Quality of Current Archaeological Sites

Many of the archaeological resources in Marin County are in a degraded condition. More than two hundred years of non-native culture has obliterated many traces of the prehistoric past. Those sites that remain are often in less than pristine condition. It is generally assumed that sites in the urban areas are in poorer condition than those in rural settings because of generally more disruptive activities that occur in urban areas. Agricultural activities also may degrade the condition of archaeological deposits. Plowing and discing, two common agricultural practices, can disturb archaeological deposits to a depth of about 12 to 18 inches. This can amount to the upper half of some large deposits and can completely penetrate some smaller ones. Deep ripping and other earth disturbing agricultural operations can damage sites to depths of four feet. These operations are not as disruptive as regular plowing, however, due to the infrequency of repetition. It is common to rip areas prior to planting grapes, for example, but to only use shallow discing over the life of a vineyard. Some of the best-protected archaeological sites are in watershed lands or in less used, remote parts of the county. Long-standing cattle operations tend to help in the preservation of some deposits due to the lack of discing and plowing.

Rock art sites tend to be targets of vandalism. This is particularly true of the petroglyphs in the Ring Mountain areas of the Tiburon Peninsula, but occurs elsewhere as well. Protection of rock art sites can be difficult since they are often prominent outrcrops of rock, which tend to attract vandals with spray paint or sharp tools.

Quality of Current Information

The current information available on archaeological resources in Marin County varies in quality. Some sites have not been revisited in many decades and the original information on them is questionable. Others have been evaluated in the recent past and are well known. Generally, the locations of archaeological sites are relatively accurate. The exact size and distribution of each site is less well known. Each archaeological site has been plotted as a point on a USGS Quadrangle map. Since 1900, a number of agencies have maintained these maps. The UC Berkeley Anthropology Department formally organized these maps in 1948 and updates them periodically. This process has protected the locational information on some sites that have no other records. Other sites have extensive data sets available.

State Bill 18

In 2005, State Bill 18 (SB18) was adopted which requires local governments to consult with tribes prior to making certain planning decisions and to provide notice to tribes during key points in the planning process. The law specifically requires tribal consultation prior to adopting or amending any general plan or specific plan. Accordingly, County staff initiated the SB 18 consistency process by sending a Request for Tribal Contact Information Form to the Native American Heritage Commission.

Following the release of the *Draft 2005 CWP Update*, meetings were held with a representative of the Federated Indians of Graton Rancheria. Comments and recommended changes made by the tribal representative with respect to applicable policies of the *Draft 2005 CWP Update* were then incorporated into the document.

HISTORICAL RESOURCES

Historical resources, as distinguished from archaeological resources, include antiques, buildings, structures, and sites generally of the past two centuries, marking the successive eras of Spanish, Mexican, and North American occupation of Marin County. [10]

The Spanish explorer Viscaino landed about 20 years after Sir Frances Drake in what is now called Drake's Bay. However the first Spanish settlement in Marin was not established until 1817 when Mission San Rafael Archangel was founded partly is response to the Russian built Fort Ross in what is now Sonoma County. Chief Marin, who was named by the Spaniards, led a band of resisters against the Spaniards, and was formidable enough that the county was name in his honor.

Although Spain and England originally claimed the land that is now California, Spain lost the title to Mexico in 1821, and in the early 1830s secularization of mission properties was decreed. During the next decade, Marin was divided into great ranchos. A grantee was required to become a Mexican citizen and baptized Catholic; thereafter his first name was Spanish and he was known as a "don." Juan Reed, Sausalito's first known English-speaking resident, was granted the Rancho Corte Madera del Presidio. Adjacent land was granted to Captain Guillermo Antonio Richardson, an Englishman and the first port captain of San Francisco. Timoteo Murphy was given an immense grant that included San Rafael, where he managed the mission properties. The United States' occupation of California began in 1846, ending the "Days of the Dons." California became a state in 1850 and Marin one of its original counties. As settlement accelerated, the huge cattle-raising ranchos gradually gave way to smaller ranches, many of which are still working ranches today.

Properties of historical importance in California are designated as significant resources in four registration programs:

- California Register of Historical Landmarks — Marin County has 13 sites.
- California Points of Historical Interest — Marin County has five sites.
- The National Register of Historic Places — Marin County has 45 sites.
- The National Historic Landmark Registry — Marin County has two sites.

Map 4-1 (Historic Resources) in the *Draft 2005 CWP Update* shows the location of the Marin County properties registered on the California Register of Historical Landmarks and the National Register of Historic Places.

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[10] *History of Marin*, County of Marin, information accessed online at http://www.marin.org/html/history.cfm, March 2006.

California Register of Historical Resources

The California Register of Historical Resources, created by State legislation in 1993,[11] is an authoritative guide to California's significant historical and archeological resources to be used in identifying the existing historical resources of the state. The California Register program identifies historical resources for state and local planning purposes and defines threshold eligibility for State historic preservation grand funding. The State Historical Resources Commission (SHRC) oversees the California Register program, which the State Office of Historic Preservation (OHP) administers. The California Register includes sites listed or eligible for listing in the National Register of Historic Places, State Historical Landmarks (numbered 770 or higher), and California Points of Historical Interest.[12]

Marin County is home to 13 State Historical Landmarks, including Mission San Rafael Arcangel, the oldest house north of San Francisco Bay, Angel Island, and China Camp, one of the earliest, largest and most productive Chinese fishing villages in California, which was active in the 1870's.

Listing of a property on the California Register does not prevent the use, sale, or transfer of the property, nor does it prevent the alteration or demolition of a historic resource. Because land use authority in California resides with the local government, listing does not give either the State or the federal government any additional authority over the property. However, listing on the California Register may qualify the owner to benefit from historic preservation grants and other preservation programs such as the Mills Act. Listing also allows the State Historical Building Code to be applied when requirements of the Uniform Building Code threaten the historical integrity of a designated resource, and listed sites are considered significant resources for the purposes of CEQA.[13]

The California Register includes resources listed in or formally determined eligible for listing in the National Register of Historic Places, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (i.e., local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC § 5024.1, 14 CCR § 4850).[14]

National Historic Landmarks

National Historic Landmarks are buildings, sites, districts, structures, and objects that have been determined by the Secretary of the Interior to be nationally significant in American history and culture.

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[11] *Technical Assistance Series #10, California State Law and Historic Preservation: Statues, Regulations and Administrative Policies Regarding Historic Preservation and Protection of Cultural and Historical Resource,* page 67, California Office of Historic Preservation, Department of Parks and Recreation, May 23, 2001.

[12] *Technical Assistance Series #3 California Register of Historical Resources: Questions and Answers,* California Office of Historic Preservation, Department of Parks and Recreation, September 9, 2002.

[13] *Technical Assistance Series #3 California Register of Historical Resources: Questions and Answers,* California Office of Historic Preservation, Department of Parks and Recreation, September 9, 2002.

[14] *Technical Assistance Series #1, CEQA and Historical Resource,* California Office of Historic Preservation, Department of Parks and Recreation, May 23, 2001.

There are fewer than 2,500 National Historic Landmarks in the United States, with two in Marin County: the Marin County Civic Center and the Point Reyes Lifeboat Station. The Civic Center was designed by Frank Lloyd Wright near the end of his long career and contains the only government buildings designed by Lloyd that were actually built. The Point Reyes Lifeboat Station was constructed in 1927 and was used by the U.S. Coast Guard for emergency sea rescues until 1968. The Boathouse and crew were involved in many dramatic shipwrecks at the Point Reyes Headlands. [15] The National Historic Landmarks Program is operated through a partnership of the National Park Service and the National Historic Landmark Stewards Association. [16] All National Historic Landmarks are listed on the National Register of historic places which is the official list of the Nation's historic properties worthy of preservation. [17] Benefits available for properties listed as National Historic Landmarks include limited federal grants through the Historic Preservation Fund and federal income tax incentives available for donating easements and for rehabilitating income-generating historic buildings. [18]

National Register of Historic Places

Administered by the National Park Service, the National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed on the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. There are a total of 45 properties within Marin County listed on the National Register. Among the sites includes are more than a dozen houses and buildings, several Native American villages, forts and military installations, two beaches, a bridge, and Angel Island.

Listing on the National Register contributes to preserving historic properties by giving the property owner eligibility for federal tax benefits and qualifying them for federal assistance for historic preservation when funds are available. [19] Properties listed only on the National Register, and not designated as National Historic Landmarks, are primarily of State and local significance, while Historic Landmarks are sites of national significance. [20]

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15 Nichols • Berman research on the National Historic Landmarks Program online database, January 8, 2003, http://tps.cr.nps.gov/nhl.

16 *National Historic Landmarks Program,* homepage, January 8, 2003, http://www.cr.nps.gov/nhl/.

17 *Frequently Asked Questions,* National Historic Landmarks Program website, January 8, 2003, http://www.cr.nps.gov/nhl/QA.htm.

18 *Frequently Asked Questions,* National Historic Landmarks Program website, January 8, 2003, http://www.cr.nps.gov/nhl/QA.htm.

19 *Welcome to the National Register,* National Register of Historic Places website, January 8, 2003, http://www.cr.nps.gov/nr/about.htm.

20 *Frequently Asked Questions,* National Historic Landmarks Program website, January 8, 2003, http://www.cr.nps.gov/nhl/QA.htm.

Cultural Resources - Significance Criteria

According to the *State CEQA Guidelines*, the project would have a significant cultural resources impact if it would: [21]

- Cause a substantial adverse change in the significance of a historical resource;
- Cause a substantial adverse change in the significance of an archaeological resource;
- Disturb any human remains, including those interred outside of formal cemeteries; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

[21] This is an abbreviated discussion of significance criteria contained in section 15064.5 of the *CEQA Guidelines*.

Cultural Resources – Impacts and Mitigation Measures

Impact 4.11-1 Historical Resources

Land uses and development consistent with the Draft 2005 CWP Update could result in the disturbance of historical resources. This would be a significant impact.

Marin County contains historical sites that are designated on local, State, and national historical lists (see **Map 4-1** [Historic Resources] in the *Draft 2005 CWP Update*). In addition, potential but undesignated historical resources exist. In recent years, Marin County has seen a loss of its historical resources. In rural areas, this has occurred where large residential structures replaced historic ranches.[22] In the City-Centered Corridor, this has occurred in older subdivisions where historic homes have been replaced or were substantially altered.[23] As new development and redevelopment continue consistent with the *Draft 2005 CWP Update*, historical resources could be disturbed due to demolition, destruction, alteration, or structural relocation. In addition, increased tourism may also result in adverse effects to such resources if they are not carefully managed.[24]

Development of parcels within the Housing Overlay Designation could have adverse effects on historical resources. The St. Vincent's School for Boys on the St. Vincent's property is a registered California historic landmark (see **Map 4-1** [Historic Resources] in the *Draft 2005 CWP Update*).

The *Draft 2005 CWP Update* includes policies and programs in the Socioeconomic Element, which if adopted and implemented, would reduce adverse changes to historical resources. This would be accomplished by identifying historical resources, nominating potential resources for inclusion in State and federal lists, creating a body to review projects that would adversely affect historical resources, and by obtaining funding and providing economic incentives to preserve such resources.

Policies **HAR-1.1** and **HAR-1.2** would require the County to identify historical resources and document (e.g., photograph) historical information related to these sites. Program **HAR-1.b** would require the County to prepare a comprehensive survey of historic buildings and buildings of architectural significance. These policies and programs would aid County staff in identifying potential adverse effects to historical resources during the environmental review of discretionary projects and begin consultations with appropriate agencies or historical groups. In addition to identifying historical resources, implementation of policy **HAR-1.4** and program **HAR-1.i** would result in the continued pursuit of grant funding to preserve and / or acquire these identified historical resource sites.

Policy **HAR-2.1** and Program **HAR-2.a** would encourage the County to consult with local historical societies to nominate sites for listing in the federal or State Historical Register, including buildings more than 50 years old that represent key elements of the Marin County's history. This policy and program, in conjunction with the Policies **HAR-1.1** and **HAR-1.2**, would reduce adverse effects to

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22 *Historical and Archeological Resources, Socioeconomic Element, Draft 2005 CWP Update*, August 2005.

23 *Historical and Archeological Resources, Socioeconomic Element, Draft 2005 CWP Update*, August 2005.

24 *Historical and Archeological Resources, Socioeconomic Element, Draft 2005 CWP Update*, August 2005.

undesignated historical resources as potential sites would be identified during surveys or recommended through community involvement.

Policies **HAR-1.3** and **HAR-1.5** would help avoid adverse changes to historical resources, limit the ability to modify historical structures, and require new development to respect the heritage, context, design, and scale of older structures and neighborhoods. This would be accomplished primarily through implementation of Program **HAR-1.g**, which would create a County Historical Commission responsible to prepare a cultural resource preservation plan and review projects that may affect historical resources. In addition, programs **HAR-1.l** and **HAR-1.m** would require the County to adopt guidelines for preservation of historic structures and require design compatibility for discretionary projects on or near historical sites. Program **HAR-1.h** would require the County to seek certified local government status so that the County and its Historical Commission could participate in State and federal preservation programs. If adopted and implemented, these four programs would help mitigate the removal, destruction, or alteration of an identified historical resource as discretionary projects would be subject to a standardized review by qualified individuals and adopted design guidelines.

As previously discussed, St. Vincent's property contains a registered California historic landmark. **Policy SV-4.1** would preserve historic sites on the St. Vincent's property including the St. Vincent's School for Boys.

The *Draft 2005 CWP Update* also contains policies to encourage preservation of historical resources by their owners. Programs **HAR-1.j**, **HAR-1.k**, **HAR-1.n**, **HAR-1.o**, and **HAR-2.b** would assist low-income owners of historical structures in obtaining low-interest renovation loans, inform owners about State and federal incentive programs for restoration, allow flexibility in zoning standards (e.g., required on-site parking or setbacks) to facilitate restoration, promote adaptive re-use, and partner with private owners to support rehabilitation of historical structures. Generating the economic means, either directly through grants and loans or indirectly by promoting investment through adaptive re-use (i.e., allowing an appropriate range of re-use options for older buildings) would be a key element in the long-term preservation of Marin County's historical resources.

Finally, the *Draft 2005 CWP Update* contains several policies and programs that would increase public awareness and support community involvement in historical resource preservation. Policy **HAR-2.1** and implementing programs **HAR-2.c**, **HAR-2.e**, **HAR-2.g**, and **HAR-2.h** would install markers and plaques on County roadways and structures, support local history education (i.e., at the Anne T. Kent California Room at the Marin County Civic Center) and the development of educational materials, and promote educational events (e.g., National Historical Preservation Week).

If adopted and implemented, the policies and programs described above, especially the creation of the County Historical Commission would reduce adverse changes to historical resources in Marin County. Implementation of programs **HAR-1.g**, **HAR-1.h**, **HAR-1.l**, and **HAR-1.m** would, however, be required to reduce this impact to a less-than-significant level. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, program **HAR-1.h** would be

implemented within five years.[25] However, given the potential funding and time frame of implementation for programs **HAR-1.g**, **HAR-1.l**, and **HAR-1.m** it cannot be certain that these programs would be implemented in a timely manner.[26] Therefore, this would represent a significant project impact. Because impacts to historic resources are typically limited to the proximity of development, there would not be a significant cumulative historic resources impact. The following mitigation would be required for project impacts.

Mitigation Measure 4.11-1 In order to reduce impacts to historical resources to a less-than-significant level, the County would be required to obtain additional funding for programs **HAR-1.g** *(Create a County Historical Commission)*, **HAR1.l** *(Adopt Preservation Guidelines)*, and **HAR-1.m** *(Require Design Compatibility)* and revise the time frame of their implementation to the medium-term or sooner.

Significance After Mitigation Implementation of Mitigation Measure 4.11-1 would reduce adverse changes to historical resources to a less-than-significant level.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting Mitigation Measure 4.11-1as part of the *Marin Countywide Plan 2005*.

Impact 4.11-2 Archeological and Paleontological Resources and Human Remains

Land uses and development consistent with the Draft 2005 CWP Update could result in the disturbance of subsurface archeological and paleontological resources as well as human remains, including those interred outside of formal cemeteries. However, policies and programs of the Draft 2005 CWP Update would reduce this to a less-than-significant impact.

As previously described, Marin County has a rich archeological and paleontological history with numerous recorded sites throughout the seven planning areas. The State of California has officially recorded 630 archaeological sites in Marin County. There an unknown number of unrecorded sites as well. These resources, which include deposits and remains left by local Native Americans and other early inhabitants, represent an important part of the history of Marin County and the Native American community. The majority of archeological sites in the county exist in rural areas, especially along the Point Reyes Peninsula, and inland along the bay.

Ministerial projects (e.g., agricultural cultivation, single family dwellings on existing lots, or land use activities not subject to permit requirements) would not be subject to these review procedures. Conduct of these uses could disturb remains or archeological and paleontological resources.

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[25] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

[26] As described in **Figure 4–39** Historical and Archaeological Resources Program Implementation in the *Draft 2005 CWP Update*.

Sites include villages, seasonal camps, hunting camps, and special use sites. Many sites are located along permanent water sources. Villages are often represented by large, prominent shellmounds found on the coast and along the shore of San Francisco Bay.

As described in the *Marin Countywide Plan Cultural Resources Technical Background Report*, many of the archaeological resources in Marin County are in a degraded condition. Furthermore, sites in urban areas could be more susceptible to degradation than sites in rural areas from land uses and development consistent with the *Draft 2005 CWP Update* as more disruptive activities could occur in urban areas.

In addition, agricultural activities could substantially degrade the condition of archaeological deposits. Plowing and discing, two common practices in a variety of agricultural settings, could disturb archaeological deposits to a depth of about 12 to 18 inches. This could amount to the upper half of some large deposits, and can completely penetrate some smaller ones. Deep ripping and other earth disturbing agricultural operations could damage sites to depths of four feet. These operations would not be as disruptive as regular plowing, however, due to the infrequency of repetition. It is common to rip areas prior to planting grapes, for example, but to only use shallow discing over the life of a vineyard. [27]

Development of parcels with the Housing Overlay Designation could adversely affect archaeological resources. In addition, the St. Vincent's / Silveira properties have been identified as an area with high archaeological sensitivity. Furthermore, several archaeological sites have been previously identified on the properties. [28]

Without proper regulations and monitoring, excavation and grading activities resulting from development consistent with the *Draft 2005 CWP Update* could result in substantial disturbances of archaeological resource (e.g., the loss of integrity or information), the disturbance of human remains, or the destruction of a unique paleontological resource. Such alteration of cultural resources may prevent potentially eligible sites from being listed on the California Register of Historical Resources.

The *Draft 2005 CWP Update* contains a number of policies and programs to reduce adverse changes to the significance of an archeological or paleontological resource. Policy **HAR-1.3** would ensure that human activity avoid damaging cultural resources. Implementing Program **HAR-1.a** would update County sensitivity maps that identify potential locations of archeological resources, and survey and evaluate existing archeology resources every three years. This would be important to help identify the potential for resources as some archaeological sites have not been revisited in many decades and the information on them is questionable. [29] Program **HAR-1.d** would then require archeological surveys for new development by State-qualified archeologist in areas identified as potential resource locations on the County's sensitivity map. Program **HAR-1.e** would help ensure permanent protection of identified archeological sites by requiring development avoid the resource and provide permanently deeded open space that incorporates the resource.

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[27] *Marin Countywide Plan Cultural Resources Technical Background Report*, February 2003.

[28] *St. Vincent's / Silveira Constraints Report*, City of San Rafael, 1991-1992.

[29] *Marin Countywide Plan Cultural Resources Technical Background Report*, February 2003.

Program **HAR-1.f** would require the County to involve appropriate authorities. This program would require the County to refer development proposals on or near cultural resource sites to the California Archeological Inventory, the California Historical Resources System/Northwest Information Center (CHRIS / NWIC) and / or Native American Representatives, as appropriate.

In addition, policy **HAR-2.2** would require the County to implement SB 18 tribal consultation requirements. As described earlier in the setting section, implementation of this policy would require the County to consult with tribes prior to making certain planning decisions and to provide notice to tribes at key points during the planning process. SB 18 specifically requires tribal consultation prior to adopting or amending the general plan or any specific plan. Among the requirements of SB 18 that would be implemented by this policy include the County sending proposal information to the Native American Heritage and request contact information for tribes with traditional lands or places located within the geographical areas affected by the proposed changes. The County would also be required to contact each tribe identified by NAHC in writing and provide the opportunity to consult about the proposed project. If a tribe(s) responds to the written notice within 90 days indicating they want to consult, County staff would need to organize a consultation. Consultation with and involvement of tribal representatives during the planning process could aid in the identification of cultural resources and thereby reduce their disturbance.

The *Draft 2005 CWP Update* also contains polices and programs that would further public education about archeological resources. Programs **HAR-2.d** and **HAR-2.e** would support development of educational materials as well as local history education and preservation. Program **HAR-2.e** would specifically promote Native American awareness in coordination with the Marin Museum of the American Indian. The program would develop educational programs about Native American history and culture for children, families, and adults as well as school enrichment programs.

As previously discussed, several archeological sites exist on the St Vincent's / Silveira properties. **Policy SV-4.2** would protect identified archaeological resources on the Silveira property as well as ensure that any new archaeological resources discovered during development would be protected.

While not directly related to cultural resources protection, the *Draft 2005 CWP Update* contains a number of policies and programs that establish and provide for development setbacks in Stream Conservation Areas (SCAs) and maintaining existing riparian vegetation: Policies **BIO-4.1**, **BIO-4.2**, **BIO-4.4**, **BIO-4.7**, **BIO-4.8**, and **BIO-4.9** and Programs **BIO-4.a** and **BIO-4.b**. Because archeological sites are often located near water sources, these policies and programs would minimize or avoid ground disturbance in these areas.

The County typically adheres to the following procedures to reduce the degradation of cultural and paleontological deposits. If the project site is located within an area designated on the County's cultural resources sensitivity maps, the County requires an archeological or paleontological survey report. In addition, as described in Policy **HAR-1.f**, a referral may be sent to the CHRIS / NWIC or other authority for new discretionary development proposals. If the CHRIS / NWIC responds with a request for an archeological or paleontological survey, the County generally requires it from the project applicant during the environmental review. When the survey is prepared, the archaeologist and / or paleontologist typically include a recommendation that, in the event resources are discovered during ground disturbance, work is to stop, an archaeologist and / or paleontologist consulted, and their recommendations followed. Occasionally, the CHRIS / NWIC might not request such a study but would recommend this same condition (i.e., work stoppage in the event resources are discovered).

As previously discussed, the information contained in the County's sensitivity maps is questionable and requires updating. Therefore, the use of these maps to determine when an archeological or

paleontological survey is necessary may not be adequate. Furthermore, if the CHRIS / NWIC does not respond to a referral from the County, there may be no mitigation (except State work stoppage requirements) to identify and protect archeological and / or paleontological resources that are found during ground disturbing activities.

Implementation of Program **HAR-1.a** would be required to update the sensitivity maps. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures*** it cannot be assumed that this program would be implemented and the sensitivity maps updated given that additional funding may be required. However, because the County's sensitivity maps were updated as a part of the *Marin Countywide Plan Cultural Resources Technical Background Report* it has been determined that it would not be necessary to update the maps within the next five years. Therefore, this would be a less-than-significant project impact. Because impacts to archeological and paleontological resources and human remains are typically limited to the proximity of development there would not be a significant cumulative impact.

Mitigation Measure 4.11-2 None required.

4.12 VISUAL RESOURCES

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Visual Resources – Environmental Setting

This section addresses impacts on the visual resources and aesthetic character of Marin County's natural environment. Issues include potential impacts to scenic views and vistas, and impacts associated with an increase of urban light sources within the area. Some topics discussed in this section overlap with other sections of this EIR, including ***Section 4.1 Land Use, Population, and Housing***, and ***Section 4.8 Agriculture***. Visual resources impacts are most closely related to the Built Environment Element, Community Design section as well as the Natural Systems and Agriculture Element, Open Space section in the *Draft 2005 CWP Update.*

Marin County has a unique visual environment with an attractiveness and diversity of landscape that includes views of open space, ocean vistas and beaches, San Francisco Bay shoreline, hills and ridgelines, agriculture lands, stands of various types of trees and other natural features. Nearly half of the county's land base is protected by park or open space status. With the largest amount of public land in the nine-county Bay Area, Marin County's 118,669 acres of park and open space make up 30 percent of the County's land base, while water area and watershed lands comprise another 20 percent. [1] Agriculture, mainly cattle grazing, and privately-owned open space contracts occupy 26 percent of the County's land base. **Exhibit 4.12-1** illustrates the land-use patterns that contribute to the visual environment of Marin County.

Exhibit 4.12-1
Marin County Land Uses in 2001

Land Use	*Acreage*	*Percentage of County Land Base*
Parks Lands [a]	105,428	27
Agriculture & Open Space [b]	101,619	26
Water Area	55,424	14
Watershed Lands [c]	22,731	6
Marin County Open Space District	13,241	3
Tideland, Marshland, Mudflats	10,000	3
Remainder of Marin Land [d]	79,909	21
Total	***388,352***	***100***

a Includes federal, State, County and local municipality parks
b Privately-owned open space acreage under contract
c Marin Municipal Water District and Novato Municipal District lands
d Includes developed and potentially developable land

Source: *Marin County Acreage Summary*, Prepared By: Assessor's Mapping Division, January 2, 2001, accessed online at http://www.co.marin.ca.us/depts/AR/main/Acreage.cfm, March 2006.

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1 *Marin County Acreage Summary*, Prepared By: Assessor's Mapping Division, January 2, 2001, accessed online at http://www.co.marin.ca.us/depts/AR/main/Acreage.cfm, March 2006.

AGRICULTURAL LANDS

In 2003, 137,000 acres of private land and 32,000 acres of federal land [2] were utilized for agricultural purposes. [3] Agriculture provides visual open landscapes, green space and buffers surrounding idyllic rural communities. Many farms and ranges are located in West Marin. However, agricultural lands also provide separators between communities such as San Rafael and Novato. Nearly 155,000 acres of Marin County's agricultural land was used as pasture, mainly for the prominent dairy and livestock industries. [4] Another 5,515 acres was used to grow and harvest hay. These passive forms of agriculture provide scenic beauty and green open space, contributing to the rural character of Marin County. Land zoned for agricultural purposes in Marin County includes Agriculture (A), Agricultural Residential Planned (ARP), and Agricultural Production Zone (APZ). These districts require parcels to be a minimum of 60 acres in specific locations in the Inland Rural and Coastal Corridors, and certain coastal areas.

More than 35,000 acres on 53 farms and ranches in the county have made legal agreements with the Marin Agricultural Land Trust (MALT) [5] to conserve their agricultural lands by prohibiting non-agricultural residential or commercial development, subdivision, and uses or practices which would be destructive to the agricultural value of the land. Once the easement is recorded, the current and future owners are bound by its terms in perpetuity. [6]

PARKLANDS

Within the 27 percent of Marin County acreage dedicated to parklands, there are three federal [7] and seven state lands [8], 459 acres of County-owned parks, and 1,491 acres of local parks owned by local municipalities. [9] Approximately 85 percent of the park land is provided by the Point Reyes National Seashore (PRNS) and the Golden Gate National Recreational Area (GGNRA) federal lands. There are also a handful of facilities operated by private non-profit organizations. In addition, 464 linear miles

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2 Agriculture on federal lands is in the Point Reyes National Seashore and Golden Gate National Recreation Area.

3 Status of Lands in Agricultural Use in Marin County, Marin County Assessor's Office, May 2003.

4 *Marin County Livestock and Agricultural Crop Report 2004,* Marin County Department of Agriculture, April 1, 2005.

5 MALT is a nonprofit organization created in 1980 by a coalition of local ranchers and environmentalists. MALT acts as a private conservation alternative to the sale, subdivision, or development of farmland by acquiring conservation easements in voluntary transactions with landowners.

6 *Agricultural Conservation Easements,* Marin Agricultural Land Trust, information accessed online at their website, http://www.malt.org/about/easements.html, March 2006.

7 *County of Marin Parks and Recreation in Marin County Map,* accessed online at http://gisprod1.co.marin.ca.us/park/viewer.htm, January 2006.

8 *California State Parks in Marin County*, list accessed online at http://www.parks.ca.gov/parkindex/results.asp, January 2006.

9 *Marin Countywide Plan Parks and Recreational Technical Background Report*, The Marin County Community Development Agency, Planning Division, January 2005.

of trails are open to the public, including 26 miles of paved pathways. Marin County has many open space and watershed lands that are generally protected for environmental purposes and are not available for active recreation. However, these lands provide valuable open space visual resources of the world famous Pacific Ocean coastline, redwood forests, and natural landforms. The county and local municipality-owned parks situated within the built environment offer natural areas, trails, water features, and visual breaks within urban environments.

Marin County has 34 open space preserves providing 14,675 acres of ridgelands, baylands, and environmentally sensitive lands with 175 miles of trails and fire roads available for public use.[10] Many of these open space lands are located near residential communities providing not only habitat for wildlife but visual resources for the nearby communities.

BUILT ENVIRONMENT CHARACTER

Public parklands and open space land uses largely contribute to the visual environment of the county. However, the community character of the built environment also plays a crucial role in defining the visual environment. While Mount Tamalpais State Park encompasses the most dominant natural landform in the county, other visually prominent ridgelines are designated within the Ridge and Upland Greenbelt areas. Restrictions are placed on development in these areas to protect the visual quality of the ridgelines, hills, and view corridors.

Marin County has traditionally strived to design compact villages, towns and cities that blend with the surrounding natural and agricultural landscapes. By encouraging residential development near city or town centers, walkable neighborhoods maintain a pedestrian-scale heritage such as downtown Sausalito with its urban waterfront area designed to promote public use with residential communities nearby. Each Marin County community has a special visual character that benefits from attractive building design and layouts. County and local ordinances have protected nearby ridgeline and viewsheds. By regulating urban and rural design standards, new structures, additions, lighting, signs, landscaping, infrastructure and other design elements can offer visual resources by complimenting existing character and the surrounding natural environment and view corridors. When the scenic qualities of the built environment are protected, residents and visitors can enjoy a distinctive visual environment.

SCENIC CORRIDORS

Many of the roadways throughout Marin County offer views of some of the County's most scenic resources. There are currently no designated State Scenic Highways or National Scenic Byways within Marin County. However, the entire stretch of State Route 1 running through the county is eligible to be a State Scenic Highway as well as sections of U.S. 101, which are described in detail below. State Route 37, which runs west to east through a mid-portion of the county, is designated as an "unconstructed state highway eligible for Scenic Designation."[11] The criteria for official designation and eligibility includes the scenic quality of the landscape, how much of the natural

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[10] *Marin Count Open Space District Year in Review 2004-2005*, Marin Count Open Space District, Department of Parks and Open Space, December 2005.

[11] *California Scenic Highway Mapping System*, Caltrans information accessed online at http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm, March 2006.

landscape can be seen by travelers, and to the extent to which development intrudes upon the traveler's enjoyment of the view.

For the purpose of this EIR, to describe the visual resources along Marin County's highways and major arteries, each corridor is divided into Visual Analysis Areas (VAA) that encompass distinct spatial areas. The VAAs are geographically discrete areas that often are separated by natural features (e.g., bodies of water, ridges, or changes in vegetation) or by development. Each VAA has a certain visual character based upon the land uses and features contained within.

State Route 1 Corridor – Shoreline Highway [12]

State Routes are defined by the *California Streets and Highway Code* [13] as the routes of the highway system that serve the State's heavily traveled rural and urban corridors. They connect the communities and regions of the state, and serve the state's economy by connecting centers of commerce, industry, agriculture, mineral wealth, and recreation.

In Marin County, State Route (SR) 1 is highly scenic and comprised of a rich variety of landscape settings or types, each with its own visual character. All areas have attractive, interesting scenery. Some VAAs are pastoral and rural in character, while others have a developed and lively appearance. Still others are characterized by dramatic, pristine coastline and the Pacific Ocean seen from beaches or roads or trails that wind along or near coastal bluffs.

The SR 1 corridor in Marin County has been divided into the following 12 VAAs from the Sonoma County line traveling south on SR 1 to the interchange with U.S. 101 in Marin City.

Sonoma County Line to Fallon

Views from SR 1 look out at a valley of agriculture land, mainly sheep grazing. The topography is generally comprised of sweeping, west-facing slopes. The land slopes from east to west, steepest at the higher elevations. The slopes are mostly grass-covered with occasional isolated stands of trees. Various rock outcroppings represent unique natural features. Development consists primarily of hillside homes with exteriors of natural finished wood material. The natural wood exteriors are sympathetic to the surrounding setting. The middle ground consists of grassy slopes and a distinct stand of trees.

Fallon to Tomales

This landscape is dominated by livestock ranching with sweeping pastures that blanket broad rounded hills. Topography consists of large, broad, yet low, rolling hills that have relatively gentle slopes. Large, open pastures and broad, rolling hillsides, allow for sweeping panoramas of this picturesque, rural/agricultural landscape. SR 1 constantly rises and drops among the hills and turns gently left and right on large, sweeping curves. Vegetation consists of mostly pasture grasses with isolated clumps of forest, including some distinct eucalyptus groves. Some hillsides feature shrub masses. Bands of riparian vegetation occur along some minor creeks in the gullies between the hills. Farm ponds, local

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[12] Marin County Local Coastal Program Inventory of Visual and Scenic Resources, The Marin County Community Development Agency, Planning Division, May 20, 2003.

[13] *California Streets and Highway Code*, Section 300-635. Information accessed online at http://www.leginfo.ca.gov/cgi-bin/displaycode?section=shc&group=00001-01000&file=300-635, March 2006.

creeks, including Stemple Creek represent the water bodies in the VAA. None are visually prominent. Development is dispersed throughout this large VAA and consists primarily of large scale ranch operations. Buildings are located back from the road by a considerable distance (up to a mile). Livestock are seen grazing throughout the areas, adding to the unique visual character.

Tomales to the east shore of Tomales Bay

This small VAA begins at the development comprising the community of Tomales, through which SR 1 forms the main street. Topography includes a flatter area where the center of town exists bounded by gently sloping hills. There is a gentle incline to SR 1 from north to south through the town. Vegetation within this VAA consists mostly of a loose stand of trees. A significant amount of ornamentals exist among the development along the highway. No water bodies or unique natural features are evident in this VAA although several older buildings along SR 1 appear historic. Development in Tomales differs from other developed communities within the coastal zone in that building are set back from the road's edge creating front yards and are spread out from each other creating side yards. The development along the highway includes commercial uses, but is primarily residential. Some homes have flower gardens in their front yards.

Following SR 1 out of the community of Tomales, the VAA offers a unique yet simple setting comprised of a limited set of feature yet is striking in its visual appeal. The topography features a narrow, flat-bottom canyon defined by very steep, but low hills. Vegetation consists mostly of grassland with some low shrubs. A band of riparian vegetation and wetlands exists along the creek. Walker Creek and Key Creek are prominent features along this portion of the VAA. Occasional rock outcrops and the topography of the canyon are unique natural features. The canyon creates a distinct feeling of enclosure. Development appears to include only the highway, and post and wires fences. Once out of the short, shallow canyon, the topography consists of large, rolling hills that vary considerably in steepness. Gently sloping or flat areas exist as SR 1 approaches Tomales Bay.

Tomales Bay East Shore to Point Reyes Station

This VAA extends nearly the entire length of the east side of Tomales Bay. While it possesses a consistent overall landscape character, it contains distinct pockets that give it a rich variety. The topography is one of large, rolling hills that vary considerably in steepness. Gently sloping or flat areas exist near Tomales Bay. The vegetation is varied and includes pockets of forest, mostly eucalyptus and cypress groves, and open rolling pastures of grass. There are marsh and wetlands near the shore of the bay and hillsides with typical coastal scrub with occasional stands of trees. Tomales Bay forms a large, open expanse of water and is a dominant or semi-dominant feature of the overall landscape. Small creeks drain the hills and feed into the bay. The bay itself and the large hills represent unique natural features within this VAA as well as some unique, mature stands of trees. Development is widely dispersed and includes dairy farms among the hills and oyster farming on the bay. Small pockets of commercial and residential development occur along the shore in several places on SR 1. The hillsides above the highway has scattered residential development. The distance of the highway from the shore of the bay varies. In some areas, the road is at the water's edge, while in others it runs along the hillsides above and back from the shore. This provides travelers with a variety of viewing experiences as they pass through the town of Marshall, the Marconi Conference Center State Historic Park and the Tomales Bay State Park. At the end of the bay, SR 1 travels through a rural area with a relaxed atmosphere and strong naturalistic appearance. Rolling hills and open forest vegetation are prevalent. Scattered residential development exists within the wooded areas and substantial overhead utilities are viewed along the shoulder of SR 1.

Point Reyes Station to Olema

As SR 1 travels into Point Reyes Station, the topography flattens out with a gentle slope downward toward Tomales Bay. The landscape features a lively commercial district that is often filled with visitors who browse among the many shops and restaurants. Cultivated ornamentals and lawn grasses are most common among the downtown development. Several older buildings in the downtown areas appear historic, which may be considered classic regional architecture, mostly two story buildings of brick, stucco or wood. SR 1 has a wide cross section through the downtown that provides for on-street parking, diagonal and parallel. Overhead utilities are present, but are located off the main downtown thoroughfare. A campground can be seen on the way out of Point Reyes and agricultural lands provide open space south of Point Reyes Station. An occasional farmstead with ornamental landscaping is seen.

Olema to Olema Valley

Olema is fairly small and concentrated community at the junction of SR 1 and Sir Frances Drake Highway. It is somewhat isolated in the middle of valley. Buildings stand on both sides of SR 1 among picturesque native oaks and other native trees. Development includes tightly clustered buildings for a short distance. The commercial and residential structures are mostly one and story wood buildings. Many have an older and somewhat rustic architectural character. This relatively flat area is situated between Olema Creek to the west and the steep Bolinas Ridge immediately east of SR 1. The vegetation includes a mixed forest of mostly native trees. Some cultivated ornamentals occur among the buildings along SR 1.

Olema Valley to Bolinas Lagoon

This VAA has a diversity of mostly natural-appearing landscapes. Stands of large, native oak trees interspersed with meadows, the rolling topography and a general absence of development give this VAA a high degree of scenic appeal. Acreage within this VAA is either part of the GGNRA or PRNS. The topography consists of mostly rolling hills with occasional small valleys. The southern portion has some steep slopes traversed by SR 1. Vegetation includes forest stands of mixed, mostly native trees and open pastures or meadows. The southern portion features a dense stand of eucalyptus trees that surrounds SR 1. Development is limited to occasional ranch or farm structures and fences set back from the highway.

Bolinas Lagoon to Stinson Beach

At the south end of Olema Valley, the landscape is dominated by Bolinas Lagoon, which lies immediately along the west side of SR 1. A flat, narrow, coastal plain lies at the base of steep hills, rising sharply to the east from the edge of SR 1. The highway runs along the shore of the lagoon and is only a few feet higher than the water surface. Extensive mudflats are exposed at low tide. A prominent mesa is seen to the west. Vegetation consists mostly of forest with occasional open areas. A marsh is found at the fringe of the lagoon. Wildlife, particularly various shorebirds and waterfowl, can be seen here and often draw visitors. Overhead utility lines extend along the shoulder of SR 1 and mar the view from the road. Almost no development is seen on the east side of the highway. Clusters of residential development and farmsteads are seen on the hills and mesa toward the community of Bolinas. Some clusters of shoreline development are seen along the north edge of the lagoon but at such as distance that it does not detract from the view. A half mile south of the lagoon is Stinson Beach.

Stinson Beach to Slide Ranch

The Stinson Beach landscape is characterized by its large and popular sand beach, a lively concentration of shops, restaurants, and other visitor-related development along both sides of SR 1. It includes residential development distributed on the hillside facing the ocean and on the low, flat spit that separates Bolinas Lagoon from Bolinas Bay. The topography of Stinson Beach includes a low, long spit extending northward from the center of the community and a gentle slope rising from west to east becoming steeper as it climbs. The west-facing slopes contain a loose stand of mixed forest and coastal scrub. There is a visually distinctive mix of indigenous, riparian, woods and cultivated ornamental vegetation. Residential landscaping includes trees, shrubs, and groundcovers. Overhead utility lines exist along SR 1 and several local roads within the town. A steep incline winds up a cliff as SR 1 travels south out of Stinson Beach,

The next four miles to Slide Ranch offer a unique, linear landscape situated directly along the coast, offering dramatic views of the coast and ocean. SR 1 is situated part way up the face of the bluffs directly above the shore, providing dramatic views of the surf, the rugged shore zone, occasional beaches, and sometimes steep bluffs. This is the only stretch of SR 1 in Marin County to offer such an experience from the highway. Most of this VAA is land owned by GGNR and Mount Tamalpais State Park. The topography is never flat, always hill with large, steep slopes mostly west-facing. The vegetation is primarily coastal scrub that is highly patterned with occasional stands of trees, including cypress and other species exist where microclimate conditions allow. Threads of riparian vegetation are occasionally seen in gullies. The vast Pacific Ocean is the dominant feature while other unique natural features include numerous rock outcrops, the steep and varied topography, and on clear days, the distant Farallon Islands are visible. One overhead power line crosses SR 1 near Slide Ranch and is a brief distraction to passing motorists. Otherwise, development is limited to SR 1 and its associated road cuts, and the small, limited development at Steep Ravine and Slide Ranch.

Slide Ranch to Muir Beach

Views from SR 1 are oriented along the road and to the east. This VAA is distinctive because of the deep valley seen to the east and the predominance of coastal scrub vegetation. Steep slopes form a relatively deep, long canyon as SR winds along the north side of the canyon. The road is steeply inclined with several tight turns. The ridge immediately to the west blocks views of the Pacific Ocean. Vegetation consists of dense coastal scrub with scattered trees and notable groves of eucalyptus, cypress and pine. The only water body seen in the VAA is Redwood Creek in the valley bottom. Large rock outcroppings are visible in only a few places on the hillsides. There is some evidence of hillside residences, but most development is in the valley bottom, which includes an extensive farmstead, riding stables and a firehouse upon entering the community of Muir Beach.

Muir Beach to Green Gulch

The community of Muir Beach is a concentration of coast side development with an easily accessible, popular beach. On the north side, the developed Muir Beach Overlook provides an area where the public can enjoy dramatic views of the Marin Coast. The topography consists of a low, flat coastal zone flanked by large, steep hills immediately to the north and east. Vegetation is highly varied, including a wet meadow and a riparian zone near the beach, coastal scrub on hillsides east of SR 1, and a thin, mixed forest on the hills west of SR 1 and north of the beach. Unique features include the sandy beach, large rocks in shallow water near the beach, and various rock outcroppings among the steep hills. The community of Muir Beach is made up of mainly private residences dispersed on the hillsides. It has the appearance of classic coastal hillside architecture featuring natural materials such

as wood and stone that are sympathetic in terms of color, texture, and type with the setting. The Pelican Inn on SR may be considered a local landmark. Overhead utility lines are visible.

Green Gulch to Almonte, Junction 101

This area is defined by the topography of Green Gulch, which creates a distinctive canyon that descends from the ridge south of Mount Tamalpais to the bayshore commercial development of Almonte. The bottom lands of Green Gulch are privately owned and occupied by the Zen Center and Green Gulch Farm. Steep slopes form a relatively deep, long canyon. SR 1 winds along the north side of the canyon. The road is steeply inclined with many tight turns, is never flat or straight, and offers brief, intermittent, distant views of the Pacific Ocean. Viewers are in close proximity to the large, surrounding hills. An undulating ridgeline forms a distinctive horizon against the sky. The canyon's narrow valley floor opens considerably toward the western end. Vegetation consists of dense coastal scrub with some scattered cypress trees of small to moderate size. A grove of large eucalyptus trees exists near the Zen Center. On the hillsides, large patches of grass surrounded by masses of shrubby vegetation create a distinctive and interesting pattern of fine texture and varying color. The Pacific Ocean is seen on the western horizon in limited views from within the canyon. This creates dramatic vistas from the highway. Unique natural features include occasional rock outcroppings, the topography of the canyon, and large areas of undisturbed coastal scrub vegetation. Relatively little development is seen. It includes SR 1,the Zen Center, which is mostly unseen, evidence of a road grade or trail as a straight line on the south side of the canyon, north-facing slopes, near the Zen Center, and overhead utility lines seen at the Zen Center and extending westward. Traveling south on SR 1, the residential communities of Almonte intermingle with Eucalyptus trees, all of which hang on the steep cliffs and mountains as you wind into more commercial development as the U.S. 101 junction approaches. The topography flattens out near U.S. 101 where restaurants, hotels and other commercial businesses sit upon the banks and marshes around Coyote Creek.

U.S. 101 Corridor – Redwood Highway

The bay waters, which border the eastern boundary of the City-Centered Corridor, provide outstanding views to both residents and visitors. Views of the bay waters from U.S. 101 are a matter of community concern as future development within this corridor may obstruct views of the waters. The U.S. 101 corridor in Marin County has been divided into eight VAAs from the Sonoma County line traveling south on U.S. 101 to the Golden Gate bridge.

Sonoma County Line to Atherton Avenue

The northern section of this corridor is largely open space and marshes. The county line is delineated by San Antonio Creek which feeds into the Petaluma Marsh Wildlife Area, which are both visible from the highway. The topography is rolling hills, which flattens out in the southern portion. Agricultural lands supporting sheep and cattle straddle the highway for most of the VAA. Scattered farm houses and barns dot the landscape with telephone polls, rural roads and fences. Vegetation includes native grasses and oak trees. Mount Burdell Open Space Preserve provides a lush, green background to the viewshed on the right. As the topography flattens out, the Gnoss Field Airport and the Redwood Landfill facility with its berms and large light posts is the viewshed on the left. The open space of Olompali State Historical Park on the right is visible for a short time, interrupted by sporadic commercial development next to the highway. This development increases as Atherton Ave. approaches.

Atherton Avenue to State Route 37

This VAA is a highly urbanized portion of Novato that includes commercial, light industrial and residential buildings. Views of undeveloped hills are off in the distant background. The topography is rolling hills on both sides of the highway. Novato Creek and the Bel Marin Keys are visible in the distance when not obstructed by tall development near the highway. As U.S. 101 travels south out of Novato, the landscape changes from urban to rural and open. Agricultural lands frame the highway with the Petaluma Marsh Wildlife Area and various open space preserves providing undeveloped viewsheds in the distance. Cell phone towers dot the immediate open space in this area.

State Route 37 to Smith Ranch Road

The landscape of this VAA is diverse with views of open space, commercial, and residential buildings. Ornamental landscaping associated with the residential development includes tall palm trees that can be seen for miles. The undeveloped rolling hills of Ignacio Valley and Pacheco Valley Open Space Preserves provide views of open space and vegetation in the distance while the Loma Verde Open Space Preserve does the same closer to the highway.

Residential development can be seen on the nearby ridgelines and hills while commercial development and high density residential developments are prominent near the freeway. Agricultural land and open space near St. Vincent's signals that the developed region of Novato ends. At this point the San Pablo Bay and its protected wildlife area can be viewed in the distance. Vegetation includes oaks, cypress and native grasses.

Smith Ranch Road to Sir Frances Drake Boulevard

The relatively small open space community separator leads way to the development of San Rafael. The topography is one of steep and rugged cliffs and mountains, most of which accommodate either residential or commercial development. Signs for the Marin Civic Center are visible. As U.S. 101 travels south the topography begins to flatten out on the right side of the highway. The city of San Rafael fills the valley before prominent retaining and/or sound walls block any view except for the eucalyptus and oak trees hanging over the light colored brick. After the walls end, commercial and light industrial development is prominent and eventually the San Francisco Bay is the distant viewshed.

Sir Frances Drake Boulevard to Tiburon Boulevard

As U.S. 101 approaches Sir Frances Drake Boulevard the Larkspur Landing ferry terminal is visible on the left. To the right rolling hills with eucalyptus trees, pampas grass and sweet broom are in view. Mount Tamalpais is prominent in the distance as the commercial development of Larkspur and then Corte Madera begin fill the sides of the highway. Traveling south, the landscape to the left of the highway begins to incline with the open space of the Tiburon Ridge Preserve, as agricultural lands occupy the valley on the right. The agricultural lands give way to a newer residential development towards the Tiburon Boulevard exit.

Tiburon Boulevard to State Route 1 Interchange

The development of Strawberry Manor lines the eastern side of the highway in this VAA. Mount Tam is the unique natural feature of this VAA, with nearby vegetation of eucalyptus trees and grasses. Brief glimpses of San Francisco are visible past the Richardson and San Francisco bays. Tiburon and Belvedere are the middle ground viewsheds. To the west of the highway, commercial development mingles with the marshes and tidal waters of the Sausalito Canal. In the middle ground viewshed, the

undeveloped lands of the Bothin Marsh Open Space Preserve are prominent. Some development is evident on the ridgelines in the distant.

State Route 1 Interchange to Spencer Avenue

Once past the SR 1 interchange, Bothin Marsh Open Space Preserve dominates the western edge of this VAA with undeveloped hills on both sides of the highway. Traveling south, commercial development of Marin City and Sausalito begin to fill the landscape. To the east, the bay is lined with houseboats and commercial development. The highway climbs a steep incline with eucalyptus trees as the views of Richardson Bay and the hills of Tiburon and Belvedere beyond disappear.

Spencer Avenue to the Golden Gate Bridge

The topography of this VAA becomes dramatic as the highway winds through steep valleys and hills. On the western side of the highway is dominated by steep cliffs with some development as the eastern and southern viewshed is filled with vistas of the bay and San Francisco. The Waldo tunnel provides a commanding entrance to an unfettered view of what have been peeks and glimpse of the famous landscape. The protected lands of the Golden Gate National Recreation Area fill both sides of the highway. The military buildings of Fort Baker are seen in the valley below as you approach the Golden Gate Bridge.

State Route 37 Corridor – Sears Point Highway

SR 37 originates in Marin County at U.S. 101 between Bel Marin Keys and Novato. This highway runs west to east through Marin County leading into Sonoma and Solano counties. There are very few exits off this highway as the landscape is mainly agricultural land or protected wetlands and marshes.

As you approach SR 37, wide-open spaces are seen for miles. The development of Bel Marin Keys is visible in the distance. Agricultural lands dominate the viewscape. After crossing Novato Creek, sloughs, marshes and wetlands are visible nearby with Deer Island Preserve in the middle ground distance. Approaching the developed lands of Black Point, commercial and residential development increases, with a large golf course as a focal point. The highway winds up a gradual slope with partial views of development.

After departing the Green Point and Black Point communities, the Petaluma River, which is the Marin / Sonoma County line is the dominant natural feature with Port Sonoma Yacht Club and Marina and its commercial buildings and docked boats. Flat agricultural lands of grain follow with railroad tracks off in the distance.

NIGHTTIME SKY

Landforms generally cannot be seen at night. Rather, the location, type, and quantity of light sources become the important visual factors. Nighttime sources of light can include vehicle headlamps, streetlights, decorative outdoor landscape or security lighting, and interior lighting. Highly visible lights at night can disrupt views by interrupting the viewshed and have the potential to be seen for miles if geography and landscaping do not intervene. Moving sources of light and glare (such as vehicles) easily catch they eye and are difficult to ignore.

LIGHT POLLUTION

Light pollution is wasted light that does nothing to increase nighttime safety, utility, or security. Such excessive lighting can significantly change the character of rural and natural areas by making the built environment more prominent at night and creating visual clutter. It can waste energy, money, and natural resources. [14]

Also referred to as sky glow, light pollution is a result of outdoor lighting that is directed to or reflected to the sky. It creates the haze or "glow" of light that surrounds highly populated areas, reduces the ability to view the nighttime sky, and changes the character of the night sky. The sky glow phenomenon is a result of light reflected from atmospheric particles, such as fog, dust, or smog. This is typically caused by excess light entering the sky either from a laminar directed above the plane of the horizon, or light reflected from a surface to the sky. Sky glow is of particular concern in areas near observatories, [15] as light emitted or reflected into the sky interferes with the ability of the observatory and the public to view the sky in an unobstructed manner. [16]

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14 *The Problem with Light Pollution*, International Dark-Sky Association, Information Sheet 1, May 1996.

15 There are no observatories in Marin County:

16 *White Paper on Outdoor Lighting Code Issues*, National Electrical Manufacturers Association, August 2000.

4.11 Visual Resources – Significance Criteria

The visual resources analysis uses criteria from the *State CEQA Guidelines* and Appendix N, Significance Criteria, of the Marin County EIR Guidelines. According to these criteria, the project would have a significant visual resources impact if it would:

- Have a substantial adverse effect on a scenic vista open to the public or a scenic highway.
- Have a demonstrable negative aesthetic effect by causing a substantial alteration of existing visual resources by resulting in 1) an abrupt transition in land use; 2) disharmony with adjacent uses because of height, bulk or massing of structures; or 3) cast of substantial light, glare or shadow.

Visual Resources – Impacts and Mitigation Measures

Impact 4.12-1 Scenic Resources

Land uses and development consistent with the Draft 2005 CWP Update could degrade the visual quality of Marin County's scenic resources. However, existing provisions of the Marin County Development Code, design review of discretionary projects, and proposed policies and programs contained in the Draft 2005 CWP Update would substantially reduce adverse changes to visual resources. Therefore, this would be a less-than-significant impact.

Adverse changes to visual resources associated with implementation of the *Draft 2005 CWP Update* could result from a number of mechanisms. These include dramatic large and small-scale shifts from one land use to another, such as the change from open space to urban use (e.g., development of the St. Vincent's / Silveira properties), or project specific-impacts such as construction of large homes on hillsides or ridgelines. These changes may also be caused by an incremental change over time, such as the trend towards residential use in areas where the principal land use is farming or grazing (e.g., the in Inland Rural Corridor).

In addition, degraded visual resources can serve as indicators of other physical change in the environment. Underlying impacts like erosion, habitat fragmentation, changes in water supply or land management practices identified in various sections of this EIR could have perceptible effects on visual resources.

The *Draft 2005 CWP Update* primarily provides for the protection of scenic resources through the use of the Ridge and Upland Greenbelt designation. **Map 3-4** (Ridge and Upland Greenbelt Areas) of the *Draft 2005 CWP Update* illustrates the extent of these lands, the majority of which lie along the western boundary of the City-Centered and Inland Rural Corridor. This designation provides for development setbacks from ridgelines, clustering of residences, and other design considerations as set forth in the Development Code (see discussion below) in order to preserve scenic resources.

As described in ***Chapter 3.0 Description of the Proposed Project***, implementation of the *Draft 2005 CWP Update* would reallocate 1,694 residential units, primarily from West Marin to the City-Centered Corridor. The West Marin Planning Area contains numerous scenic resources described in the environmental setting. While this would minimize adverse changes to visual resources in this area,

implementation of the *Draft 2005 CWP Update* would allow development of as many as 2,577 residential units. Depending on the scale and density of this development, visual quality in this area could be degraded, especially on hillsides and ridgelines. *Impact 4.12-2 Community Character* further addresses adverse effects to community character from development at a mass and scale inconsistent with existing neighborhoods or rural areas.

Development of the St. Vincent's / Silveira properties could result in adverse changes to visual quality of this site. As described in ***Chapter 3.0 Description of the Proposed Project***, new development on these properties would be limited by Policy **SV-2.4** to the existing amount of acres of non-agricultural development plus five percent of the total acreage on each property. This would allow 69.8 acres of the total 1,080 acres to be developed: 39.5 acres at the St. Vincent's property and 30.3 acres at the Silveira property. Existing agricultural uses occupy 35.7 acres or 1.5 percent of the total land.

Provided new development would be restricted to this five percent increase in developable acres, adverse changes to the visual quality of the St. Vincent's / Silveira properties would primarily depend on the density of development that would occur. The three development options included in the *Draft 2005 CWP Update* would allow221, 350, or 501 residential units. While it is difficult to assess the visual impacts of this development at the general plan level, development at higher densities (i.e., 501 units) could be at a mass and scale that would degrade the visual quality of the site. However, the five percent limitation would ensure that 90 percent or roughly 975 acres would be preserved as open space.

The *Draft 2005 CWP Update* includes a number of policies and programs to protect scenic resources through community involvement to identify important viewsheds, design standards for public projects, and the regulation of development on hillsides and ridgelines. Such measures would help define community boundaries and frame the natural environment as viewed from developed areas. In addition, maintaining the existing viewshed around communities (i.e., the Ridge and Upland Greenbelt areas) would minimize the encroachment of development on Marin County's natural open space and agricultural lands.

Goal **DES-4** and Policy **DES-4.1** would protect scenic quality and views of the natural environment, including ridgelines and upland greenbelts, hillsides, water, and trees from adverse impacts related to development. A number of programs that focus on identifying undesignated scenic resources, developing new codes and procedures to minimize adverse changes to these resources, and ensuring that new development is visually consistent with existing neighborhoods would be used to implement this policy.

Program **DES-4.a** would protect key public views by working with community groups to identify, map, and protect important view corridors. This program would also establish design standards for development in those areas as part of the Design Review Requirements and individual Community Plans.

Program **DES-4.b** would amend applicable codes and procedures to require appropriate placement, design, setbacks, and native landscaping of public facilities and encourage local agencies to adopt similar standards. These standards would apply to soundwalls, medians, retaining walls, power lines and water tanks, among other public facilities.

Program **DES-4.c** would regulate mass and scale by ensuring that new structures respect environmental site constraints and the character of the surrounding neighborhood. New structures would also have to be compatible with ridge protection policies, minimize grading, and avoid tree-cutting, especially on wooded hillsides.

Programs **DES-4.d** and **DES-4.e** would be key to the protection of the scenic resources as they would protect views of hillsides, ridge and upland greenbelt areas. Program **DES-4.d** would continue to protect views of hillsides by implementing Development Code standards that require development proposed on or near visually prominent ridgelines to be clustered below the ridgeline on the least visually prominent portion of the site. The program would also result in the inclusion of additional ridgelines of countywide significance in the County's Ridge and Upland Greenbelt map and rezone these lands to a Planned District category, thereby requiring design review for new development. To further the intent of this program, Program **DES-4.e** would employ a variety of specific strategies to protect hillsides and ridgelines, including:

- Identifying any unmapped ridgelines of countywide significance and adding them to the adopted County Ridge and Upland Greenbelt Areas map;

- Amending the Development Code and County zoning maps to designate a suburban edge on all parcels contiguous to the City-Centered Corridor that abut the Ridge and Upland Greenbelt Areas. Those parcels would also be required to develop at rural densities with visually sensitive site design;

- Rezoning Ridge and Upland Greenbelt lands to the Planned District category and adjacent buffer areas to a transitional district, thereby subjecting them to County Design Review Requirements that include hillside protection;

- Requiring buildings in Ridge and Upland Greenbelt areas to be screened from view by wooded areas, rock outcrops, or topographical features;

- Calculating density for Ridge and Upland Greenbelt subdivisions at the lowest end of the Countywide Plan designation range.

Scenic resources in the rural or natural settings are prominent throughout Marin County. Protection of open space and greenbelts are addressed in several policies and programs in the *Open Space* section of the Natural Systems & Agriculture Element. These policies and programs would reduce adverse changes to the visual quality of these resources, primarily through the acquisition of open space.

Policy **OS-2.2** would continue to acquire or otherwise preserve additional open space throughout the county by targeting greenbelts and community separators in the Baylands and City-Centered Corridor. This policy specifically targets 12 areas including the Tiburon Peninsula Ridge, the Ridge above Tamalpais Valley, Northridge, Pinheiro Ridge, the hills east of U.S. 101 near St. Vincent's School, and others. Additional open space scenic resources are also targeted. Policy **OS-2.3** would balance shoreline protection and access to water edge lowlands while Policy **OS-2.4** would support open space efforts along streams. Policies **OS-2.5** and **OS-2.6** would support open space efforts in the Inland Rural and Coastal Corridors.

The *Draft 2005 CWP Update* includes two programs to implement these policy goals. Program **OS-2.a** would encourage land management agencies, cities, and towns to assess their land protection goals in the Baylands, City-Centered, Inland Rural, and Coastal Corridors. Program **OS-2.h** would require clustered development in cases where a public agency is unable to purchase or otherwise permanently secure an area designated as open space. Development would be limited to low density residential, agricultural or low intensity recreational uses with a provision requiring clustering to provide effective protection to open space and environmental resources. These policies and programs, aimed at protecting open space, will also enhance the scenic resources throughout the county, protecting existing viewsheds from potential development.

The *Community Development* Section in the *Built Environment Element* includes several policies and programs that would protect viewsheds by concentrating development in the City-Centered Corridor. Policy **CD-1.1** would direct land uses to appropriate areas by concentrating urban development in the City-Centered Corridor. This policy is designed to protect sensitive lands in the Baylands Corridor; agriculture, resources, habitat and existing communities in the Inland Rural Corridor; and open space, existing communities, recreational and agricultural land uses in the Coastal Community. Policy **CD-1.3** would calculate potential density and commercial Floor Area Ratio at the low end of the applicable range on sites with sensitive habitat or within the Ridge and Upland Greenbelt areas, the Baylands Corridor, or properties lacking public water or sewer systems. As described above this policy would reallocate 1,694 units from West Marin to the City-Centered Corridor.

Program **CD-1.a** would update the Development Code as necessary to ensure that urban development is confined primarily to the City-Centered Corridor and to designate specific areas within and surrounding the corridor for resource protection, including the Ridge and Upland Greenbelt Areas, the Streamside Conservation Areas, designated wetlands, and undeveloped historic baylands and floodplains. Program **CD-1.c** would amend the Development Code to calculate potential residential density and commercial Floor Area Ratio at the low end of the applicable range on sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems. This program would help protect the scenic resources of the many ridgelines of Marin County by reducing potential development on parcels, in some cases from four dwelling units to one.

The *Draft 2005 CWP Update* also includes programs that would help provide for the permanent protection of agricultural and open space lands. Program **CD-1.d** would maintain agriculture in the Inland Rural Corridor by working with landowners, special districts and local, State, and federal agencies, and private groups. Program **CD-1.e** would protect open lands in the Coastal Corridor by employing the same strategy.

In addition to the these policies and programs, the Marin County Development Code would continue to provide for the preservation of scenic resources through the application of design standards, primarily in designated Ridgeline and Upland Greenbelt areas. These include setbacks from ridgeline development, clustered housing, minimal tree removal, and specific landscaping provisions.

Requiring compliance of the standards set forth in the current County Development Code, during design review of discretionary projects, as well as implementation of the proposed policies and programs in the *Draft 2005 CWP Update* listed above would substantially reduce adverse changes to Marin County's scenic resources. Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to a cumulative impact.

Mitigation Measure 4.12-1 None required.

Impact 4.12-2 Community Character

Land uses and development consistent with the Draft 2005 CWP Update would adversely affect the visual quality and character of Marin County's unincorporated communities and rural areas. This would be a significant impact.

Land uses and development consistent with the *Draft 2005 CWP Update* could introduce additional urban (e.g., residential, commercial, or industrial) uses in rural areas. Such uses, such as large estates or agricultural processing and support uses (e.g., wineries or on-site sales) on hillsides, ridgelines, or agricultural lands could be at a scale or density that would be visually incompatible with the existing

rural character. In addition, development of large estates on agricultural lands would result in high land ownership costs that make agriculture less economically viable. [17]

When evaluating the visual quality of a rural area, introduced urban features, even of relatively small scale, could easily dominate the landscape. Often the landscape would be transformed to impervious surfaces and native vegetation replaced by landscaped plantings. Urban infrastructure is typically larger in scale than the infrastructure of rural landscapes, in order to accommodate higher densities of users. Fundamental changes are usually evident even in well-designed and heavily mitigated developments. Visual mitigation for projects that transform the landscape to urban uses usually result in natural features of the landscape, such as transplanted oaks trees. While not all urban uses would be incompatible with the rural character careful site selection, planning and attentive site design would be required in order to ensure their effects are more beneficial than adverse.

In addition, implementation of the *Draft 2005 CWP Update* could introduce new land uses and development that would be visually incompatible with existing neighborhoods throughout the county's built areas. Such incompatibilities could result from the development of dissimilar or disproportionate land uses in close proximity to one another or development that would be impede or detract from pedestrian oriented communities.

The *Draft 2005 CWP Update* proposes several policies and programs to minimize visual impacts to built areas where much of the projected development would occur. Goal **DES-1 and** Policy **DES 1.1** would preserve community character by addressing design at the community level through the use of community plans to regulate building design and protect key resources.

Several implementing programs and provisions of the Development Code would ensure careful planning to minimize adverse changes to the visual quality of Marin County's urban communities. Program **DES-1.a**, would add design components to community plans and encourage ridgeline and viewshed protection. Program **DES-1.b** would encourage cities to maintain compact development patterns and require urban forms that express their unique characters. Program **DES-1.c** would prepare urban and rural design standards to ensure that new structures, additions, lighting, signs, landscaping, infrastructure, and other design elements are consistent with existing character and compatible with surrounding environment. Programs **DES-1.e** and **DES1.f** would expand design guidelines and revise sign standards in the Development Code to address commercial, mixed-use, multifamily residential and community gateway projects. These policies and programs would minimize adverse changes of new land uses and development consistent with the *Draft 2005 CWP Update* to the visual quality in urban, rural, and natural settings.

Program **DES-3.b** would incorporate the Marin County Single Family Residential Design Guidelines into the design review process for new and remodeled homes and include standards for view protection, solar access, landscaping and trees, streetscapes and pedestrian amenities, and compatibility with surrounding built and natural features. Landscaping standards could include irregular planting spacing to achieve a natural appearance on graded slopes.

Communities both in the urban and rural areas include scenic resources and vistas of important natural features. Policy **DES-4.1** would require the preservation of visual quality of the natural environment, and the related programs, as described in the *Impact 4.12-1 Scenic Resources*, would reduce the impact of projected development in these areas. Program **DES-4.c** would ensure that the mass and

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[17] *Marin County Agricultural Economic Analysis - Final Report*, Strong Associates, November 2003.

scale of new structures respect environmental site constraints and character of the surrounding neighborhood.

Policy **DES-5.1** would ensure that roadways, parking areas, and pedestrian and bike movement are functional and aesthetically appropriate to the areas they serve. Programs **DES-5.a** and **DES-5-b** would require adoption of streetscape design standards and would refine parking area standards. These programs would promote pedestrian oriented communities and ensure new development be visually consistent with existing neighborhoods.

Goal **AG-1** would preserve the visual quality and character of rural areas by preserving agricultural lands and resources. Policy **AG-1.1** would limit development of residential or other non-agricultural uses on agricultural lands. To accomplish this, Program **AG-1.a** would provide four options related to total floor areas, dwelling sizes, and land uses permitted on agricultural lands. Options 1 through 3 would limit residential development on agricultural zoned property to reflect housing sizes typically accessory to agricultural production uses, while considering the need for landowner family housing. Option 4 would convene a working group to prepare criteria and / or standards in order to establish limits on the size of residential development on agricultural zoned lands.

In addition, Policy **AG-1.2** would encourage contractual protection of agricultural lands through conservation easements, land conservation, and farmland security contracts. Policy **AG-1.3** would maintain very low-density agricultural zoning in the Inland Rural and Coastal Corridors, thereby enhancing viewsheds in those areas. Policies **AG-1.4** and **AG-1.6** would limit non-agricultural zoning and development in the Agricultural Production Zone. Policy **AG-1.5** would restrict subdivision of agricultural lands within the Coastal, Inland Rural, and Baylands Corridors. Preservation of agricultural lands would prevent sprawl, maintain open space, and therefore protect the visual quality and character of Marin County's rural areas.

Furthermore, as described in the previous impact, implementation of Policy **CD-1.3** would reallocate 1,694 residential units, primarily from West Marin to the City-Centered Corridor. This would preserve the rural character of West Marin by maintaining low-density residential development.

While adoption and implementation of the above policies and programs would substantially reduce adverse changes to the visual character of Marin's County's rural and unincorporated communities, implementation of four programs would be required to reduce this impact to a less-than-significant level. Specifically, implementation of programs **DES-1.a**, **DES-1.c**, **DES-3.b**, and **AG-1.a** would be necessary to reduce adverse changes to existing communities, agricultural lands, and rural areas that would occur without the adoption of additional design guidelines and provisions to limit the scale and density of residential uses on agricultural lands. Based on criteria described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, programs **DES-1.c**, **DES-3.b**, and **AG-1.a** would be implemented within five years. [18] However, given the potential funding and time frame of implementation for program **DES-1.a**, it cannot be certain that this program would be implemented

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[18] As described in ***Section 4.0 Environmental Setting, Impacts, and Mitigation Measures***, this Draft EIR assumes that if there is an identified funding source; if it is a medium or high priority; and will be implemented in the immediate-, short-, or medium-term, or is ongoing, that the program would be implemented and could be relied upon to reduce significant impacts to a less-than-significant level. If there is no identified funding source, is a low priority, and only would be implemented in the long-term, then this Draft EIR does not assume that the program will be implemented. In instances where such program would be required to mitigate significant impacts, this Draft EIR recommends, as a mitigation measure, that the program be funded, receive a higher priority, and be implemented in the medium-term or sooner.

in a timely manner.[19] Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative visual impact. The following mitigation would be required to reduce project related and cumulative impacts.

Mitigation Measure 4.12-2 In order to reduce impacts to the visual character of Marin County's communities to a less-than-significant level, the County would be required to obtain funding for program **DES-1.a** *(Add Design Components to Community Plans)* and revise the time frame of its implementation to the medium-term or sooner. In addition, the Marin County Community Development Agency would be responsible for revising design guidelines of community plans to be consistent with the *Draft 2005 CWP Update*.

Significance After Mitigation Revisions to funding and timeframe of implementation of program **DES-1.a** would reduce adverse effects of development to the character of Marin County's urban and rural communities to a less-than-significant level and the project's contribution to cumulative impacts would be less than cumulatively considerable.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the proposed policies and programs as part of the *Marin Countywide Plan 2005*. The Marin County Community Development Agency would be responsible for conducting design review as well as recommending and overseeing implementation of appropriate mitigation measures.

Impact 4.12-3 Views from Highways

Land uses and development consistent with the Draft 2005 CWP Update could degrade the quality and character of views from Marin County's highways. However, policies and programs contained in the Draft 2005 CWP Update would substantially reduce such adverse visual changes, especially along State Route 1. Therefore, this would be a less-than-significant impact.

As described in the environmental setting, many of the highways throughout Marin County offer views of some of the county's most scenic resources. Although there are currently no designated State Scenic Highways within Marin County, the entire stretch of State Route 1, sections of U.S. 101, and State Route 37 are eligible for inclusion.

Views from these highways could be adversely affected by land uses and development that would be sited in close proximity to the roadway (i.e., without appropriate setbacks or screening), incompatible with the existing character (e.g., in scale or density) of the rural area or built community, located on hillsides and ridgelines, or have inappropriate lighting, signage, or other design feature. In addition, development of public facilities or other infrastructure projects (i.e., sound or retaining walls or grading and tree removal associated with road improvements) could also adversely affect views along these scenic highways.

In addition, as discussed in ***Chapter 3.0 Description of the Proposed Project***, the *Draft 2005 CWP Update* includes four options for development at the St. Vincent's / Silveira properties. Located between Novato and San Rafael, development on the St. Vincent's / Silveira properties would convert agricultural and bay lands, visible from U.S. 101 to a large mixed-use housing project. Currently, this land serves as a community separator between Novato and San Rafael and has been used for dairy ranching since about 1900. The land also is home to an orphanage and school, which is run by the

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[19] As described in Figure 3-10 Design Program Implementation in the *Draft 2005 CWP Update*.

Catholic Youth Organization. The school building is a California historical landmark and is partly visible from U.S. 101. The four development options for the St. Vincent's / Silveira properties would permit between 221 to 500 housing units. For each of the four options, non-residential uses may be permitted in lieu of some housing units subject to certain conditions.

The *Draft 2005 CWP Update* would provide for the preservation of scenic resources along these highways, primarily through the participation in the State Scenic Highway program and reducing residential development in West Marin.

Program **DES-4.f** would have the County participate in the State Scenic Highway program. Participation in this program would require the County to adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. These ordinances would comprise the required Scenic Corridor Protection Program. There are five minimum requirements for scenic corridor protection: [20]

- Regulation of land use and density of development;
- Detailed land and site planning;
- Control of outdoor advertising (including a ban on billboards);
- Careful attention to and control of earthmoving and landscaping; and
- Careful attention to design and appearance of structures and equipment.

As described in the previous impacts, implementation of Policy **CD-1.3** would reallocate 1,694 residential units, primarily from West Marin to the City-Centered Corridor. As **Exhibit 3.0-7** shows that these units would primarily moved from parcels along Highway 1, it would be reasonable to expect that maintaining lower density residential development in this area would minimize adverse changes to views along this eligible scenic highway.

In addition, to policies and programs described in the previous impacts that would preserve agricultural lands and community character, adopt community design standards, and regulate development on hillsides and ridgelines, the *Draft 2005 CWP Update* would also provide for road design standards. Policy **TR-1.6** and Program **TR-1.o** would preserve rural character in West Marin by maintaining roads in that area as two-lane routes. This policy and related program would help protect the views of agricultural and natural lands from State Route 1.

The *Draft 2005 CWP Update* also contains policies that would protect the visual quality of the St. Vincent's / Silveira properties. Policy **SV-1.3** would preserve views of and from the bay by protecting wetlands through locating development in areas that avoid sensitive areas and their buffer zones. Policy **SV-1.5** would protect the Silveira Corridor on the Silveira ranch to provide for scenic vistas and Policy **SV-1.7** would preserve trees by protecting major native oak groves and eucalyptus groves. **SV-1.11** would protect ridge and upland greenbelt lands. Policy **SV-2.4** would require non-agricultural development of the site to be clustered on up to five percent of the land of each of the properties. By requiring clustered development, the footprint of the development would be decreased

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[20] *California Scenic Highway Program*, Caltrans, accessed June 15, 2006 online at http://www.dot.ca.gov/hq/LandArch/scenic/scpr.htm

thereby possibly reducing the visual impacts of the project. Policy **SV-3.1** would assure that development would be sensitive to the character of the land. Most importantly, Policy **SV-3.2** would protect existing views by protecting views of Pacheco Ridge, the Chapel, the bucolic setting and the bay, as seen from U.S. 101. This policy also would ensure that the properties would continue to function as a visual buffer separating the cities of San Rafael and Novato.

In conclusion, adverse visual changes to eligible scenic highways would be reduced substantially through participation in the State Scenic Highway program (i.e., development of ordinances and the required scenic corridor protection program); polices, programs, and provisions of the Development Code to preserve scenic resources; and the preservation of agricultural lands and community character. In addition, impacts related to the St. Vincent's / Silveira development would be minimized through a number of site-specific polices that would guide future development. Therefore, this would be a less-than-significant project impact and the project would make a less than cumulatively considerable contribution to cumulative impacts.

Mitigation Measure 4.12-3 None required.

Impact 4.12-4 Light Pollution and Nighttime Sky

Land uses and development consistent with the Draft 2005 CWP Update would create additional sources of lighting resulting in sky glow, light trespass, and glare. This would be a significant impact.

Outdoor lighting used in residential, commercial, industrial, and public uses contributes to adverse visual affects to the nighttime sky. Excessive nighttime lighting resulting from land uses and development consistent with the *Draft 2005 CWP Update* could result in light trespass, light pollution, and glare.

Light trespass is unwanted light from a neighboring property. The most common form of light trespass is spill light, which illuminates objects beyond the property boundaries. Light trespass may be more obtrusive during the late night hours.[21] Light trespass can be considered a property rights issue, which may become an increased concern in Marin County as sources of outdoor lighting have and may continue to be more intense than in the past. Disputes related to light trespass are difficult to resolve. Light trespass would not only be a nuisance but also a health and safety risk if it would adversely affect visibility for tasks like driving.

Light pollution would have a cumulative impact to Marin County residents. Excessive nighttime lighting could result in sky glow, which is the haze of light that surrounds highly populated areas. Sky glow reduces the ability to see stars and other features of the nighttime sky. This would be of particular concern as it could profoundly change the appearance of the nighttime sky for future generations. See ***Section 6.2 Cumulative Impacts*** for additional discussion of light pollution in Marin County.

Excessive lighting could also have an adverse impact on wildlife. Increased night lighting from new land uses and development may disrupt important behaviors and physiological processes, with significant ecological consequences. For instance:

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21 *White Paper on Outdoor Lighting Code Issues*, National Electrical Manufacturers Association, August 2000.

> *Insects, amphibians, and birds are highly sensitive. Lights at night are especially disruptive to wetland birds and land animals, which use light reflected off water to orient them. Migratory songbirds are also vulnerable, and are killed in large numbers when night-lit buildings attract them off their course. Some animals cannot forage or find mates because they cannot hide from their predators. Owls, foxes, and other predators who hunt by sight may thrive where night-lights are strong.* [22]

Implementation of the *Draft 2005 CWP Update* could also result in glare. Glare is light of such brightness that it continually draws the eye toward the lamp image and / or prevents the viewer from adequately viewing the intended target. Glare commonly occurs when a spot in the field of view is significantly brighter in contrast to the rest of the field of view, such as when a direct lamp image is visible, or when the difference in light levels between adjacent areas is substantial enough to cause the eyes to take several minutes to adapt to the change.

The *Draft 2005 CWP Update* contains policies and programs in the Design Section of the Built Environment Element that would reduce the adverse affects of excessive lighting. Policy **DES-1.c** would prepare design standards for urban and rural areas. These standards would include regulating new structures, additions, lighting, signs, landscaping, infrastructure and other design elements to ensure that they are consistent with existing character and compatible with the surrounding environment.

In addition, the Marin County Development Code contains the following provisions related to lighting:

- Prohibited types of illumination and sound. No electrical sign shall blink, flash or emit a varying intensity of color or light which would cause glare, momentary blindness or other annoyance, disability or discomfort to persons on surrounding properties or passing by;

- The proposed development will not impair, or substantially interfere with the development, use, or enjoyment of other property in the vicinity, including, but not limited to, light, air, privacy and views, or the orderly development of the neighborhood as a whole, including public lands and rights-of-way; and

- Prohibited types of illumination and sound. No electrical sign shall blink, flash or emit a varying intensity of color or light that would cause glare, momentary blindness or other annoyance, disability or discomfort to persons on surrounding properties or passing by.

While these policies and programs would reduce some of the adverse effects to the nighttime sky, future lighting impacts resulting from excess and / or and improperly directed lighting, signage, etc, could be significant. Although Program **DES-1.c** would require the preparation of lighting design guidelines, it does not provide sufficient information in order to determine if such guidelines would substantially reduce adverse changes to the nighttime sky. Therefore, this would be a significant project impact and the project would make a cumulatively significant contribution to a cumulative impact. The following mitigation would be required.

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[22] *Preliminary Evaluation of the Environmental Impacts of a Resort Casino Proposed by the Federated Indians of the Graton Rancheria at Lakeville Highway and State Highway 37 in Southern Sonoma County, California*, The Bay Institute, Sonoma Land Trust, and Sonoma Ecology Center, July 2003.

Mitigation Measure 4.12-4 In order to minimize light trespass, light pollution, and glare, new development and projects that would make significant parking lot improvements or add new lighting would be required to prepare a lighting plan for design review by County staff. Therefore, the following new program would need to be added to the Built Environment Element of the *Draft 2005 CWP Update*:

Program **DES-1.(new)** *Lighting Design Guidelines*. Amend the Development Code to include lighting design guidelines. Require new development and projects that would make significant parking lot improvements or add new lighting to submit a lighting plan consistent with these guidelines for design review by County staff. Lighting design guidelines should address:

- Efficiency – Cost effective energy efficient standards for outdoor lighting shall be developed to conserve energy thereby reducing excessive lighting, light pollution, light trespass, and glare;
- Reasonableness of Intensity – Acceptable standards shall be defined for various land uses and development types specifying the maximum allowable total lumens per acre;
- Directional Control – Standards shall be developed to minimize the upward transmission and intensity of light at various distances from its source through the use of full-cutoff lighting, downward casting, shielding, visors etc;
- Signage – Standards with respect to illuminated signs shall be developed that prohibit or limit the size, spacing, design, upward transmission of light, and hours of operation. In addition, signs should be white or light colored lettering on dark backgrounds;
- Night Lighting – Hours of operation for various uses shall be specified in order to prohibit all-night lighting except when warranted for public safety reasons. On demand lighting shall be encouraged;
- Education – A voluntary educational component of this program shall include the distribution of informational materials for use by county residents, developers, and lighting supply retailers. These materials shall provide specific methods and product information necessary for compliance of new development as well as aiding the conversion of existing lighting sources;
- Incentives – The County shall develop incentives for residents and businesses encouraging the conversion of existing lighting sources to compliant ones; and
- Enforcement – These standards shall be incorporated into the County Development Code and design review process for new development.

Significance After Mitigation Adoption and implementation of Mitigation Measure 4.12-4 would reduce adverse changes to visual resources resulting from additional sources of lighting that would occur from implementation of the *Draft 2005 CWP Update*. However, because some of the additional sources of lighting would be beyond the control of the County (i.e., from the cities or from ministerial projects) it may not be reasonable to assume this visual impact would be reduced to a less-than-significant level. Therefore, this would be a significant unavoidable project and cumulative impact.

Responsibility and Monitoring The Board of Supervisors would be responsible for adopting the amended program as part of the *Marin Countywide Plan 2005*. The Community Development Agency would be responsible for development and incorporation of lighting standards into the Marin County Development Code as well as enforcement during the design review and construction phases of individual development projects.

5.0 PROJECT ALTERNATIVES

5.0 ALTERNATIVES

This chapter provides an analysis of a reasonable range of alternatives to the proposed Project (i.e., the *Draft 2005 CWP Update*). The intent of the alternatives analysis in an EIR, as stated in the *CEQA Guidelines (Section 15126(d))*, is to 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. The *CEQA Guidelines (Section 15126(d(1))* state that the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. The feasibility of an alternative may be determined based on a variety of factors including, but not limited to, site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and site accessibility and control (*CEQA Guidelines (Section 15126(d)(5)(A))).* This chapter also identifies the environmentally superior alternative. As required by CEQA, if the environmentally superior alternative is the *No Project / No Action Alternative*, this chapter identifies an environmentally superior alternative among the other alternatives *(CEQA Guidelines (Section 15126.6(e)(2))).*

The alternatives were formulated to provide a realistic and representative range of potential land use and development concepts plus alternative policies for the unincorporated sections of Marin County. The principal criterion for selecting the alternatives studied in this Draft EIR was to ensure that the range of alternatives evaluated would be sufficient to provide information to the public and public officials to make informed decisions about the project and feasible project alternatives capable of avoiding or substantially lessening significant impacts.

Conceivably, an EIR can analyze an infinite number or variations of alternatives. However, CEQA directs EIRs to analyze a reasonable range of alternatives to the project that would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects of the project. The analysis of a range of alternatives is governed by a "rule of reason" for alternatives that could feasibly attain the basic objectives of the project. Similarly, it is prudent to present feasible alternatives. In order for the analyses to be meaningful for readers, the alternatives must be distinct and readily discernible. This also is necessary to distinguish between their effects and determine the environmentally preferred alternative.

As discussed above, the range of alternatives to be included in an EIR should focus on those that are feasible and capable of attaining the basic objectives of the project. The objectives of the *Draft 2005 CWP Update* are provided in ***Section 3.2 Project Objectives***.

To ensure that a wide range of alternatives were initially considered as a part of the County's Countywide Plan visioning process four alternative scenarios were developed. These were:

- Economic Vitality
- Environmental Preservation
- Housing
- Transportation

For each of the four CWP alternative scenarios, separate workshops were held with associated constituency groups and interested members of the public to contribute their vision for Marin County and specific desired outcomes of the planning process. Many of the common interests, ideas, and recommendations form this group process were included directly into the *Draft 2005 CWP Update* as policies or programs or in conjunction with the CWP Update options developed and included as discrete plan choices as part of the *Draft 2005 CWP Update*. However, the principal ideas developed by each of the community groups were also converted to policy concepts that were then computer modeled as CWP alternative scenarios to compare each scenario outputs variously for such concerns as land use, population, density, water supply and demand, traffic, etc. to existing conditions, current policy direction of the *1994 CWP*, and the other three CWP alternative scenarios. These CWP alternative scenarios were not initially developed to meet CEQA guidelines for alternatives. However, two of the initial CWP alternative scenarios provided a basis for two of the alternatives further developed as Draft EIR Alternatives 2 and 3 and fully analyzed in the Draft EIR in accordance with CEQA requirements for alternatives.

This Draft EIR analyzes four CEQA alternatives to the project as presently proposed. Two of the Draft EIR CEQA alternatives are those developed from the CWP alternative scenarios as noted above. The other two Draft EIR CEQA alternatives are the No Project Alternative mandated for review by CEQA and a Mitigated Alternative. The Mitigated Alternative was developed and evaluated to provide additional measures to further reduce *Draft 2005 CWP Update* project impacts, even if such impacts were identified in the Draft EIR as already mitigated to less than significant or were identified as significant and unavoidable in the EIR and would remain unavoidable even with the additional measures included in the Mitigated Alternative. The four CEQA alternatives evaluated in the Draft EIR are more specifically summarized as follows:

Alternative 1 (No Project / No Action Alternative) – CEQA requires every EIR to evaluate a "no project" alternative. Section 15126, subdivision (d)(4) of the *State CEQA Guidelines* states that the "no project" analysis shall discuss the existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. **-.** In this case, the No Project Alternative assumes that no updated Countywide Plan would be adopted for Marin County and future development would continue to be guided by the *1994 CWP*.

Alternative 2 – This alternative is based on the Economic Vitality scenario.

Alternative 3 – This alternative is based on the Environmental Preservation scenario.

In response to comments received from the *Draft 2005 CWP Update* scoping process, the Economic Vitality and Environmental Preservation scenarios were modified. These modifications ensure that a full range of alternatives were evaluated in the Draft EIR for the St. Vincent's / Silveira properties.

Alternative 4 (Mitigated Alternative) – This alternative was developed in response to the analyses of the *Draft 2005 CWP Update.* It avoids or substantially lessens the identified significant impacts of the proposed project by incorporating all of the mitigations proposed in the Draft EIR. It also includes several additional measures to address identified impacts, even where already mitigated to less-than-significant by the *Draft 2005 CWP Update* or EIR or where impacts would remain significant and unavoidable even with the additional measures included in the Mitigated Alternative.

Unlike the *Draft 2005 CWP Update,* goals, policies, and programs have not been prepared for each of the EIR alternatives. Except where they would obviously conflict with the individual alternative, it is assumed that the goals, policies, and programs of the *Draft 2005 CWP Update* would be incorporated

into *Alternative 2*, *Alternative 3*, and *Alternative 4*. Only *Alternative 4* (*Mitigated Alternative*) incorporates the mitigations recommended by the Draft EIR for the *Draft 2005 CWP Update*.

As demonstrated in the stated purpose for each of the alternative as described and further determined in the supporting analysis below; each of the four alternatives would be capable of attaining the basic objectives of the *Draft 2005 CWP Update*.

Each alternative proposes varying levels of development for specific project sites. **Exhibit 5.0-1** shows the comparison of development by housing units and nonresidential floor area for the *Draft 2005 CWP Update* and each of the four alternatives.

Exhibit 5.0-2 shows the distribution of housing units under existing conditions and for each of the four alternatives by planning area. **Exhibit 5.0-3** shows the distribution of nonresidential floor area by planning area.

Exhibit 5.0-1
Comparison of Alternatives (Data reflect unincorporated area only)

Specific Sites	***Draft 2005 CWP Update***			***Alternative 1 No Project / No Action (Housing Units)***	***Alternative 2 (Housing Units)***	***Alternative 3 (Housing Units)***	***Alternative 4 Mitigated (Housing Units)***
	Scenario 1 (Housing Units)	***Scenario 2 (Housing Units)***	***Scenario 3 (Housing Units)***				
St. Vincent's / Silveira	221 [a]	350 [a]	501	Current zoning (A-2 or approximately 540 housing units)	1,500 (+246,000 sq. ft. of retail use)	65	501
San Rafael Rock Quarry	Existing conditions	350	350	Existing conditions	228	Existing conditions	75 to 350
Strawberry Shopping Center	169	169	169	No housing units	169	130	100
Marin City Shopping Center	186	186	186	No housing units	186	170	75
Marinwood Shopping Center	90	90	90	No housing units	90	5	100
Fairfax / Oak Manor	21	21	21	No housing units	21	No housing units	10
Housing Bank	Allocated to sites 466 Residual to Housing Bank 1,508 Total 1,974	Allocated to sites 816 Residual to Housing Bank 1,029 Total 1,845	Allocated to sites 816 Residual to Housing Bank 878 Total 1,694	No Housing Bank	No Housing Bank	No Housing Bank	Total Housing Bank 758
Total Housing Units	***32,714***	***32,714***	***32,714***	***32,714***	***32,831***	***31,686***	***31,799***
Total Non-Residential Floor Area	***4,441,330***	***4,441,330***	***4,441,330***	***5,272,188***	***4,869,496***	***3,947,139***	***4,441,330***

a Nonresidential Floor Area in exchange for some Housing Units

Sources: Memo from Michel Rodriguez, Land Use Alternatives Comparison, June, 2005.
Marin Countywide Plan Update Land Use Alternatives by Planning Area, September 2005.
Community Development Element Technical Report #1 Land Use Modeling and Buildout, June 2005.
Marin Countywide Plan Update Land Use Alternatives by Special Study Area, September 2005.
Marin County Community Development Agency, November, 2006.

Exhibit 5.0-2
Housing Units [a] by Planning Area for all Project Alternatives

Planning Area	Existing (Housing Units)	Alternative			
		Alternative 1 No Project (Housing Units)	Alternative 2 (Housing Units)	Alternative 3 (Housing Units)	Alternative 4 Mitigated (Housing Units)
Novato	2,854	3,302	3,128	3,101	3,128
Las Gallinas	4,234	5,222	6,252	4,681	5,325
Central San Rafael	645	756	1,102	732	879
Upper Ross Valley	1,358	1,480	1,469	1,433	1,479
Lower Ross Valley	2,828	2,976	2,958	2,988	3,121
Southern Marin	9,565	10,534	10,641	10,664	10,586
West Marin	5,839	8,444	7,281	8,087	7,281
Unincorporated Area Total	***27,323***	***32,714***	***32,831***	***31,686***	***31,799***
Change from Existing [b]	--	+5,391	+5,508	+4,363	+4,476
Incorporated Cities & Towns	80,671	89,133	89,133	89,133	89,133
Countywide Total	***107,994***	***121,847***	***121,964***	***120,819***	***120,932***

a *Unit* is any self-contained dwelling such as a house, townhouse, or apartment but excluding group quarters.
b Represents the total change in housing units under each alternative for the unincorporated area only.

Source: Marin County Community Development Agency, October 18, 2006.

Exhibit 5.0-3
Nonresidential Floor Area [a] by Planning Area for All Project Alternatives

Planning Area	Existing (Square Feet)	Alternative			
		Alternative 1 No Project (Square Feet)	Alternative 2 (Square Feet)	Alternative 3 (Square Feet)	Alternative 4 Mitigated (Square Feet)
Novato	306,575	1,177,526	511,729	308,719	507,189
Las Gallinas	253,644	862,233	1,108,233	717,007	862,233
Central San Rafael	25,481	25,481	25,481	25,481	25,481
Upper Ross Valley	41,364	46,817	46,817	44,091	46,817
Lower Ross Valley	236,429	457,094	457,094	385,744	449,980
Southern Marin	1,095,980	1,296,421	1,324,050	1,171,693	1,234,987
West Marin	1,245,076	1,406,616	1,396,092	1,294,404	1,314,643
Unincorporated Area Total	***3,204,549***	***5,272,188***	***4,869,496***	***3,947,139***	***4,441,330***
Change From Existing [b]	--	+2,067,639	+1,664,947	+742,590	+1,236,781
Incorporated Cities & Towns	36,005,945	45,431,753	45,431,753	45,431,753	45,431,753
Countywide Total	***39,210,494***	***50,703,941***	***50,301,249***	***49,378,892***	***49,873,083***

a Floor area is shown in square footage and refers to the floor area of any nonresidential use including retail, office, warehouse, hotels, and group quarters.
b Represents the total change in housing units under each alternative for the unincorporated area only.

Source: Marin County Community Development Agency, October 18, 2006.

5.1 ALTERNATIVE 1 (NO PROJECT / NO ACTION)

Alternative 1 (*No Project / No Action*) assumes that no updated Countywide Plan is adopted for Marin County and future development would continue to be guided by the *1994 CWP* and zoning. This alternative reflects growth under the *1994 CWP* policies, assuming availability of infrastructure improvements and community services.

Exhibit 5.0-1 above provides a comparison of *Alternative 1* with the *Draft 2005 CWP Update* and the other three alternatives. **Exhibits 5.0-2** and **5.0-3** above show the number of housing units and nonresidential floor area for *Alternative 1* compared to each of the other alternatives considered by planning area. Compared to the *Draft 2005 CWP Update*, this alternative would result in the same number of housing units (32,714) but would have 830,858 square feet of additional nonresidential floor area (i.e., 5,272,188 square feet versus 4,441,330 square feet). Compared to existing conditions, this alternative would result in an increase of 5,391 housing units and 2,067,639 square feet of nonresidential floor area in the unincorporated area.

This alternative would not include the establishment of the Housing Overlay Designation (Policy **CD-2.3**) contained in the *Draft 2005 CWP Update*. As a result, the Housing Bank would not be created and there would be no "transfer" of housing units from various environmentally sensitive areas to the City-Centered Corridor. Accordingly, there would be 8,444 housing units in the West Marin Planning Area under this alternative as compared to 7,281 housing units that would occur under the *Draft 2005 CWP Update*.

Proposed development for the project sites below includes:

St. Vincent's/Silveira

- Current zoning (A-2 or approximately 540 housing units) [1]

San Rafael Rock Quarry

- Existing conditions

Strawberry Shopping Center

- No housing units

Marin City Shopping Center

- No housing units

Marinwood Shopping Center

- No housing units

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[1] Development allowed by the A-2 zoning is being considered for EIR purposes as the Countywide Plan designation – Urban and Conservation Reserve – relies on an interim rather than permanent density of one unit per 100 acres. Thus a higher number of units is being used for EIR purposes.

Analysis of Alternative 1 (No Project Alternative)

LAND USE, POPULATION, AND HOUSING

Continuation of the existing Countywide Plan (i.e., *1994 CWP*) would not create any new inconsistencies with adopted land use or other plans. Similar to the *Draft 2005 CWP Update* this would be a less-than-significant impact under CEQA as existing inconsistencies would not result in adverse physical effects to the environment.

Existing Countywide Plan land use designations would remain the same under *Alternative 1* as land use amendments proposed by the *Draft 2005 CWP Update* would not occur. For example, land use designation changes to recognize lands purchased and owned by the State and federal government or by the Marin Audubon Society for park and open space purposes or to protect sensitive habitat would not occur. Under *Alternative 1*, population growth in the unincorporated area would slightly exceed ABAG projections, as it would have the same number of housing units as the *Draft 2005 CWP Update*.

The same as the *Draft 2005 CWP Update*, *Alternative 1* would induce substantial growth within the unincorporated portion of Marin County resulting in a significant unavoidable project and cumulative impact.

Land use conflicts between agricultural and urban uses would be similar under this alternative as with the *Draft 2005 CWP Update*. Even without the benefits of the additional policies and programs of the *Draft 2005 CWP Update*, the continued application of the Right to Farm Ordinance contained in the Marin County Code would reduce these impacts to a less-than-significant level.

The amount of agricultural processing, retail sales, and visitor-serving uses that would occur under this alternative would be similar to or the same as under the *Draft 2005 CWP Update* as existing provisions of the Development Code would continue to allow these uses on agricultural lands. Such uses would result in land use conflicts with existing agricultural production and, as discussed in various sections of this EIR, would generate additional traffic and noise as well as remove agricultural land from production. This would represent a significant project impact.

Land use conflicts associated with development on Housing Overlay Designation (HOD) sites proposed by the *Draft 2005 CWP Update* would not occur under this alternative. However, this alternative would result in the most development in the West Marin Planning Area as the transfer of 1,694 housing units from environmentally sensitive parcels would not occur.

TRANSPORTATION

As discussed in ***Section 4.2 Transportation***, traffic analysis was prepared using Marin County's Travel Model for the *Draft 2005 CWP Update* and each of the alternatives. This alternatives analysis uses the same thresholds of significance as those in ***Section 4.2 Transportation***.

Exhibit 5.0-4 shows traffic volumes, volume-to-capacity (V/C) ratios and levels of service (LOS) for the AM peak hour traffic volumes under existing conditions, the *Draft 2005 CWP Update*, and each of the alternatives. **Exhibit 5.0-5** shows the same information for the PM peak hour. Significant impacts are shaded grey. **Exhibit 5.0-6** shows the existing level of service for the eight intersections (A through H) studied for existing conditions, the *Draft 2005 CWP Update*, and each of the alternatives.

Exhibit 5.0-4
AM Peak Existing (2005), Draft 2005 CWP Update (2030), and Alternatives Traffic Volumes, V/C, and LOS

Screen Line Segment	Direction	Existing Conditions (2005)			Draft 2005 CWP Update (2030)																		Alternatives																							
					Scenario 1						Scenario 2						Scenario 3						Alternative 1						Alternative 2						Alternative 3						Alternative 4					
					Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulative			Project		
		Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS
1. Hwy. 101	N/B	3,541	0.89	D	4,152	1.04	F	3,866	0.97	E	4,153	1.04	F	3,864	0.97	E	4,155	1.04	F	3,858	0.96	E	4,217	1.05	F	3,884	0.97	E	4,133	1.03	F	3,829	0.96	E	4,161	1.04	F	3,855	0.96	E	4,159	1.04	F	3,842	0.96	E
at Golden Gate Bridge	S/B	6,177	0.77	C	8,829	1.10	F	8,014	1.00	E	8,818	1.10	F	8,000	1.00	E	8,837	1.10	F	8,001	1.00	E	8,661	1.08	F	7,898	0.99	E	8,803	1.10	F	7,950	0.99	E	8,754	1.09	F	7,955	0.99	E	8,787	1.10	F	7,917	0.99	E
2. Bridgeway Blvd.	N/B	390	0.20	A	463	0.24	A	419	0.22	A	458	0.24	A	416	0.22	A	463	0.24	A	418	0.22	A	469	0.24	A	425	0.22	A	468	0.24	A	419	0.22	A	464	0.24	A	418	0.22	A	461	0.24	A	417	0.22	A
Gate 5 & Gate 6 Rd.	S/B	951	0.50	A	1,104	0.58	A	1,080	0.56	A	1,103	0.57	A	1,079	0.56	A	1,102	0.57	A	1,078	0.56	A	1,134	0.59	A	1,095	0.57	A	1,116	0.58	A	1,084	0.56	A	1,127	0.59	A	1,091	0.57	A	1,089	0.57	A	1,068	0.56	A
3. State Route 1	N/B	352	0.44	A	469	0.59	A	445	0.56	A	468	0.59	A	442	0.55	A	469	0.59	A	443	0.55	A	468	0.59	A	442	0.55	A	452	0.57	A	426	0.53	A	463	0.58	A	438	0.55	A	459	0.57	A	436	0.54	A
U.S. 101 to Almonte Blvd.	S/B	1,077	1.35	F	1,342	1.68	F	1,484	1.86	F	1,346	1.68	F	1,488	1.86	F	1,343	1.68	F	1,472	1.84	F	1,350	1.69	F	1,511	1.89	F	1,340	1.68	F	1,466	1.83	F	1,334	1.67	F	1,464	1.83	F	1,334	1.67	F	1,495	1.87	F
4. State Route 131	E/B	949	0.49	A	1,307	0.68	B	1,204	0.63	B	1,302	0.68	B	1,201	0.63	B	1,301	0.68	B	1,200	0.62	B	1,306	0.68	B	1,201	0.63	B	1,282	0.67	B	1,176	0.61	B	1,299	0.68	B	1,196	0.62	B	1,306	0.68	B	1,203	0.63	B
U.S. 101 & Strawberry Dr.	W/B	1,105	0.58	A	1,645	0.86	D	1,401	0.73	C	1,641	0.85	D	1,395	0.73	C	1,638	0.85	D	1,392	0.73	C	1,612	0.84	D	1,371	0.71	C	1,619	0.84	D	1,374	0.72	C	1,624	0.85	D	1,381	0.72	C	1,617	0.84	D	1,373	0.72	C
5. Hwy. 101 - Alto Hill	N/B	3,991	0.40	B	4,961	0.50	B	4,497	0.45	B	4,950	0.50	B	4,489	0.45	B	4,955	0.50	B	4,481	0.45	B	4,999	0.50	B	4,483	0.45	B	4,935	0.50	B	4,457	0.45	B	4,943	0.50	B	4,469	0.45	B	4,950	0.50	B	4,467	0.45	B
Paradise Dr. to SR 131	S/B - MFL	5,012	0.65	C	6,376	0.83	D	5,876	0.76	C	6,368	0.83	D	5,868	0.76	C	6,387	0.83	D	5,884	0.76	C	6,337	0.82	D	5,852	0.76	C	6,353	0.83	D	5,838	0.76	C	6,389	0.83	D	5,890	0.76	C	6,406	0.83	D	5,858	0.76	C
	S/B - HOV	1,248	0.57	C	1,772	0.81	D	1,580	0.72	C	1,775	0.81	D	1,581	0.72	C	1,777	0.81	D	1,583	0.72	C	1,763	0.80	D	1,574	0.72	C	1,768	0.80	D	1,568	0.71	C	1,785	0.81	D	1,591	0.72	C	1,808	0.82	D	1,588	0.72	C
6. Sir Francis Drake Blvd.	E/B	1,906	0.79	C	2,127	0.89	D	1,973	0.82	D	2,108	0.88	D	1,967	0.82	D	2,181	0.91	E	1,975	0.82	D	2,161	0.90	D	1,963	0.82	D	2,177	0.91	E	1,965	0.82	D	2,158	0.90	D	1,966	0.82	D	2,143	0.89	D	1,980	0.83	D
Bon Air Road to Wolfe Grade	W/B	1,470	0.61	B	1,556	0.65	B	1,564	0.65	B	1,569	0.65	B	1,580	0.66	B	1,578	0.66	B	1,587	0.66	B	1,567	0.65	B	1,583	0.66	B	1,581	0.66	B	1,595	0.66	B	1,576	0.66	B	1,582	0.66	B	1,592	0.66	B	1,605	0.67	B
7. Sir Francis Drake Blvd.	E/B	2,487	1.04	F	2,896	1.21	F	2,672	1.11	F	2,865	1.19	F	2,647	1.10	F	2,919	1.22	F	2,661	1.11	F	2,906	1.21	F	2,667	1.11	F	2,917	1.22	F	2,651	1.10	F	2,899	1.21	F	2,644	1.10	F	2,917	1.22	F	2,648	1.10	F
U.S. 101 to Eliseo Dr.	W/B	2,378	0.99	E	2,633	1.10	F	2,562	1.07	F	2,652	1.11	F	2,573	1.07	F	2,670	1.11	F	2,585	1.08	F	2,642	1.10	F	2,558	1.07	F	2,639	1.10	F	2,568	1.07	F	2,650	1.10	F	2,567	1.07	F	2,630	1.10	F	2,565	1.07	F
8. E. Sir Francis Drake B.	E/B	538	0.56	A	758	0.79	C	639	0.67	B	728	0.76	C	619	0.64	B	747	0.78	C	626	0.65	B	726	0.76	C	615	0.64	B	724	0.75	C	615	0.64	B	726	0.76	C	614	0.64	B	728	0.76	C	620	0.65	B
Larspur Ferry to San Quentin	W/B	1,110	1.16	F	1,122	1.17	F	1,098	1.14	F	1,139	1.19	F	1,033	1.08	F	1,102	1.15	F	1,116	1.16	F	1,133	1.18	F	1,076	1.12	F	1,148	1.20	F	1,038	1.08	F	1,140	1.19	F	1,079	1.12	F	1,096	1.14	F	1,177	1.23	F
9. I-580	E/B	2,686	0.61	C	4,012	0.91	D	3,096	0.70	C	4,025	0.91	D	3,102	0.70	C	4,023	0.91	D	3,095	0.70	C	3,950	0.90	D	3,069	0.70	C	3,995	0.91	D	3,068	0.70	C	3,998	0.91	D	3,094	0.70	C	4,041	0.92	D	3,078	0.70	C
at Richmond Bridge	W/B	3,140	0.71	C	4,071	0.93	D	3,320	0.75	C	4,083	0.93	D	3,323	0.76	C	4,076	0.93	D	3,323	0.76	C	4,152	0.94	E	3,345	0.76	C	4,074	0.93	D	3,304	0.75	C	4,093	0.93	D	3,322	0.75	C	4,113	0.93	D	3,319	0.75	C
10. I-580	E/B	2,134	0.49	B	2,977	0.68	C	2,395	0.54	B	2,966	0.67	C	2,399	0.55	C	2,944	0.67	C	2,390	0.54	B	2,928	0.67	C	2,376	0.54	B	2,953	0.67	C	2,373	0.54	B	2,955	0.67	C	2,396	0.54	B	2,985	0.68	C	2,375	0.54	B
SFD Blvd. to Bellam Blvd.	W/B	2,113	0.48	B	2,954	0.67	C	2,345	0.53	B	2,950	0.67	C	2,341	0.53	B	2,979	0.68	C	2,351	0.53	B	3,019	0.69	C	2,367	0.54	B	2,923	0.66	C	2,320	0.53	B	2,958	0.67	C	2,345	0.53	B	3,000	0.68	C	2,346	0.53	B
11. Hwy. 101 - Cal Park Hill	N/B	3,950	0.51	B	5,020	0.51	B	4,441	0.45	B	5,025	0.51	B	4,437	0.45	B	4,997	0.50	B	4,426	0.45	B	5,051	0.51	B	4,445	0.45	B	4,993	0.50	B	4,390	0.44	B	4,980	0.50	B	4,402	0.44	B	5,041	0.51	B	4,415	0.45	B
from I-580 to SFD Blvd.	S/B - MFL	7,846	1.19	F	8,097	1.23	F	7,215	1.09	F	8,119	1.23	F	7,445	1.13	F	8,114	1.23	F	7,454	1.13	F	8,082	1.22	F	7,400	1.12	F	8,040	1.22	F	7,364	1.12	F	8,118	1.23	F	7,454	1.13	F	8,187	1.24	F	7,434	1.13	F
	S/B - HOV	-	-	-	1,871	0.85	D	1,667	0.76	C	1,877	0.85	D	1,721	0.78	D	1,881	0.85	D	1,728	0.79	D	1,869	0.85	D	1,711	0.78	D	1,866	0.85	D	1,709	0.78	D	1,896	0.86	D	1,741	0.79	D	1,907	0.87	D	1,732	0.79	D
12. Hwy. 101 - n/o I-580	N/B	5,358	0.70	C	6,845	0.69	C	5,914	0.60	C	6,820	0.69	C	5,896	0.60	C	6,808	0.69	C	5,898	0.60	C	6,886	0.70	C	5,940	0.60	C	6,795	0.69	C	5,843	0.59	C	6,810	0.69	C	5,887	0.59	C	6,836	0.69	C	5,875	0.59	C
from 2nd Street to I-580	S/B - MFL	8,652	1.12	F	9,224	1.20	F	8,206	1.07	F	9,257	1.20	F	8,440	1.10	F	9,234	1.20	F	8,430	1.09	F	9,164	1.19	F	8,362	1.09	F	9,202	1.20	F	8,371	1.09	F	9,241	1.20	F	8,448	1.10	F	9,330	1.21	F	8,433	1.10	F
	S/B - HOV	-	-	-	1,771	0.81	D	1,576	0.72	C	1,777	0.81	D	1,620	0.74	C	1,781	0.81	D	1,626	0.74	C	1,773	0.81	D	1,618	0.74	C	1,765	0.80	D	1,606	0.73	C	1,797	0.82	D	1,643	0.75	C	1,795	0.82	D	1,623	0.74	C
13. 3rd Street (in San Rafael)	E/B	241	0.13	A	312	0.16	A	264	0.14	A	342	0.18	A	273	0.14	A	338	0.18	A	272	0.14	A	311	0.16	A	264	0.14	A	312	0.16	A	263	0.14	A	338	0.18	A	272	0.14	A	316	0.16	A	265	0.14	A
at Union Street	W/B	1,125	0.59	A	1,162	0.61	B	1,146	0.60	A	1,276	0.66	B	1,209	0.63	B	1,276	0.66	B	1,209	0.63	B	1,169	0.61	B	1,140	0.59	A	1,177	0.61	B	1,145	0.60	A	1,269	0.66	B	1,205	0.63	B	1,202	0.63	B	1,163	0.61	B
14. Hwy. 101 - s/o LV Rd.	N/B	4,594	0.46	B	6,257	0.63	C	5,381	0.54	B	6,277	0.63	C	5,387	0.54	B	6,284	0.63	C	5,384	0.54	B	6,350	0.64	C	5,450	0.55	C	6,209	0.63	C	5,314	0.54	B	6,249	0.63	C	5,363	0.54	B	6,281	0.63	C	5,350	0.54	B
Lucas Valley Rd. to Freitas Pkwy.	S/B - MFL	7,033	1.07	F	7,778	1.01	F	7,698	1.00	E	7,749	1.01	F	7,690	1.00	E	7,772	1.01	F	7,714	1.00	E	7,779	1.01	F	7,700	1.00	E	7,781	1.01	F	7,707	1.00	E	7,737	1.00	E	7,679	1.00	E	7,824	1.02	F	7,706	1.00	E
	S/B - HOV	1,296	0.59	C	1,646	0.75	C	1,608	0.73	C	1,644	0.75	C	1,615	0.73	C	1,644	0.75	C	1,617	0.73	C	1,656	0.75	C	1,618	0.74	C	1,646	0.75	C	1,611	0.73	C	1,645	0.75	C	1,616	0.73	C	1,677	0.76	C	1,620	0.74	C
15. Lucas Valley Road	E/B	678	0.85	D	1,069	1.34	F	904	1.13	F	1,070	1.34	F	914	1.14	F	1,069	1.34	F	913	1.14	F	1,083	1.35	F	913	1.14	F	1,084	1.36	F	915	1.14	F	1,063	1.33	F	908	1.13	F	1,058	1.32	F	936	1.17	F
Las Gallinas Ave. and Los Gamos	W/B	252	0.32	A	339	0.42	A	326	0.41	A	341	0.43	A	328	0.41	A	340	0.43	A	326	0.41	A	350	0.44	A	334	0.42	A	340	0.43	A	325	0.41	A	347	0.43	A	328	0.41	A	338	0.42	A	326	0.41	A
16. Hwy. 101 - Pacheco Hill	N/B	4,411	0.45	B	6,279	0.63	C	5,299	0.54	B	6,297	0.64	C	5,304	0.54	B	6,315	0.64	C	5,315	0.54	B	6,383	0.64	C	5,371	0.54	B	6,195	0.63	C	5,196	0.52	B	6,357	0.64	C	5,369	0.54	B	6,282	0.63	C	5,258	0.53	B
Nave Dr. and Miller Creek	S/B - MFL	6,849	0.89	D	7,307	0.95	E	7,169	0.93	D	7,289	0.95	E	7,234	0.94	E	7,320	0.95	E	7,263	0.94	E	7,378	0.96	E	7,301	0.95	E	7,293	0.95	E	7,234	0.94	E	7,376	0.96	E	7,307	0.95	E	7,400	0.96	E	7,295	0.95	E
	S/B - HOV	1,290	0.59	C	1,614	0.73	C	1,517	0.69	C	1,613	0.73	C	1,573	0.71	C	1,614	0.73	C	1,575	0.72	C	1,624	0.74	C	1,576	0.72	C	1,612	0.73	C	1,569	0.71	C	1,619	0.74	C	1,576	0.72	C	1,658	0.75	C	1,588	0.72	C
17. South Novato Blvd.	N/B	115	0.14	A	159	0.17	A	127	0.13	A	160	0.17	A	127	0.13	A	160	0.17	A	126	0.13	A	165	0.17	A	127	0.13	A	160	0.17	A	124	0.13	A	162	0.17	A	129	0.13	A	167	0.17	A	125	0.13	A
U.S. 101 to Sunset Parkway	S/B	363	0.45	A	804	0.84	D	489	0.51	A	816	0.85	D	555	0.58	A	806	0.84	D	538	0.56	A	878	0.91	E	582	0.61	B	820	0.85	D	548	0.57	A	797	0.83	D	543	0.57	A	507	0.53	A	390	0.41	A
18. State Route 37	E/B	1,197	0.27	A	2,684	0.61	C	1,361	0.31	A	2,739	0.62	C	1,373	0.31	A	2,665	0.61	C	1,372	0.31	A	2,791	0.63	C	1,441	0.33	A	2,679	0.61	C	1,369	0.31	A	2,657	0.60	C	1,377	0.31	A	2,969	0.67	C	1,351	0.31	A
U.S. 101 and Atherton Ave.	W/B	2,111	0.48	B	2,491	0.57	C	2,173	0.49	B	2,477	0.56	C	2,272	0.52	B	2,481	0.56	C	2,300	0.52	B	2,636	0.60	C	2,313	0.53	B	2,473	0.56	C	2,275	0.52	B	2,486	0.57	C	2,284	0.52	B	2,531	0.58	C	2,319	0.53	B
19. Hwy. 101	N/B	2,565	0.58	C	3,515	0.80	D	2,672	0.61	C	3,505	0.80	D	2,673	0.61	C	3,515	0.80	D	2,679	0.61	C	3,538	0.80	D	2,669	0.61	C	3,512	0.80	D	2,673	0.61	C	3,534	0.80	D	2,675	0.61	C	4,045	0.61	C	2,682	0.41	B
at Sonoma/Marin County Line	S/B - MFL	5,055	1.15	F	5,712	1.30	F	5,070	1.15	F	5,723	1.30	F	5,199	1.18	F	5,704	1.30	F	5,225	1.19	F	5,801	1.32	F	5,252	1.19	F	5,733	1.30	F	5,226	1.19	F	5,720	1.30	F	5,232	1.19	F	4,936	1.12	F	5,038	1.14	F
	S/B - HOV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,122	0.51	B	936	0.43	B

Source: Marin County Travel Model and Nelson / Nygaard, December 2006.

Exhibit 5.0-5
PM Peak Existing (2005), Draft 2005 CWP Update (2030), and Alternatives Traffic Volumes, V/C, and LOS

Screen Line Segment	Direction	Existing Conditions (2005)			Draft 2005 CWP Update (2030)																		Alternatives																				
					Scenario 1						Scenario 2						Scenario 3						Alternative 1						Alternative 2						Alternative 3						Alternative 4					
					Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulative			Project			Cumulatve			Project		
		Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS	Vol.	V/C	LOS
1. Hwy. 101	N/B	7,195	0.90	D	9,233	1.15	F	8,630	1.08	F	9,234	1.15	F	8,599	1.07	F	9,234	1.15	F	8,617	1.08	F	9,099	1.14	F	8,510	1.06	F	9,201	1.15	F	8,532	1.07	F	9,165	1.15	F	8,558	1.07	F	9,142	1.14	F	8,509	1.06	F
at Golden Gate Bridge	S/B	3,503	0.88	D	4,458	1.11	F	3,802	0.95	E	4,455	1.11	F	3,779	0.94	E	4,439	1.11	F	3,783	0.95	E	4,445	1.11	F	3,783	0.95	E	4,469	1.12	F	3,772	0.94	E	4,376	1.09	F	3,757	0.94	E	4,409	1.10	F	3,747	0.94	E
2. Bridgeway Blvd.	N/B	1,202	0.63	B	1,555	0.81	D	1,392	0.72	C	1,554	0.81	D	1,387	0.72	C	1,556	0.81	D	1,388	0.72	C	1,570	0.82	D	1,392	0.73	C	1,563	0.81	D	1,385	0.72	C	1,562	0.81	D	1,385	0.72	C	1,525	0.79	C	1,367	0.71	C
Gate 5 & Gate 6 Rd.	S/B	998	0.52	A	1,310	0.68	B	1,118	0.58	A	1,311	0.68	B	1,116	0.58	A	1,312	0.68	B	1,116	0.58	A	1,319	0.69	B	1,127	0.59	A	1,319	0.69	B	1,119	0.58	A	1,312	0.68	B	1,117	0.58	A	1,288	0.67	B	1,106	0.58	A
3. State Route 1	N/B	1,220	1.53	F	1,554	1.94	F	1,574	1.97	F	1,562	1.95	F	1,580	1.97	F	1,560	1.95	F	1,557	1.95	F	1,580	1.98	F	1,629	2.04	F	1,572	1.97	F	1,532	1.92	F	1,511	1.89	F	1,491	1.86	F	1,544	1.93	F	1,597	2.00	F
U.S. 101 to Almonte Blvd.	S/B	764	0.96	E	906	1.13	F	881	1.10	F	899	1.12	F	871	1.09	F	896	1.12	F	869	1.09	F	899	1.12	F	881	1.10	F	880	1.10	F	854	1.07	F	880	1.10	F	858	1.07	F	873	1.09	F	860	1.08	F
4. State Route 131	E/B	1,813	0.94	E	2,126	1.11	F	1,894	0.99	E	2,143	1.12	F	1,901	0.99	E	2,136	1.11	F	1,897	0.99	E	2,123	1.11	F	1,900	0.99	E	2,123	1.11	F	1,891	0.99	E	2,135	1.11	F	1,897	0.99	E	2,123	1.11	F	1,882	0.98	E
U.S. 101 & Strawberry Dr.	W/B	1,341	0.70	B	1,625	0.85	D	1,558	0.81	D	1,617	0.84	D	1,552	0.81	D	1,611	0.84	D	1,544	0.80	C	1,617	0.84	D	1,551	0.81	D	1,598	0.83	D	1,531	0.80	C	1,615	0.84	D	1,552	0.81	D	1,607	0.84	D	1,543	0.80	C
5. Hwy. 101 - Alto Hill	N/B -MFL	6,259	0.81	D	7,053	0.92	D	6,788	0.88	D	7,060	0.92	D	6,782	0.88	D	7,057	0.92	D	6,788	0.88	D	7,038	0.91	D	6,761	0.88	D	7,049	0.92	D	6,742	0.88	D	7,054	0.92	D	6,775	0.88	D	7,067	0.92	D	6,764	0.88	D
Paradise Dr. to SR 131	N/B - HOV	1,239	0.56	C	1,663	0.76	C	1,521	0.69	C	1,667	0.76	C	1,519	0.69	C	1,668	0.76	C	1,524	0.69	C	1,655	0.75	C	1,507	0.68	C	1,660	0.75	C	1,496	0.68	C	1,674	0.76	C	1,521	0.69	C	1,677	0.76	C	1,513	0.69	C
	S/B	6,641	0.67	C	8,160	0.82	D	7,364	0.74	C	8,170	0.83	D	7,328	0.74	C	8,124	0.82	D	7,318	0.74	C	8,137	0.82	D	7,347	0.74	C	8,144	0.82	D	7,284	0.74	C	8,042	0.81	D	7,237	0.73	C	8,122	0.82	D	7,245	0.73	C
6. Sir Francis Drake Blvd.	E/B	1,762	0.73	C	1,869	0.78	C	1,892	0.79	C	1,854	0.77	C	1,994	0.83	D	1,847	0.77	C	1,887	0.79	C	1,857	0.77	C	1,886	0.79	C	1,873	0.78	C	1,901	0.79	C	1,845	0.77	C	1,853	0.77	C	1,846	0.77	C	1,889	0.79	C
Bon Air Road to Wolfe Grade	W/B	1,758	0.73	C	2,202	0.92	E	1,971	0.82	D	2,188	0.91	E	1,958	0.82	D	2,177	0.91	E	1,958	0.82	D	2,158	0.90	D	1,932	0.80	C	2,180	0.91	E	1,927	0.80	C	2,168	0.90	D	1,931	0.80	C	2,157	0.90	D	1,943	0.81	D
7. Sir Francis Drake Blvd.	E/B	2,207	0.92	E	2,387	0.99	E	2,391	1.00	E	2,378	0.99	E	2,395	1.00	E	2,385	0.99	E	2,382	0.99	E	2,382	0.99	E	2,388	0.99	E	2,394	1.00	E	2,406	1.00	E	2,382	0.99	E	2,370	0.99	E	2,375	0.99	E	2,386	0.99	E
U.S. 101 to Eliseo Dr.	W/B	2,492	1.04	F	3,010	1.25	F	2,763	1.15	F	2,994	1.25	F	2,730	1.14	F	2,992	1.25	F	2,740	1.14	F	2,967	1.24	F	2,712	1.13	F	2,984	1.24	F	2,697	1.12	F	2,962	1.23	F	2,710	1.13	F	2,987	1.24	F	2,724	1.13	F
8. E. Sir Francis Drake B.	E/B	910	0.95	E	986	1.03	F	951	0.99	E	949	0.99	E	934	0.97	E	985	1.03	F	950	0.99	E	945	0.98	E	938	0.98	E	986	1.03	F	943	0.98	E	926	0.96	E	918	0.96	E	1,002	1.04	F	953	0.99	E
Larspur Ferry to San Quentin	W/B	1,135	1.18	F	1,168	1.22	F	1,147	1.19	F	1,151	1.20	F	1,138	1.19	F	1,190	1.24	F	1,140	1.19	F	1,162	1.21	F	973	1.01	F	1,161	1.21	F	1,133	1.18	F	1,162	1.21	F	1,140	1.19	F	1,172	1.22	F	1,102	1.15	F
9. I-580	E/B	3,377	0.77	C	4,134	0.94	E	3,530	0.80	D	4,165	0.95	E	3,533	0.80	D	4,162	0.95	E	3,537	0.80	D	4,184	0.95	E	3,531	0.80	D	4,186	0.95	E	3,524	0.80	D	4,232	0.96	E	3,543	0.81	D	4,188	0.95	E	3,520	0.80	D
at Richmond Bridge	W/B	2,768	0.63	C	4,488	1.02	F	3,365	0.76	C	4,484	1.02	F	3,346	0.76	C	4,490	1.02	F	3,355	0.76	C	4,435	1.01	F	3,331	0.76	C	4,497	1.02	F	3,346	0.76	C	4,493	1.02	F	3,337	0.76	C	4,479	1.02	F	3,339	0.76	C
10. I-580	E/B	2,062	0.47	B	2,509	0.57	C	2,196	0.50	B	2,583	0.59	C	2,214	0.50	B	2,551	0.58	C	2,212	0.50	B	2,596	0.59	C	2,208	0.50	B	2,586	0.59	C	2,213	0.50	B	2,629	0.60	C	2,228	0.51	B	2,576	0.59	C	2,202	0.50	B
SFD Blvd. to Bellam Blvd.	W/B	1,905	0.43	B	3,600	0.82	D	2,518	0.57	C	3,637	0.83	D	2,529	0.57	C	3,581	0.81	D	2,515	0.57	C	3,569	0.81	D	2,517	0.57	C	3,633	0.83	D	2,536	0.58	C	3,648	0.83	D	2,515	0.57	C	3,570	0.81	D	2,506	0.57	C
11. Hwy. 101 - Cal Park Hill	N/B -MFL	7,044	0.91	D	7,475	0.97	E	6,896	0.90	D	7,528	0.98	E	6,908	0.90	D	7,500	0.97	E	6,903	0.90	D	7,539	0.98	E	6,908	0.90	D	7,513	0.98	E	6,875	0.89	D	7,570	0.98	E	6,939	0.90	D	7,512	0.98	E	6,888	0.89	D
from I-580 to SFD Blvd.	N/B - HOV	-	-	-	1,378	0.63	C	1,271	0.58	C	1,384	0.63	C	1,270	0.58	C	1,387	0.63	C	1,276	0.58	C	1,372	0.62	C	1,257	0.57	C	1,368	0.62	C	1,251	0.57	C	1,398	0.64	C	1,281	0.58	C	1,392	0.63	C	1,277	0.58	C
	S/B	6,113	0.93	D	8,275	0.94	E	6,113	0.69	C	8,287	0.94	E	7,095	0.81	D	8,205	0.93	D	7,076	0.80	D	8,249	0.94	E	7,117	0.81	D	8,257	0.94	E	7,047	0.80	D	8,122	0.92	D	7,006	0.80	D	8,232	0.94	E	7,015	0.80	D
12. Hwy. 101 - n/o I-580	N/B -MFL	7,556	0.98	E	8,389	1.09	F	7,644	0.99	E	8,477	1.10	F	7,689	1.00	E	8,427	1.09	F	7,657	0.99	E	8,420	1.09	F	7,657	0.99	E	8,423	1.09	F	7,631	0.99	E	8,429	1.09	F	7,675	1.00	E	8,447	1.10	F	7,653	0.99	E
from 2nd Street to I-580	N/B - HOV	-	-	-	1,452	0.66	C	1,323	0.60	C	1,459	0.66	C	1,324	0.60	C	1,461	0.66	C	1,328	0.60	C	1,449	0.66	C	1,318	0.60	C	1,443	0.66	C	1,308	0.59	C	1,474	0.67	C	1,342	0.61	C	1,466	0.67	C	1,328	0.60	C
	S/B	6,678	0.87	D	9,189	0.93	D	6,678	0.67	C	9,280	0.94	E	6,678	0.67	C	9,173	0.93	D	6,678	0.67	C	9,271	0.94	E	6,678	0.67	C	9,215	0.93	D	6,678	0.67	C	9,113	0.92	D	6,678	0.67	C	9,230	0.93	D	6,678	0.67	C
13. 3rd Street (in San Rafael)	E/B	891	0.46	A	1,150	0.60	A	1,035	0.54	A	1,268	0.66	B	1,097	0.57	A	1,269	0.66	B	1,098	0.57	A	1,150	0.60	A	1,036	0.54	A	1,149	0.60	A	1,032	0.54	A	1,266	0.66	B	1,096	0.57	A	1,177	0.61	B	1,047	0.55	A
at Union Street	W/B	602	0.31	A	600	0.31	A	602	0.31	A	659	0.34	A	602	0.31	A	658	0.34	A	602	0.31	A	608	0.32	A	602	0.31	A	610	0.32	A	602	0.31	A	659	0.34	A	602	0.31	A	614	0.32	A	602	0.31	A
14. Hwy. 101 - s/o LV Rd.	N/B -MFL	6,040	0.78	D	6,863	0.89	D	6,699	0.87	D	6,875	0.89	D	6,718	0.87	D	6,857	0.89	D	6,705	0.87	D	6,897	0.90	D	6,723	0.87	D	6,875	0.89	D	6,679	0.87	D	6,839	0.89	D	6,688	0.87	D	6,880	0.89	D	6,702	0.87	D
Lucas Valley Rd. to Freitas Pkwy.	N/B - HOV	1,293	0.59	C	1,615	0.73	C	1,551	0.70	C	1,614	0.73	C	1,553	0.71	C	1,614	0.73	C	1,554	0.71	C	1,622	0.74	C	1,555	0.71	C	1,610	0.73	C	1,536	0.70	C	1,617	0.74	C	1,556	0.71	C	1,633	0.74	C	1,561	0.71	C
	S/B	5,842	0.66	C	8,273	0.84	D	5,842	0.59	C	8,305	0.84	D	5,842	0.59	C	8,271	0.84	D	5,842	0.59	C	8,309	0.84	D	5,842	0.59	C	8,214	0.83	D	5,842	0.59	C	8,230	0.83	D	5,842	0.59	C	8,242	0.83	D	5,842	0.59	C
15. Lucas Valley Road	E/B	492	0.62	B	760	0.95	E	492	0.62	B	763	0.95	E	492	0.62	B	759	0.95	E	492	0.62	B	765	0.96	E	492	0.62	B	771	0.96	E	492	0.62	B	761	0.95	E	492	0.62	B	741	0.93	E	492	0.62	B
Las Gallinas Ave. and Los Gamos	W/B	562	0.70	B	738	0.92	E	690	0.86	D	733	0.92	E	688	0.86	D	732	0.92	E	687	0.86	D	753	0.94	E	696	0.87	D	748	0.94	E	688	0.86	D	747	0.93	E	688	0.86	D	764	0.96	E	705	0.88	D
16. Hwy. 101 - Pacheco Hill	N/B -MFL	5,985	0.78	D	6,694	0.87	D	6,557	0.85	D	6,715	0.87	D	6,581	0.85	D	6,715	0.87	D	6,584	0.86	D	6,730	0.87	D	6,581	0.85	D	6,629	0.86	D	6,483	0.84	D	6,763	0.88	D	6,622	0.86	D	6,665	0.87	D	6,520	0.85	D
Nave Dr. and Miller Creek	N/B - HOV	1,284	0.58	C	1,610	0.73	C	1,547	0.70	C	1,610	0.73	C	1,550	0.70	C	1,610	0.73	C	1,551	0.71	C	1,623	0.74	C	1,555	0.71	C	1,609	0.73	C	1,535	0.70	C	1,617	0.74	C	1,556	0.71	C	1,633	0.74	C	1,559	0.71	C
	S/B	5,505	0.56	C	8,501	0.86	D	5,505	0.56	C	8,561	0.86	D	5,505	0.56	C	8,522	0.86	D	5,505	0.56	C	8,594	0.87	D	5,505	0.56	C	8,398	0.85	D	5,505	0.56	C	8,526	0.86	D	5,505	0.56	C	8,499	0.86	D	5,505	0.56	C
17. South Novato Blvd.	N/B	329	0.41	A	1,195	1.24	F	737	0.77	C	1,189	1.24	F	736	0.77	C	1,186	1.24	F	732	0.76	C	1,235	1.29	F	752	0.78	C	1,155	1.20	F	718	0.75	C	1,213	1.26	F	752	0.78	C	984	1.03	F	612	0.64	B
U.S. 101 to Sunset Parkway	S/B	261	0.33	A	981	1.02	F	261	0.27	A	963	1.00	E	261	0.27	A	957	1.00	E	261	0.27	A	1,019	1.06	F	261	0.27	A	954	0.99	E	261	0.27	A	1,028	1.07	F	261	0.27	A	443	0.46	A	261	0.27	A
18. State Route 37	E/B	3,275	0.74	C	4,324	0.98	E	3,389	0.77	C	4,410	1.00	E	3,392	0.77	C	4,378	1.00	E	3,408	0.77	C	4,468	1.02	F	3,364	0.76	C	4,365	0.99	E	3,388	0.77	C	4,316	0.98	E	3,389	0.77	C	4,523	1.03	F	3,307	0.75	C
U.S. 101 and Atherton Ave.	W/B	1,295	0.29	A	2,887	0.66	C	1,295	0.29	A	2,989	0.68	C	1,295	0.29	A	2,884	0.66	C	1,295	0.29	A	2,970	0.68	C	1,295	0.29	A	2,881	0.65	C	1,295	0.29	A	2,868	0.65	C	1,295	0.29	A	3,007	0.68	C	1,295	0.29	A
19. Hwy. 101	N/B - MFL	4,317	0.98	E	5,220	1.19	F	4,476	1.02	F	5,204	1.18	F	4,454	1.01	F	5,243	1.19	F	4,480	1.02	F	5,289	1.20	F	4,472	1.02	F	5,287	1.20	F	4,456	1.01	F	5,303	1.21	F	4,463	1.01	F	5,632	1.28	F	4,447	1.01	F
at Sonoma/Marin County Line	N/B - HOV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,151	0.52	B	733	0.33	A
	S/B	2,791	0.63	C	4,191	0.95	E	2,791	0.63	C	4,147	0.94	E	2,791	0.63	C	4,154	0.94	E	2,791	0.63	C	4,177	0.95	E	2,791	0.63	C	4,256	0.97	E	2,791	0.63	C	4,302	0.98	E	2,791	0.63	C	5,793	0.88	D	2,791	0.42	B

Source: Marin County Travel Model and Nelson / Nygaard, December 2006.

Exhibit 5.0-6
Existing, Draft 2005 CWP Update, and Alternatives Intersections Conditions

	INTERSECTIONS		Existing		Draft 2005 CWP Update																Alternatives																							
					Scenario 1					Scenario 2					Scenario3					Alternative 1					Alternative 2					Alternative 3					Alternative 4				
					Unmitigated		Mitigated			Unmitigated		Mitigated			Unmitigated		Mitigated			Unmitigated		Mitigated			Unmitigated		Mitigated			Unmitigated		Mitigated			Unmitigated		Mitigated		
			Delay	LOS	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation	Delay	LOS	Delay	LOS	Mitigation
A	**Bridge Boulevard @ Hwy 101 SB Off-ramp Marin City**	AM	8.2	A	10.6	B	-	-		10.4	B	-	-		10.3	B	-	-		9.8	A	-	-		10.1	B	-	-		12.0	B	-	-		9.8	A	-	-	
		PM	8.2	A	12.2	B	-	-		11.9	B	-	-		11.8	B	-	-		11.2	B	-	-		11.3	B	-	-		11.6	B	-	-		11.0	B	-	-	
B	**Redwood Highway Frontage Road @ Hwy 101 NB Off-ramp Strawberry**	AM	7.3	A	10.8	B	-	-		10.9	B	-	-		11.0	B	-	-		10.8	B	-	-		11.1	B	-	-		10.8	B	-	-		10.8	B	-	-	
		PM	9.6	A	9.2	A	-	-		9.0	A	-	-		9.1	A	-	-		8.8	A	-	-		9.0	A	-	-		9.2	A	-	-		8.8	A	-	-	
C	**Tiburon Boulevard @ Redwood Highway Frontage Road Mill Valley**	AM	>80	F	>80	F	48.1	D	Add EBT & NBR	>80	F	47.8	D	Add EBT & NBR	>80	F	50.4	D	Add EBT & NBR	>80	F	64.1	E	Add EBT & NBR	>80	E	53.1	D	Add EBT & NBR	>80	F	50.9	D	Add EBT & NBR	>80	F	53.1	D	Add EBT & NBR
		PM	>80	F	>80	F	>80	F	(Tiburon General Plan)	>80	F	>80	F	(Tiburon General Plan)	>80	F	>80	F	(Tiburon General Plan)	>80	F	>80	F	(Tiburon General Plan)	>80	F	>80	F	(Tiburon General Plan)	>80	F	>80	F	(Tiburon General Plan)	>80	F	>80	F	(Tiburon General Plan)
D	**2nd Street @ Grand Avenue San Rafael**	AM	20.9	C	39.8	D	34.8	C	Add NBR	40.9	D	34.9	C	Add NBR	39.1	D	34.9	C	Add NBR	40.7	D	34.6	C	Add NBR	>80	F	33.2	C	Add NBR	>80	F	33.4	C	Add NBR	>80	F	33.6	C	Add NBR
		PM	22.8	C	>80	F	57.5	E	(San Rafael General Plan)	>80	F	62.3	E	(San Rafael General Plan)	>80	F	63.1	E	(San Rafael General Plan)	>80	F	58.1	E	(San Rafael General Plan)	>80	F	37.8	D	(San Rafael General Plan)	78.1	E	41.3	D	(San Rafael General Plan)	78.8	E	36.1	D	(San Rafael General Plan)
E	**3rd Street @ Grand Avenue San Rafael**	AM	16.9	B	>80	F	30.2	C	Add WBT	>80	F	40.1	D	Add WBT	>80	F	39.8	D	Add WBT	>80	F	33.5	C	Add WBT	>80	F	29.7	C	Add WBT	>80	F	26.4	C	Add WBT	>80	F	28.6	C	Add WBT
		PM	37.4	D	>80	F	64.6	E	(San Rafeal General Plan)	>80	F	57.3	E	(San Rafeal General Plan)	>80	F	60.1	E	(San Rafeal General Plan)	>80	F	69.5	E	(San Rafeal General Plan)	>80	F	55.5	E	(San Rafeal General Plan)	>80	F	56.4	E	(San Rafeal General Plan)	>80	F	53.0	D	(San Rafeal General Plan)
F	**Miller Creek Road @ Las Gallinas Avenue Marinwood**	AM	>60	F	>60	F	17.2	B	Signalize w/ WBL pocket	>60	F	22.1	C	Signalize w/ WBL pocket	>60	F	22.1	C	Signalize w/ WBL pocket	>60	F	21.7	C	Signalize w/ WBL pocket	>60	F	28.7	C	Signalize w/ WBL pocket	>60	F	17.4	B	Signalize w/ WBL pocket	>60	F	20.9	C	Signalize w/ WBL pocket
		PM	8.4	A	38.2	D	13.5	B	(Per Oakview EIR)	40.7	D	13.6	B	(Per Oakview EIR)	40.2	E	14.6	B	(Per Oakview EIR)	34.2	D	11.4	B	(Per Oakview EIR)	30.4	D	7.2	A	(Per Oakview EIR)	31.1	D	7.1	A	(Per Oakview EIR)	30.7	D	11.2	B	(Per Oakview EIR)
G	**Miller Creek Road @ Hwy 101 SB Off-ramp Marinwood**	AM	>60	F	>60	F	42.1	D	Signalize: SBL, SBT & SBR w/ WBL P	>60	F	50.4	D	Signalize: SBL, SBT & SBR w/ WBL P	>60	F	42.4	D	Signalize: SBL, SBT & SBR w/ WBL P	>60	F	54.2	D	Signalize: SBL, SBT & SBR w/ WBL P	>60	F	54.5	D	Signalize: SBL, SBT & SBR w/ WBL P	>60	F	50.6	C	Signalize: SBL, SBT & SBR lanes	>60	F	58.5	E	Signalize
		PM	3.5	A	>60	F	38.8	D	(Per Oakview EIR)	>60	F	37.8	D	(Per Oakview EIR)	>60	F	37.0	D	(Per Oakview EIR)	>60	F	29.8	C	(Per Oakview EIR)	>60	F	35.8	D	(Per Oakview EIR)	>60	F	25.8	C	(Per Oakview EIR)	>60	F	30.4	C	(Per Oakview EIR)
H	**Miller Creek Road @ Hwy 101 NB Off-ramp Marinwood**	AM	13.7	B	>60	F	16.1	B		>60	F	17.1	B		>60	F	16.6	B		>60	F	17.9	B		>60	F	32.2	C		29.4	C	29.4	C		>60	F	14.4	B	
		PM	24.0	C	>60	F	54.7	E	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	>60	F	49.2	D	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	>60	F	48.2	D	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	>60	F	60.7	E	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	>60	F	60.4	E	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	>60	F	54.5	D	Signalize w/ EBL & NBL pockets (Per Oakview EIR)	>60	F	48.7	D	Signalize w/ EBL & NBL pockets (Per Oakview EIR)

Source: Marin County Travel Model and Nelson / Nygaard, December 2006.

With respect to traffic impacts, a key difference between *Alternative 1* and the *Draft 2005 CWP Update* would be that the Housing Bank would not be established. Therefore, housing units would not be reallocated from environmentally sensitive parcels (i.e., primarily from West Marin to the City-Centered Corridor). Consequently, under *Alternative 1*, fewer vehicle trips would be made by alternative modes of transport because the land use patterns and transportation systems in West Marin, a more rural, sparsely developed area, are less supportive of travel by foot, bike, and transit. The City-Centered Corridor, on the other hand, is denser, has businesses, stores and other land uses within close proximity to residential areas, and offers convenient alternatives to travel by automobile: all factors which would increase the use of alternative modes of transport and decrease vehicle miles traveled (VMT) under the *Draft 2005 CWP Update*.

Exhibit 5.0-7 compares the relative levels of vehicle miles traveled (VMT) for the *Draft 2005 CWP Update* and each of the alternatives.

Exhibit 5.0-7
Population and Vehicle Miles Traveled for Alternatives

Countywide Plan Alternative	***Population*** [a]	***Growth 2005 - 2030 (Percent)***	***Daily Vehicle Miles Traveled***	***Growth 2005-2030 (Percent)***
Existing Conditions	253,341	--	7,003,560	--
Draft 2005 CWP Update	286,340	+13.0	Scenario 1 – 8,809,258 Scenario 2 – 8,827,123 Scenario 3 – 8,823,921	+25.8 +26.0 +26.0
Alternative 1 (No Project / No Action)	286,340	+13.0	8,860,900	+26.5
Alternative 2	286,615	+13.1	8,830,352	+26.1
Alternative 3	283,925	+12.1	8,782,537	+25.4
Alternative 4 (Mitigated)	284,190	+12.2	8,889,684	+26.6

a Existing population estimate for January 1, 2006. State of California, Department of Finance, E-5 Population and housing Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark, Sacramento, California, May 2006. Future population based on County projection of 2.35 persons per household.

Sources: Marin Travel Model and Nichols•Berman.

Alternative 1 would result in an additional 830,858 square feet of nonresidential floor area (i.e., 5,272,188 square feet compared to 4,441,330 square feet) than would the *Draft 2005 CWP Update*. This would likely increase VMT. However, such an increase could be offset if the additional nonresidential floor area would improve the jobs-housing balance, thereby decreasing the distance Marin County residents must travel to reach their jobs, and thus VMT.

With *Alternative 1*, VMT would increase approximately 26.5 percent over existing conditions. Furthermore, VMT under *Alternative 1* would exceed VMT under the *Draft 2005 CWP Update* by between 0.5 percent (Scenario 2) to 0.7 percent (Scenario 1) due to land-use differences.

Screenlines

As shown in **Exhibits 5.0-4** and **5.0-5** under *Alternative 1* significant transportation project and cumulative impacts would occur at the following screenlines

#1 Highway 101 at Golden Gate Bridge

In the AM peak hour – northbound (cumulative) and southbound (cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (cumulative)

#3 State Route 1 – U.S. 101 to Almonte Boulevard

In the AM peak hour – southbound (project and cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (project and cumulative)

#4 State Route 131 – U.S. 101 and Strawberry Drive

In the PM peak hour – eastbound (project and cumulative)

#7 Sir Francis Drake Boulevard – U.S. 101 to Elisso Drive

In the AM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

In the PM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

#9 I-580 at Richmond Bridge

In the PM peak hour – westbound (cumulative)

#11 U.S. 101 Cal Park Hill – from I-580 to Sir Francis Drake Boulevard

In the AM peak hour – southbound (cumulative)

#12 U.S. 101 north of I-580 – from 2nd Street to I-580

In the AM peak hour – southbound (cumulative)

In the PM peak hour – northbound (cumulative)

#15 Lucas Valley Road – between Las Gallinas Avenue and Los Gamos

In the AM peak hour – eastbound (project and cumulative)

In the PM peak hour – eastbound (cumulative) and westbound (cumulative)

#17 South Novato Boulevard – U.S. 101 to Sunset Parkway

In the AM peak hour – southbound (cumulative)

In the PM peak hour – northbound (cumulative) and southbound (cumulative)

#18 State Route 37 – U.S. 101 and Atherton Avenue

In the PM peak hour – eastbound (cumulative)

#19 at Sonoma/Marin County Line

In the AM peak hour –southbound (project and cumulative)

In the PM peak hour –northbound (project and cumulative)

As compared to the *Draft 2005 CWP Update*, the screenline impact analysis shows that *Alternative 1* would:

- Not result in the significant cumulative impact experienced on Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6) that would occur westbound during the PM peak hour under all *Draft 2005 CWP Update* scenarios.

- Not result in the significant cumulative impact experienced on East Sir Francis Drake Boulevard from Larkspur Ferry to San Quentin (Screenline #8) that would occur eastbound during the PM peak hour under *Draft 2005 CWP Update* Scenario 1 and in both directions during the PM peak hour under Scenario 3.

- Result in a significant cumulative impact on South Novato Boulevard between U.S. 101 and Atherton Avenue (Screenline #17) that would occur southbound during the AM peak hour. This would not occur under any of the *Draft 2005 CWP Update* scenarios.

- Result in a significant cumulative impact on State Route 37 between U.S. 101 and Atherton Avenue (Screenline #18) that would occur eastbound during the PM peak hour. This would not occur under any of the *Draft 2005 CWP Update* scenarios.

Another way of comparing *Alternative 1* to the *Draft 2005 CWP Update* is to examine what percentage of screenline / directions (e.g., Screenline #2 / southbound or Screenline #2 / northbound) would have less or more congestion (as measured by LOS) under the *Draft 2005 CWP Update* scenarios compared to *Alternative 1*. Looking at cumulative impacts during the AM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 40 percent of screenlines and make congestion worse at 26 percent of screenlines compared to *Alternative 1*. Looking only at project impacts during the AM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 35 percent of screenlines and make congestion worse at 16 percent of screenlines compared to *Alternative 1*. Looking at cumulative impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 41 percent of screenlines and make congestion worse at 29 percent of intersections compared to *Alternative 1*. Looking only at project impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 20 percent of screenlines and make congestion worse at 23 percent of screenlines compared to the *Alternative 1*. In general, the *Draft 2005 CWP Update* scenarios would reduce traffic congestion compared to Alternative 1.

Intersections

As shown in **Exhibit 5.0-6**, under *Alternative 1* significant cumulative transportation impacts would occur at the following intersections:

- State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road – in the AM and PM peak hour
- Second Street and Grand Avenue – in the PM peak hour
- Third Street and Grand Avenue – in the AM and PM peak hour
- Miller Creek Road and Las Gallinas Avenue – in the AM peak hour
- Miller Creek Road and U.S. 101 southbound off-ramp – in the AM and PM peak hour
- Miller Creek Road and U.S. 101 northbound off-ramp – in the AM and PM peak hour

As shown in **Exhibit 5.0-6**, based on the results of the Marin Travel Model results, under *Alternative 1*, all intersection impacts would be the same as those of the *Draft 2005 CWP Update.*

AIR QUALITY

As shown in **Exhibit 5.0-7** VMT within Marin County would increase at a rate greater than population. Under *Alternative 1*, daily VMT in Marin County would increase by 26.5 percent between 2005 and 2030, while population would increase by 13 percent. Therefore, *Alternative 1* would be inconsistent with the Clean Air Plan.

A major difference between the *Draft 2005 CWP Update* and the *1994 CWP* is that land uses and development would be more focused to the eastern portions of the county (or City-Centered Corridor) that are served by established transportation infrastructure. This would result in greater reliance on transit, carpools, and non-motorized modes of transportation as well as shorter travel lengths due to closer proximity to services and jobs.

The Transportation Control Measures (TCMs) included in the *Draft 2005 CWP Update* would be more effective than those included in the *1994 CWP*. While the *1994 CWP* includes some policies and programs that would support the Clean Air TCMs, this alternative would not benefit from the new policies and programs proposed in the *Draft 2005 CWP Update*. In addition, the *1994 CWP* does not include policies that would provide adequate buffers between existing or future sources of odors or toxic air contaminants and existing or future sensitive receptors. This alternative would result in significant unavoidable project and cumulative impacts due to inconsistency with the Clean Air Plan and the TCMs.

Land uses and development consistent with the *Alternative 1* would result in an increase in greenhouse gas emissions over existing levels. This would be a significant unavoidable project and cumulative impact.

NOISE

Noise impacts of *Alternative 1* would be similar to the *Draft 2005 CWP Update*. Although land uses and development consistent with this alternative would increase traffic volumes there would not be a significant increase in vehicular traffic noise. Without the establishment of the Housing Overlay Designation and the transfer of housing units from environmentally sensitive parcels, this would eliminate the transfer of housing units from quieter areas (e.g., West Marin) to noisier areas (City-Centered Corridor). This in turn would reduce potential noise and land use conflicts associated with concentrating housing units in noisier areas. In addition, it would also reduce potential effects of noise from new housing construction and associated traffic on existing residents and other sensitive resources located in the various environmentally sensitive areas. Similar to the *Draft 2005 CWP Update*, with the exception of construction noise, this alternative would not result in any significant environmental noise impacts that could not be mitigated through project level environmental review. However, construction noise would be a significant unavoidable project and cumulative impact.

HYDROLOGY, WATER QUALITY, AND FLOOD HAZARDS

The *1994 CWP* has policies that protect streams and adjacent lands under the designation of Stream Conservation Areas (SCA). SCAs can protect people and structures against impacts from flooding by providing a broad corridor for flood conveyance and areas for storage of floodwaters. SCAs protect water quality by provide a filtering mechanism where vegetation and soils can trap sediment and absorb pollutants for breakdown by microbial processes. Additional policies in the *1994 CWP* also aim to protect both water quality and people and structures from flooding (e.g., 100-year floodplain designation and on-site containment of sediment during construction).

The *1994 CWP* is limited in its overall ability to protect county water quality and residents and structures from flooding as it lacks key policies to reduce or avoid identified impacts. There is no policy that requires assessment of sea-level rise or potential flooding impacts for projects proposed near shore locations. In addition, the *1994 CWP* does not require *Start-at-the Source* techniques that promote infiltration and reduced use of chemicals in order to reduce water quality impacts on a site-by-site basis. The *1994 CWP* also does not contain a policy that requires new development maintain peak flow rates at pre-development levels. Because of these omissions, *Alternative 1* would result in significant project and cumulative water quality and flooding impacts.

Under *Alternative 1* impacts associated with water quality and flooding would be greater in the West Marin Planning Area than under the *Draft 2005 CWP Update* because *Alternative 1* would not include Policy **CD-1.3** and Program **CD-1.c**. This policy and program would establish potential residential density and commercial Floor Area Ratio (FAR) at the low end of the applicable range on sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water or sewer systems as discussed above. Implementation of this policy and program would reduce development potential by 1,694 housing units. In the *Draft 2005 CWP Update* the 1,694 housing units would be transferred into the Housing Bank for development on sites identified in the Housing Overlay Designation. **Exhibit 3.0-7** shows the location of where such units would be transferred from. Policy **CD-1.3** and Program **CD-1.c**, therefore, would relocate housing units from environmentally sensitive areas with high habitat value that, when near a stream channel, also provide water quality and flood control functions. Development at Housing Overlay Designation sites would occur on sites or in areas that contain a high percent of impervious surface area due to existing medium to high-density development. Construction of these housing units would not likely increase peak flow rates above existing conditions at the sites. Therefore, as compared to the *Draft 2005 CWP Update*, this alternative would have relatively more impacts associated with water quality and flooding

due to peak flow rates as there would be reduction of housing units and nonresidential floor area at the identified sensitive sites.

Both *Alternative 1* and the *Draft 2005 CWP Update* would result in the same number of housing units at buildout. The *Draft 2005 CWP Update*, however, would result in 7,281 housing units in the West Marin Planning Area, as compared to the 8,444 housing units that would occur under *Alternative 1*. The reallocation of units from environmentally sensitive parcels (primarily from West Marin to the City-Centered Corridor) would reduce potential water quality impacts from increased operation of septic systems in West Marin where wastewater treatment is restricted largely to the community of Bolinas. Water quality in West Marin is important for the protection of sensitive ecological resources (e.g., anadromous fisheries) and mariculture (e.g., oyster farming).

BIOLOGICAL RESOURCES

In general, potential impacts to biological and wetland resources would be greater under *Alternative 1* than under the *Draft 2005 CWP Update.* This is because the *1994 CWP* contains fewer specific policies and programs than the *Draft 2005 CWP Update*, and, would result in more dispersed development, and increased nonresidential floor area than would occur under *Alternative 1*.

Specifically, expanded policies of the *Draft 2005 CWP Update* that would provide greater protection of sensitive resources would not occur under *Alternative 1*. This includes expanded protections for wetlands (Goal **BIO-3)**, riparian corridors (Goal **BIO-4**), baylands (Goal **BIO-5**), and various other sensitive resources (Goal **BIO-2)**. While similar provisions are contained in the *1994 CWP*, they tend to be less specific or encompassing than those provided under the *Draft 2005 CWP Update*. Examples include new *Draft 2005 CWP Update* policies and programs that would establish Wetland Conservation Areas (WCA) around jurisdictional wetlands that are absent or less defined in the *1994 CWP*. Program EQ-2.43a in the *1994 CWP* calls for avoidance of wetland areas and specifies that for each acre of wetland lost, two acres shall be restored. However, it does not call for creation of a WCA with setback standards and mitigation criteria as called for in *Draft 2005 CWP Update.*

As discussed above, without implementation of Policy **CD-1.3** and Program **CD-1.c** of the *Draft 2005 CWP Update*, future residential development would be less concentrated in City-Centered Corridor than under the *Draft 2005 CWP Update*. This would increase the likelihood that sensitive resources could be adversely affected and that the remaining natural habitat could be degraded and fragmented. Concentrating future housing in developed areas of the City-Centered Corridor would be less likely to affect sensitive resources and result in further habitat fragmentation. In addition, potential future residential development on the St. Vincent's / Silveira properties would allow approximately 540 units. Further site specific environmental assessment and project review would still be required for proposed development applications, including any development proposed on the St. Vincent's / Silveira properties.

Potential impacts to special-status species, sensitive natural communities, and wetlands would be reduced to a less-than-significant level. However, potential adverse effects to wildlife habitat and movement opportunities would remain a significant unavoidable project and cumulative impact under this alternative.

GEOLOGY, SOILS, AND SEISMICITY

Alternative 1 would result in greater significant impacts related to geologic hazards than would occur under the *Draft 2005 CWP Update*. Even though these impacts would be significant and unavoidable under both *Alternative 1* and the *Draft 2005 CWP Update*, they would be greater under *Alternative 1* because, even though this alternative would have the same number of housing units as the proposed project, it would have greater nonresidential floor area. This would expose more nonresidential structures to geologic hazards.

As discussed above, without implementation of Policy **CD-1.3** and Program **CD-1.c** of the *Draft 2005 CWP Update* under *Alternative 1* more housing would be located in West Marin. This could expose more structures and people to impacts associated with surface fault rupture and strong seismic ground shaking of the San Andreas Fault. More houses would rely on septic systems that, in areas of poor suitability, could exacerbate landsliding and subsidence, cause damage to improvements, and affect groundwater resources. In addition, more people and structures would be exposed to tsunamis. *Alternative 1* would not benefit from additional / updated policies and programs that would substantially reduce these and the other geologic hazards.

Under *1994 CWP* policies and programs, review of fault surface rupture hazards would continue to follow the minimum requirements of the Alquist-Priolo Act. This would allow some structures, including single-family residences, to be built on an active trace of the San Andreas Fault. While the impacts of seismic ground shaking would significant and unavoidable in extreme events, the *1994 CWP* contains several policies and programs that would greatly reduce this impact. However, these policies and programs generally apply only to public and high occupancy structures. Therefore they would not require improved seismic safety in both existing and new structures. In addition, the *1994 CWP* does not provide policies and programs that would raise public awareness and create a climate of preparedness. Under *Alternative 1*, communities would be less prepared for disasters. Such preparedness would reduce losses and hasten recovery should severe ground shaking or other significant geologic hazard occur.

Under *Alternative 1*, policies and programs of the *1994 CWP* would reduce many of the adverse effects related to seismic-related ground failure, landsliding, subsidence and settlement, soil erosion and expansive soils. However, these hazards would result in greater impacts under this alternative because new development / redevelopment would not benefit from thorough and adequate site-specific programs involving hazard identification, investigation and mitigation, standard-of-care peer review, and follow through with construction observation and certification.

Under the *1994 CWP*, malfunctioning septic systems would continue to harm and degrade the environment. The soils in Marin County are generally poorly suited for a standard septic system design. Effective onsite wastewater management would be essential. As the *1994 CWP* generally lacks such policies and programs, impacts to improvements surface or groundwater resources would be greater under *Alternative 1* than under the *Draft 2005 CWP Update*.

Alternative 1 could result in significant project and cumulative impacts from tsunamis and seiches. This alternative would not benefit from *Draft 2005 CWP Update* policies and programs that would minimize damage from this hazard. In addition, coastal communities would be less prepared to adequately respond and recover from a severe tsunami event.

AGRICULTURE

Under *Alternative 1*, proposed changes to County land use designations from agricultural to non-agricultural land use designations would not occur. As discussed in ***Section 4.8 Agriculture*** these changes primarily would reflect existing State and federal ownership of these lands as part of their respective park and recreational areas plus the purchase of lands to protect existing habitat. Even without changes to land use designations, these lands in State or federal ownership, or lands owned by the Marin Audubon Society, would likely be used for non-agricultural uses, such as open space or environmental protection.

In addition, some agricultural land would be removed from production because existing provisions of the Marin County Development Code would allow development of agricultural processing, retail sales, and visitor-serving uses on agricultural land. Quantifying the amount of conversion that could occur would be speculative. Such conversion would still represent a significant project and cumulative impact.

Similar to the *Draft 2005 CWP Update*, conflicts with Williamson Act contracts would be a less-than-significant impact. Under this alternative, while changes to land use designation of parcels under Williamson Act contracts to an Open Space (e.g., OS) designation would not occur as they would under the *Draft 2005 CWP Update*. Future use of these lands as open space would be compatible with the provisions of the Williamson Act.

WATER SUPPLY AND DEMAND

Exhibits 5.0-8 and **5.0-9** present water demand calculations for *Alternative 1* for each water service area and the unserved areas for projected development in the unincorporated area. The differences in housing units and nonresidential floor area at buildout between *Alternative 1* and the *Draft 2005 CWP Update* are shown in **Exhibit 5.0-8**. **Exhibit 5.0-8** lists the water service area in the left-most column. The second and third columns from the left present the number of housing units in the unincorporated areas at buildout for the *Draft 2005 CWP Update* and *Alternative 1*, respectively. The difference in housing units between the *Draft 2005 CWP Update* and *Alternative 1* is portrayed in the fourth column from the left. The summation of all the unincorporated housing units at buildout is shown at the bottom of the column (i.e., the last row). [2]

Under *Alternative 1*, 1,054 less housing units would be in the Marin Municipal Water District (MMWD) service area within the City-Centered Corridor. The three columns on the right present similar information for nonresidential floor areas. Total nonresidential floor areas are the same in all water service areas except for North Marin Water District (NMWD)-Novato, NMWD-West Marin, MMWD, Bolinas Community Public Utilities District, and Stinson Beach Community Water District that all would have more nonresidential floor area under *Alternative 1*. *Alternative 1* would result in 830,858 square feet more nonresidential floor area than the *Draft 2005 CWP Update* (see bottom of right-most column).

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[2] The negative one value indicates that the *Draft 2005 CWP Update* has one more housing unit in the unincorporated area than does *Alternative 1*, this difference is due to internal rounding.

Exhibit 5.0-8
Comparison of Draft 2005 CWP Update to Alternative 1 at Buildout - Unincorporated Area

Water Service Area	Housing Units [a]			Nonresidential Floor Area (Square Feet)		
	Draft 2005 CWP Update	Alternative 1	Difference	Draft 2005 CWP Update	Alternative 1	Difference
NMWD-Novato	3,116	3,290	+174	507,189	1,177,526	+670,337
NMWD-West Marin	1,262	1,405	+143	269,698	336,728	+67,030
MMWD	24,297	23,243	-1,054	2,309,424	2,393,277	+83,853
BCPUD	797	1,150	+353	38,173	41,727	+3,554
SBCWD	885	897	+12	57,674	63,758	+6,084
IPUD	647	706	+59	90,953	90,953	0
MBCSD	153	160	+7	5,779	5,779	0
CSWS	276	292	+16	2,486	2,486	0
EMWS	173	187	+14	0	0	0
Unserved Areas	1,109	1,384	+275	1,159,954	1,159,954	0
Total	***32,715***	***32,714***	***-1***	***4,441,330***	***5,272,188***	***+830,858***

a Includes single and multifamily units

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

Exhibit 5.0-9
Water Demand Difference Between Draft 2005 CWP Update and Alternative 1 at Buildout - Unincorporated Area

Water Service Area	Housing Difference [a]		Nonresidential Floor Area Difference		Demand Difference (Alternative 1 minus Draft 2005 CWP Update) (AFY)
	Number of Units	Demand (AFY) [b]	Square Feet	Demand (AFY) [c]	
NMWD-Novato	+174	+66	+670,337	+134	+200
NMWD-West Marin	+143	+50	+67,030	+13	+63
MMWD	-1,054	-316	+83,853	+17	-299
BCPUD	+353	+95	+3,554	+1	+96
SBCWD	+12	+2	+6,084	+1	+4
IPUD	+59	+10	0	0	+10
MBCSD	+7	+1	0	0	+1
CSWS	+16	+2	0	0	+2
EMWS	+14	+2	0	0	+2
Unserved Areas	+275	+110	0	0	+110
Total	***-1***	***+22***	***+830,858***	***+166***	***+188***

a Includes single and multifamily units
b Used 2030 estimated demand per unit in Water District Current and Projected Water Demand tables
c Used an estimated demand of 0.20 AF per 1,000 square feet based on 2005 non-residential use per square foot

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

Differences in the number of housing units and nonresidential floor areas between the *Draft 2005 CWP Update* and *Alternative 1* were used to calculate the difference in demand for each water service area and the unserved areas. This is presented in **Exhibit 5.0-9**. The second and fourth columns from the left show the difference in housing units and nonresidential floor area, respectively, for each water service area and the unserved areas. These values are from columns four and seven of **Exhibit 5.0-8**. The housing unit differences were then multiplied by an estimated water use rate for each water service area to get the demand values in the third column of **Exhibit 5.0-9**. Water use rates ranged from a low of 0.11 Acre Feet per Year (AFY) per unit in West Marin to a high of 0.38 AFY per unit in east Marin in the water service areas. These water use rates were based on average 2030 estimated single and multifamily unit demands used in **Exhibits 4.9-21** through **4.9-29** (see ***Section 4.9 Water Supply and Demand***) for each water supplier. The demand for unserved areas were estimated to be 0.4 AFY per housing unit as discussed in the *Unincorporated Domestic Existing and Future Demand* section in ***Section 4.9 Water Supply and Demand***.

Nonresidential floor area differences were multiplied by an estimated demand of 0.20 AF per 1,000 square feet. This is based on 2005 nonresidential use per square foot for three water suppliers that had sufficient nonresidential water usage data: NMWD, MMWD, and SBCWD. Nonresidential categories include commercial, business, governmental, and institutional uses. The resulting nonresidential demand values are presented in the fifth column of **Exhibit 5.0-9**. The last column on the right represents the difference in unincorporated water demand between the *Draft 2005 CWP Update* and *Alternative 1*. Except for MMWD, the water demand of *Alternative 1* would be greater than under the *Draft 2005 CWP Update* for all of the water service areas.

These values represent estimates of the differences in unincorporated buildout water demands between the *Draft 2005 CWP Update* and *Alternative 1*. *Alternative 1* water demands would be approximately 188 AFY more than *Draft 2005 CWP Update* water demands. However, a decrease of 299 AFY in water demand would occur in the MMWD service area with more water demand in all other water service areas with *Alternative 1*. To compare *Alternative 1* water demands to current conditions, the resulting water demand difference (188 AFY) can be added to the *Draft 2005 CWP Update* demand increase (1,871 AFY) to get the demand increase above current conditions (1,871 + 188 = 2,059 AFY).[3] Thus, at buildout, *Alternative 1* water demands would be 2,059 AFY above current water demands for the unincorporated areas.

Impacts associated with *Alternative 1* would be similar to those under the *Draft 2005 CWP Update*. Supply deficits would occur in NMWD-West Marin, MMWD, BCPUD, and SBCWD. In addition, a slight supply deficit would also occur in EMWS. *Impacts 4.9-1 Adequacy of Water Supply During a Normal Year*, *4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years*, *4.9-4 Impact to Groundwater Supply*, *4.9-5 Interference with or Degradation of Water Supply*, and *4.9-6 Secondary Impacts* would all be significant unavoidable project and cumulative impacts. Because of the slight increase in water demands (188 FY) and *Alternative 1's* lack of the new policies and programs included in the *Draft 2005 CWP Update*, these impacts would be greater than those of the *Draft 2005 CWP Update*. However, the decrease in water demand (299 AFY) in the MMWD service area would result in fewer impacts to that water supplier.

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[3] Column six in **Exhibit 4.9-34** shows the increase in water demand in unincorporated areas for each water service area in 2030 with buildout of the *Draft 2005 CWP Update*.

PUBLIC SERVICES

Hazardous Waste Management

Alternative 1 would result in significant project and cumulative impacts related to hazardous materials. The *1994 CWP* does not provide policies and programs sufficient to minimize the release of hazardous materials, reduce exposure to sensitive receptors, or prevent the location of new development on sites with known hazardous materials. In addition, as this alternative would result in a greater amount of nonresidential floor area than would the *Draft 2005 CWP Update*, it could result in greater usage of hazardous materials. Under this alternative, the lack of a Housing Overlay Designation would likely result in greater use of hazardous materials associated with residential use being transported, stored, and used in West Marin.

Wastewater Management Services

Exhibit 5.0-10 lists the seven main agencies that treat wastewater in Marin County. **Exhibit 5.0-10** describes the ability of these district's wastewater treatment plants to accommodate projected wastewater flows generated by land uses and development in the unincorporated area consistent with each alternative. Similar to the *Draft 2005 CWP Update*, except for the Bolinas Community Public Utility District (BCPUD), the remaining six wastewater treatment providers would have sufficient capacity to accommodate the additional demand for treatment generated by *Alternative 1*. Similar to the *Draft 2005 CWP Update*, the BCPUD would be unable to treat additional wastewater flows generated by new land uses and development consistent with *Alternative 1*.

Solid Waste Management

Similar to the proposed project, *Alternative 1* would not substantially increase the amount of solid waste generated in Marin County. Such an increase would not exceed the County's landfill capacity or conflict with the County's adopted Integrated Waste Management Plan. Similar to the *Draft 2005 CWP Update*, this would be a less-than-significant impact.

Energy

Alternative 1 would result in increased energy consumption and require additional energy resources in order to meet this demand. The land use pattern resulting from this *Alternative 1* would be a continuation of existing land use patterns; generally low-density, scattered development. Land uses and development consistent with this alternative could result in inefficient and excessive use of energy resources. *Alternative 1* would not benefit from additional goals, policies, and programs proposed by the *Draft 2005 CWP Update* including those related to the concentration of urban development within the City-Centered Corridor. Other policies and programs related to energy conservation, such as energy efficiency in new and retrofit construction would also not be implemented. Implementation of *Alternative 1* would result in significant project and cumulative energy impacts.

Exhibit 5.0-10
Comparison of Wastewater Treatment Capacity in Unincorporated Area

Agency	2005 Remaining Capacity (MGD) [a]	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		Additional Flow [b]	Remaining Capacity	Additional Flow	Remaining Capacity	Additional Flow	Remaining Capacity	Additional Flow	Remaining Capacity
Sausalito / Marin City Community Service District	0.50	0.172	+0.483	0.400	+0.100	0.348	+0.152	0.292	+0.208
Sewerage Agency of Southern Marin	1.10	0.217	+0.883	0.266	+0.834	0.141	+0.959	0.236	+0.864
Sanitary District #5 (Tiburon)	0.21	0.001	+0.209	0.001	+0.209	0.001	+0.209	0.001	+0.209
Central Marin Sanitation Agency	2.00	0.347	+1.653	0.341	+1.659	0.248	+1.752	0.377	+1.623
Las Gallinas Valley Sanitary District	0.59	0.139	+0.451	0.520	+0.070	0.078	+0.512	0.205	+0.385
Novato Sanitary District [c]	1.35	0.007	+1.343	0.003	+1.347	0.005	+1.345	0.002	+1.348
Bolinas Community Public Utility District	n/a [d]	0.135	n/a	0.063	n/a	0.131	n/a	0.059	n/a

a Dry Weather Capacities in million gallons per day (MGD)
b Figures in MGD are rounded to three decimal places. The additional flows calculated are related to projected development in the unincorporated areas only. Cumulative flows (i.e., included those of the incorporated cities and towns) of future development are analyzed in ***Section 6.2 Cumulative Impacts***.
c Data represent combined capacities for both the Novato and the Ignacio treatment plants.
d Bolinas Community Public Utility District currently has a moratorium on additional wastewater hookups because of lack of treatment capacity and limitations on water.

Source: Nichols·Berman and the Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County, The Marin County Community Development Agency, Planning Division, January 2003, Updated numbers provided by Marin County Development Agency, November 2006

Fire Protection and Emergency Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 1* would increase the demand for County fire protection and emergency services. Such demand could require new or expanded facilities, the construction of which could result in adverse physical effects to the environment. Although the *1994 CWP* includes some policies and programs to reduce construction related impacts, the policies and programs would not be sufficient to reduce these to less-than-significant impacts.

Criminal Justice Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 1* would increase the demand for police and detention services provided by the Marin County Sheriff's Department. Such demand could require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. Although the *1994 CWP* includes some policies and programs to reduce construction related impacts, the policies and programs would not be sufficient to reduce these impacts to a less-than-significant level.

Public Education Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 1* could generate a demand for school services beyond the existing public school capacity and would result in the need for additional facilities. The construction of such facilities could cause adverse physical effects to the environment. Although the *1994 CWP* includes some policies and programs to reduce construction related impacts, the policies and programs would not be sufficient to reduce these impacts to a less-than-significant level.

Parks and Recreation Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 1* would require new or expanded Community and Neighborhood Parks in order to achieve recognized park planning standards. Construction of these facilities could result in adverse physical effects to the environment. Although the *1994 CWP* includes some policies and programs to reduce construction related impacts, the policies and programs would not be sufficient to reduce these impacts to a less-than-significant level.

CULTURAL RESOURCES

Under *Alternative 1*, continued development consistent with the *1994 CWP* could result in the disturbance of designated local, State, and national historical resources (see **Map 4-1** [Historic Resources] in the *Draft 2005 CWP Update*). In addition, potential but as of yet undesignated historical resources exist that could be affected by future development. Similar to the proposed project this would be a significant impact.

Continued development consistent with the *1994 CWP* could also result in the disturbance of subsurface archaeological and paleontological resources as well as human remains. This would be a significant impact.

Alternative 1 would not benefit from additional policies and programs proposed by the *Draft 2005 CWP Update* to protect historical and archeological resources. Existing procedures to protect these resources would continue.

VISUAL QUALITY

Alternative 1 would not include the establishment of the Housing Bank (Policy **CD-2.2**) or the transfer of housing units from environmentally sensitive sites, primarily from West Marin to the City-Centered Corridor (Policy **CD-1.3** and Program **CD-1.c**). Without this transfer of housing units, this alternative could have a greater adverse impact to scenic resources, community character, and views from highways, than would the *Draft 2005 CWP Update*.

The West Marin Planning Area contains numerous scenic resources described in the environmental setting of ***Section 4.12 Visual Resources***. Compared to existing conditions, increased development (i.e., of both housing units and nonresidential floor area) in the West Marin Planning Area could result significant impacts to scenic resources. Furthermore, **Exhibit 3.0-7** shows many of the sites that would have housing units relocated under the *Draft 2005 CWP Update* would be along State Route 1. Thus, this alternative could result in a significant visual impact along State Route 1.

Alternative 1 would result in the development of approximately 540 housing units on the St. Vincent's / Silveira properties. Although the number of housing units would be similar to Scenario 3 of the *Draft 2005 CWP Update*, the *1994 CWP* does not require the clustering of future development on five percent of the properties (as required by Policy **SV-2.4)**. Thus, development at the St. Vincent's / Silveira properties could be at a low density resulting in a sprawl like appearance and a significant visual impact from U.S. 101.

The *1994 CWP* contains no policies or programs that specifically address light and glare issues. Therefore, implementation of *Alternative 1* would result in greater visual impacts associated with outdoor lighting (e.g. sky glow, light trespass, and glare) than would occur under the *Draft 2005 CWP Update*. This would be a significant unavoidable project and cumulative impact.

5.2 ALTERNATIVE 2

Alternative 2 is based on the *Economic Vitality* scenario prepared as a part of the County's Countywide Plan visioning process. The goal of *Alternative 2* is to maintain a healthy and vibrant economy while maintaining the quality of life that attracts businesses and residents to Marin by:

- Containing housing costs and transportation issues created because of increased commuting distances;
- Encouraging well-suited businesses to locate and expand to Marin;
- Improving challenging permit processes;
- Making more business space available; and
- Recruiting and retaining workers.

Exhibit 5.0-1 above provides a comparison of *Alternative 2* with the *Draft 2005 CWP Update* and the other three alternatives for housing units that would occur on Housing Overlay Designation sites as well as the total number of housing units and nonresidential floor area. **Exhibits 5.0-2** and **5.0-3** above show the number of housing units and nonresidential floor area for *Alternative 2* compared to each of the other alternatives considered by planning area. As compared to the *Draft 2005 CWP Update*, this alternative would result in an additional 117 housing units (32,831 versus 32,714) as well as an additional 428,166 square feet of nonresidential floor area (4,869,496 square feet versus 4,441,330 square feet) in the unincorporated area. This alternative would result in an increase of 5,508 housing units and 1,664,947 square feet of nonresidential floor area in the unincorporated area over existing conditions.

Proposals to attain the goals of *Alternative 2* include:

- Rezone all commercial areas, excluding industrial areas, to mixed-use to allow maximum flexibility in use / reuse of the site; [4]
- Increase allowable floor areas ratios and building heights in central business districts and for targeted transit sites to result in effective floor area ratio (FAR) of 0.35 instead of 0.3;
- Focus new housing construction on higher-density, infill areas rather than single-family units to make the most efficient use of land and maximize the potential for affordability. Assume infill densities at one unit per 1,000 square feet of lot areas above and beyond any commercial FAR allowance. Single-family parcel allowable densities remain unchanged;
- Provide additional housing on publicly-owned land, not to include parks and open space lands;
- Add housing to retail centers when they are modernized or reconstructed at a rate of one unit per 1,000 square feet of building area;

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[4] This proposal would be the same as contained in the *Draft 2005 CWP Update*.

- Provide 520 housing units for agricultural workers;
- Support tax measures and seek outside funding for transportation and housing improvements;
- Improve public transportation to reduce single-occupant vehicle trips;
- Reduce parking requirements for non-residential projects to encourage the marketplace to determine appropriate amounts of parking;
- Utilize airspace above parking lots for additional housing; and
- Assume second units of one for every ten single-family lots.

Proposed development for the project sites below include:

St. Vincent's / Silveira

- 1,500 clustered moderate-to-high density housing units.
- 246,000 square feet of retail space, exclusive of the St. Vincent's School and existing on-site facilities

San Rafael Rock Quarry

- 228 housing units

Strawberry Shopping Center

- 169 housing units

Marin City Shopping Center

- 186 housing units

Marinwood Shopping Center

- 90 housing units

Analysis of Alternative 2

LAND USE, POPULATION, AND HOUSING

Under *Alternative 2*, conflicts with adopted public plans would be similar to or the same as those identified in the *Draft 2005 CWP Update*.[5] Therefore, this would be a less-than-significant impact

[5] As previously discussed, it is assumed that the goals, policies and programs of the *Draft 2005 CWP Update* would be incorporated into Alternatives 2, 3, and 4.

under CEQA, as described in *Impact 4.1-1 Applicable Land Use or Other Plans* there would not be any plan inconsistencies that would result in adverse physical effects to the environment.

Land use amendments similar to or the same as those described for the *Draft 2005 CWP Update* would occur with this alternative. With slightly more housing units than the *Draft 2005 CWP Update*, population growth in the unincorporated area for *Alternative 2* would exceed ABAG projections and result in similar or more impacts related to growth and concentration of population.

The same as the *Draft 2005 CWP Update*, *Alternative 2* would induce substantial growth within the unincorporated portion of Marin County resulting in a significant unavoidable project and cumulative impact.

The amount of agricultural processing, retail sales, and visitor-serving uses that would occur under this alternative would be similar to or the same as under the *Draft 2005 CWP Update* as existing provisions of the Development Code would continue to allow these uses on agricultural lands. Such uses would result in land use conflicts with existing agricultural production and, as discussed in various sections of this EIR, would generate additional traffic and noise as well as remove agricultural land from production. This would represent a significant project impact.

In the West Marin Planning Area, land use conflicts between agricultural and urban uses would be similar under this alternative as with the *Draft 2005 CWP Update*. This alternative, however, would allow approximately 1,500 housing units and 246,000 square feet of nonresidential floor area at the St. Vincent's / Silveira properties. Although detailed plans for proposed uses on the St. Vincent's / Silveira properties have not been defined under this alternative, the intensity of proposed development would likely result in land use conflicts between agricultural and urban uses. Even with implementation of the County's Right to Farm Ordinance, this would be a significant impact.

Land use conflicts associated with development on Housing Overlay Designation (HOD) sites proposed by the *Draft 2005 CWP Update* would not occur under this alternative as no Housing Bank would be established.

TRANSPORTATION

As discussed in ***Section 4.2 Transportation***, traffic analysis was prepared using Marin County's Travel Model for the *Draft 2005 CWP Update* and each of the alternatives. This alternatives analysis uses the same thresholds of significance as those in ***Section 4.2 Transportation***.

Exhibit 5.0-4 shows traffic volumes, volume-to-capacity (V/C) ratios and levels of service (LOS) for the AM peak hour traffic volumes under existing conditions, the *Draft 2005 CWP Update*, and each of the alternatives. **Exhibit 5.0-5** shows the same information for the PM peak hour. **Exhibit 5.0-6** shows the existing level of service for the eight intersections studied for existing conditions, the *Draft 2005 CWP Update*, and each of the alternatives. **Exhibit 5.0-7** shows the projected VMT for *Alternative 2*.

Alternative 2 would result in two percent more new housing units and 35 percent more new nonresidential floor area than would the *Draft 2005 CWP Update*. This could lead to increased VMT and congestion. However, this alternative could also reduce VMT if it provided jobs closer to residents within the City-Centered Corridor (see discussion under *Alternative 1*). As shown in **Exhibit 5.0-7**, *Alternative 2* would result in VMT greater than all of the *Draft 2005 CWP Update* scenarios.

Several policies of *Alternative 2* could be beneficial to transportation in Marin County such as rezoning all commercial areas for mixed-use; increasing allowable floor area ratios in central business districts and targeted transit sites; focusing new housing construction on higher-density, infill areas; and adding housing to existing retail centers. Such policies would increase the share of vehicle trips made by walking, biking, and transit and therefore could reduce traffic congestion on roadways and at intersections.

Screenlines

As shown in **Exhibits 5.0-4** and **5.0-5** under *Alternative 2* significant transportation project and cumulative impacts would occur at the following screenlines

#1 Highway 101 at Golden Gate Bridge

In the AM peak hour – northbound (cumulative) and southbound (cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (cumulative)

#3 State Route 1 – U.S. 101 to Almonte Boulevard

In the AM peak hour – southbound (project and cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (project and cumulative)

#4 State Route 131 – U.S. 101 and Strawberry Drive

In the PM peak hour – eastbound (project and cumulative)

#6 Sir Francis Drake Boulevard – from Bon Air Road to Wolfe Grade

In the PM peak hour – westbound (cumulative)

#7 Sir Francis Drake Boulevard – U.S. 101 to Elisso Drive

In the AM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

In the PM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

#8 East Sir Francis Drake Boulevard – Larkspur Ferry to San Quentin

In the PM peak hour – eastbound (cumulative)

#9 I-580 at Richmond Bridge

In the PM peak hour – westbound (cumulative)

#11 U.S. 101 Cal Park Hill – from I-580 to Sir Francis Drake Boulevard

In the AM peak hour – southbound (cumulative)

#12 U.S. 101 north of I-580 – from 2nd Street to I-580

In the AM peak hour – southbound (cumulative)

In the PM peak hour – northbound (cumulative)

#15 Lucas Valley Road – between Las Gallinas Avenue and Los Gamos

In the AM peak hour – eastbound (project and cumulative)

In the PM peak hour – eastbound (cumulative) and westbound (cumulative)

#17 South Novato Boulevard – U.S. 101 to Sunset Parkway

In the PM peak hour – northbound (cumulative) and southbound (cumulative)

#19 at Sonoma/Marin County Line

In the AM peak hour –southbound (project and cumulative)

In the PM peak hour –northbound (project and cumulative)

As compared to the *Draft 2005 CWP Update*, a screenline impact analysis shows that *Alternative 2* would not result in the significant cumulative impact on East Sir Francis Drake Boulevard from Larkspur Ferry to San Quentin (Screenline #8) that would occur westbound during the PM peak hour under *Draft 2005 CWP Update* Scenario 3.

Another way of comparing *Alternative 2* to the *Draft 2005 CWP Update* is to examine what percentage of screenline / directions (e.g., Screenline #2 / southbound or Screenline #2 / northbound) would have less or more congestion (as measured by LOS) under the *Draft 2005 CWP Update* scenarios compared to *Alternative 2*. Looking at cumulative impacts during the AM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 13 percent of screenlines and make congestion worse at 31 percent of screenlines compared to the *Alternative 2*. Looking only at project impacts during the AM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at ten percent of screenlines and make congestion worse at 38 percent of screenlines compared to *Alternative 2*. Looking at cumulative impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 29 percent of screenlines and make congestion worse at 36 percent of screenlines compared to *Alternative 2*. Looking only at project impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at five percent of screenlines and make congestion worse at 40 percent of screenlines compared to *Alternative 2*. In general, the *Draft 2005 CWP Update* scenarios would make traffic congestion worse than *Alternative 2*.

Intersections

As shown in **Exhibit 5.0-6**, under *Alternative 2* significant cumulative transportation impacts would occur at the following intersections:

- State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road – in the AM and PM peak hour
- Second Street and Grand Avenue – in the AM and PM peak hour
- Third Street and Grand Avenue – in the AM and PM peak hour
- Miller Creek Road and Las Gallinas Avenue – in the AM peak hour

- Miller Creek Road and U.S. 101 southbound off-ramp – in the AM and PM peak hour
- Miller Creek Road and U.S. 101 northbound off-ramp – in the AM and PM peak hour

Under *Alternative 2*, the intersection of 2nd Street and Grand Avenue (Intersection D) would have LOS F during the AM peak hour. This would be a significant impact. In comparison, there would be no significant impact to this intersection during the AM peak hour under any of the *Draft 2005 CWP Update* scenarios.

AIR QUALITY

As shown in **Exhibit 5.0-7**, implementation of *Alternative 2* would cause VMT in Marin County to increase at a rate greater than population. Daily VMT would increase by approximately 26.1 percent between 2005 and 2030, while population within Marin County would increase by approximately 13.1 percent. Therefore, *Alternative 2* would be inconsistent with the Clean Air Plan.

With the exception of a *Draft 2005 CWP Update* policy that would directly address parking strategies to reduce vehicle travel (i.e., TCM #15), *Alternative 2* would have goals, policies, and programs similar to or the same as the *Draft 2005 CWP Update.* As such, *Alternative 2* would be supportive of the Clean Air Plan Transportation Control Measures.

Similar to the *Draft 2005 CWP Update*, this alternative could result in the exposure of new sensitive receptors to unhealthy levels of diesel particulate matter. The same air quality mitigation measures required for the *Draft 2005 CWP Update* would be required for *Alternative 2*.

Land uses and development consistent with the *Alternative 2* would result in an increase in greenhouse gas emissions over existing levels. This would be a significant unavoidable project and cumulative impact.

NOISE

Similar to the *Draft 2005 CWP Update*, this alternative would not cause a substantial increase in vehicular traffic noise to sensitive receptors throughout the county. Although this alternative would not include a Housing Bank or Housing Overlay Designation, it would focus new housing construction on higher density, infill areas and would add housing to existing shopping centers.

Under this alternative, additional noise resulting from proposed high-density residential development along transportation corridors (i.e., infill projects) or in existing shopping centers would be similar to that of the *Draft 2005 CWP Update*. This would be a less-than-significant impact.

Similar to the *Draft 2005 CWP Update*, future land use planning for the St. Vincent's / Silveira properties would need to consider traffic noise from U.S. 101. The 1,500 housing units and 246,000 square feet of retail space that would occur at the St. Vincent's / Silveira properties under this alternative would make traffic noise a greater constraint to development than under the *Draft 2005 CWP Update*.

Construction noise under *Alternative 2* would be a significant unavoidable project and cumulative impact as it would under the *Draft 2005 CWP Update*.

HYDROLOGY, WATER QUALITY AND FLOOD HAZARDS

Implementation of *Alternative 2* would result in an additional 117 housing units and 428,166 square feet of nonresidential floor area than would the *Draft 2005 CWP Update*. The total increase above existing conditions under this alternative would be 5,508 housing units and 1,664,947 square feet of nonresidential floor area.

The amount of additional impervious surface that would occur from housing units would not be substantially greater under this alternative than it would under the *Draft 2005 CWP Update*. However, the increase in impervious surfaces (e.g., roofs, parking lot area and roadways) from development of nonresidential floor area would be substantially greater than under the *Draft 2005 CWP Update*. Therefore, impacts to water quality from pollutants contained in runoff from increased impervious surface areas and from increased automobile trips to commercial areas (e.g., heavy metals and petrochemicals), would be greater under this alternative than under the proposed project. Furthermore, additional impervious surfaces associated with *Alternative 2* could increase peak flow rates.

Substantially more development would occur at the St. Vincent's / Silveira properties under *Alternative 2*. It would be necessary to increase the capacity of or construct new sewer lines to the properties to handle such an increase in wastewater. Septic systems would not be an option given the density of development proposed under this alternative. The increased volume of automobile traffic would degrade water quality near the properties as would pollutants commonly associated with suburban development.

Similarly, sewer lines would need to be extended to the San Rafael Rock Quarry under this alternative to accommodate the additional demand for wastewater. Water quality impacts would occur for the same reasons cited for the St. Vincent's / Silveira properties.

Therefore, *Alternative 2* would have significant project and cumulative impacts to water quality.

BIOLOGICAL RESOURCES

Alternative 2 would result in potentially significant impacts to sensitive biological and wetland resources due to the intensity and extent of possible future development. This alternative would include 1,500 housing units and 246,000 square feet of nonresidential floor area at the St. Vincent's / Silveira properties, in comparison to between 221 and 501 housing units and zero nonresidential floor area that would occur under Scenarios 1, 2, and 3 of the *Draft 2005 CWP Update*. Although detailed plans for proposed future uses on the St. Vincent's / Silveira properties have not been defined under this alternative, the intensity of proposed development would undoubtedly impact sensitive resources such as the scattered seasonal wetlands, the Miller Creek Stream Conservation Area, areas of native oak woodlands, and existing wildlife habitat and movement opportunities. Relative to the *Draft 2005 CWP Update*, the increased number of housing units could also affect the remaining sensitive natural community types and occurrences of special-status species at the San Rafael Rock Quarry site, the riparian corridors and marshlands near the Marinwood and Marin City community areas, and sensitive resources in other planning areas.

The severity of these impacts due to the increased amount of development that would occur under this alternative would depend on details of the individual development plans, the degree to which sensitive resources are avoided, and the specifics of any required mitigation. Further site assessment, resource avoidance, and appropriate environmental review and mitigation would be required as called for under the relevant policies and programs contained in the *Draft 2005 CWP Update*.

However, given the amount of additional development proposed under *Alternative 2* relative to that of the *Draft 2005 CWP Update*, particularly on the St. Vincent's / Silveira properties, potentially significant unavoidable project and cumulative impacts would be expected on wetlands, sensitive natural communities, and possibly special-status species. In addition, potential project and cumulative impacts to wildlife habitat and movement opportunities may be exacerbated under this alternative depending on the level of development proposed, and would remain significant and unavoidable.

GEOLOGY, SOILS AND SEISMICITY

Similar to the *Draft 2005 CWP Update*, *Alternative 2* would result in significant unavoidable project and cumulative impacts related to geologic hazards. Impacts would likely be greater at St. Vincent's / Silveira, San Rafael Rock Quarry, and West Marin relative to the proposed project. While this alternative would have a similar number of housing units, it would result in a greater amount of nonresidential floor area, which would expose more nonresidential structures to these impacts. In addition, implementation of *Alternative 2* would result in the greatest amount of development at the St. Vincent's / Silveira than any of the alternatives. Substantial grading could be required to accommodate such development in order to mitigate geologic hazards at the site including the presence of young alluvium, Bay Muds, colluvium, and landslides underlying portions of the site. These surficial deposits are associated with seismic-related ground failure, subsidence and settlement, expansive soils, high seismic shaking amplification, and landsliding.

This alternative proposes to construct higher-density housing rather than single-family units on infill areas in order to concentrate development in the City-Centered Corridor and to increase the potential for affordable units. Such concentration would reduce the exposure of new development to certain geologic hazards. In addition, some previously developed infill areas may already have mitigated existing on-site geologic hazards present during the prior development in the vicinity of these sites.

AGRICULTURE

Similar to the *Draft 2005 CWP Update*, land use amendments consistent with *Alternative 2* would result in a significant unavoidable project and cumulative impact from the conversion of both County and State designated farmlands to non-agricultural uses. These changes primarily would reflect existing State and federal ownership of these lands as part of their respective park and recreational areas as well as the purchase of lands to protect existing habitat. *Alternative 2* would convert the same amount of State designated agricultural land at the St. Vincent's / Silveira properties as would the *Draft 2005 CWP Update* because development would be limited to 54 additional acres of the property (Policy **SV-2.4**).

In addition, some agricultural land would be removed from production because existing provisions of the Marin County Development Code would allow development of agricultural processing, retail sales, and visitor-serving uses on agricultural land. However, quantifying the amount of conversion that could occur would be speculative. Such conversion would represent a significant impact.

Similar to the *Draft 2005 CWP Update*, conflicts with Williamson Act contracts would be a less-than-significant impact. Under this alternative, changes to land use designation of parcels under Williamson Act contracts to an Open Space (e.g., OS) designation would occur to recognize acquisition of these lands by the National Park Service as part of the Point Reyes National Seashore. However, future use of these lands as open space would be compatible with the provisions of the Williamson Act.

WATER SUPPLY AND DEMAND

Exhibits 5.0-11 and **5.0-12** present comparisons of *Alternative 2* with the *Draft 2005 CWP Update* for each water service area and the unserved areas in unincorporated Marin County. These two exhibits indicate that *Alternative 2* differs from the *Draft 2005 CWP Update* only in the MMWD service area when comparing the number of housing units. *Alternative 2* would have 116 more housing units in MMWD. In addition, *Alternative 2* would have 428,166 square feet more of nonresidential floor area at buildout than would the *Draft 2005 CWP Update*. The additional nonresidential floor area would be in NMWD-Novato, NMWD-West Marin, MMWD, BCPUD, and SBCWD. These values are shown in columns four and seven from the left in **Exhibit 5.0-11**.

Exhibit 5.0-12 presents water demands for *Alternative 2*. Water demands would be 120 AFY greater than those of the *Draft 2005 CWP Update.* Of this additional demand, 106 AFY would occur in MMWD. To compare the water demand of *Alternative 2* to existing conditions, the resulting water demand difference of 120 AFY can be added to the *Draft 2005 CWP Update* demand increase (1,871 AFY) to get the total demand increase above existing conditions (1,871 + 120 = 1,991 AFY). Thus, at buildout, water demands under *Alternative 2* would be 1,991 AFY greater than existing water demands for the unincorporated area.

Impacts associated with *Alternative 2* would be similar to those of the *Draft 2005 CWP Update*. Supply deficits would occur in NMWD-West Marin, MMWD, BCPUD, and SBCWD. The same mitigation measures for the *Draft 2005 CWP Update* would be required for *Alternative 2*. Impacts such as those described in *Impacts 4.9-1 Adequacy of Water Supply During a Normal Year*, *4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years*, *4.9-4 Impact to Groundwater Supply*, *4.9-5 Interference with or Degradation of Water Supply*, and *4.9-6 Secondary Impacts* would all be significant unavoidable project and cumulative impacts.

Given the increase in water demands (120 AFY), mainly from proposed development in the MMWD service area (106 AFY); overall impacts would be greater than those of the *Draft 2005 CWP Update*. This would be especially so in the MMWD service area for impacts related to adequacy of water supply during a normal year, adequacy of water supply during a drought and multi-drought years, the need for new or expanded water supply facilities, interference with or degradation of water Supply, and secondary impacts. Since *Alternative 2* would have similar water demands in West Marin and the unserved areas, the groundwater impacts would be the same as that of the *Draft 2005 CWP Update.* This would be a significant unavoidable project impact.

Exhibit 5.0-11
Comparison of Draft 2005 CWP Update to Alternative 2 at Buildout - Unincorporated Area

Water Service Area	Housing Units [a]			Nonresidential Floor Area (Square Feet)		
	Draft 2005 CWP Update	Alternative 2	Difference	Draft 2005 CWP Update	Alternative 2	Difference
NMWD-Novato	3,116	3,116	0	507,189	511,729	+4,540
NMWD-West Marin	1,262	1,262	0	269,698	326,204	+56,506
MMWD	24,297	24,413	+116	2,309,424	2,666,906	+357,482
BCPUD	797	797	0	38,173	41,727	+3,554
SBCWD	885	885	0	57,674	63,758	+6,084
IPUD	647	647	0	90,953	90,953	0
MBCSD	153	153	0	5,779	5,779	0
CSWS	276	276	0	2,486	2,486	0
EMWS	173	173	0	0	0	0
Unserved Areas	1,109	1,109	0	1,159,954	1,159,954	0
Total	***32,715***	***32,831***	***+116***	***4,441,330***	***4,869,496***	***+428,166***

a Includes single and multifamily units

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

Exhibit 5.0-12
Water Demand Difference Between Draft 2005 CWP Update and Alternative 2 at Buildout - Unincorporated Area

Water Service Area	Housing Difference [a]		Nonresidential Floor Area Difference		Demand Difference (Alternative 2 minus Draft 2005 CWP Update) (AFY)
	Number of Units	Demand (AFY) [b]	Square Feet	Demand (AFY) [c]	
NMWD-Novato	0	0	+4,540	+1	+1
NMWD-West Marin	0	0	+56,506	+11	+11
MMWD	+116	+35	+357,482	+71	+106
BCPUD	0	0	+3,554	+1	+1
SBCWD	0	0	+6,084	+1	+1
IPUD	0	0	0	0	0
MBCSD	0	0	0	0	0
CSWS	0	0	0	0	0
EMWS	0	0	0	0	0
Unserved Areas	0	0	0	0	0
Total	***+116***	***+35***	***+428,166***	***+86***	***+120***

a Includes single and multifamily units
b Used 2030 estimated demand per unit in Water District Current and Projected Water Demand tables
c Used an estimated demand of 0.20 AF per 1,000 square feet based on 2005 non-residential use per square foot

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

PUBLIC SERVICES

Hazardous Waste Management

Alternative 2 would result in similar impacts related to hazardous materials as the *Draft 2005 CWP Update*. However, the greater amount of nonresidential floor area could result in greater usage of hazardous materials at these locations. The lack of a Housing Overlay Designation and the amount of development at the St. Vincent's / Silveira properties could result in more hazardous materials for both the residential and commercial uses being transported, stored or used within West Marin and near Baylands adjacent to the St. Vincent's / Silveira properties.

Wastewater Management Services

Exhibit 5.0-10 lists the seven main agencies that provide wastewater treatment within Marin County. **Exhibit 5.0-10** illustrates the ability of these district's wastewater treatment plants to accommodate projected wastewater flows generated by land uses and development in the unincorporated area consistent with each alternative. Similar to the *Draft 2005 CWP Update*, except for the Bolinas Community Public Utility District (BCPUD), the treatment plants of the remaining six agencies would have sufficient capacity to accommodate the additional demand for treatment generated by *Alternative 2*. Similar to the *Draft 2005 CWP Update*, the BCPUD would be unable to treat additional wastewater flows generated by new land uses and development consistent with *Alternative 2*.

Solid Waste Management

Similar to the proposed project, *Alternative 2* would not substantially increase the amount of solid waste generated in Marin County. Such an increase would not exceed the County's landfill capacity or conflict with the County's adopted Integrated Waste Management Plan. Similar to the *Draft 2005 CWP Update*, this would be a less-than-significant impact.

Energy

Alternative 2 would result in increased energy consumption and require additional energy resources in order to meet this demand. However, similar to the *Draft 2005 CWP Update*, *Alternative 2* would have a less-than-significant impact with respect to energy consumption and land use patterns. This alternative would include focusing new housing construction on higher-density, infill areas rather than single-family units and to create housing in retail centers when they are modernized or reconstructed at a rate of one unit per 1,000 square feet of building area. Such a land use pattern should reduce transportation energy demands by allowing residential development in proximity to shopping and employment centers. Other policies and programs related to energy conservation, such as energy efficiency in new and retrofit construction would also be implemented.

Fire Protection and Emergency Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 2* would increase the demand for County fire protection and emergency services. Such demand could require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Criminal Justice Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 2* would increase the demand for police and detention services provided by the Marin County Sheriff's Department. Such demand could require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Public Education Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 2* would generate a demand for school services beyond the existing public school capacity and would result in the need for additional facilities. Construction of such facilities could result in adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Parks and Recreation Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 2* would require new or expanded Community and Neighborhood Parks in order to achieve recognized park planning standards. Construction of these facilities could result in adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

CULTURAL RESOURCES

Land uses and development consistent with *Alternative 2* could result in the disturbance of designated local, State, and national historical resources (see **Map 4-1** [Historic Resources] in the *Draft 2005 CWP Update*). In addition, potential but as of yet undesignated historical resources exist that could be affected by future development. Similar to the proposed project this would be a significant impact. Mitigation measures identified in this EIR would reduce impacts to historical resources to a less-than-significant level.

Although this alternative would result in slightly more development (i.e., housing units and nonresidential floor area) than would the *Draft 2005 CWP Update*, it is unlikely to have a substantially greater impact to subsurface archeological and paleontological resources as well as human remains than would occur under the *Draft 2005 CWP Update*. The one exception to this could be development of the St. Vincent's / Silveira properties, which have been identified as an area of high archaeological sensitivity. Under *Alternative 2*, up to 1,500 housing units and 246,000 square feet of nonresidential development could be developed on the properties. Such development would increase the potential for impacts to archaeological resources. The *Draft 2005 CWP Update* policies and programs to protect archaeological resources would reduce this to a less-than-significant impact.

VISUAL QUALITY

Alternative 2 would not include the establishment of the Housing Bank (Policy **CD-2.2**) or the transfer of housing units from environmentally sensitive sites, primarily from West Marin to the City-Centered Corridor (Policy **CD-1.3** and Program **CD-1.c**). Without this transfer of housing units, this alternative could have a greater adverse impact to scenic resources, community character, and views from highways, than would the *Draft 2005 CWP Update*.

The West Marin Planning Area contains numerous scenic resources described in the environmental setting of ***Section 4.12 Visual Resources***. Compared to existing conditions, increased development (i.e., of both housing units and nonresidential floor area) in the West Marin Planning Area could result significant impacts to scenic resources. Furthermore, **Exhibit 3.0-7** shows many of the sites that would have housing units relocated under the *Draft 2005 CWP Update* would be along State Route 1. Thus, this alternative could result in a significant visual impact along State Route 1.

This alternative would result in the development of up to 1,500 housing units and 246,000 square feet of nonresidential use on the St. Vincent's / Silveira properties. Policy **SV-2.4** would limit development on the St. Vincent's / Silveira properties to the existing amount of acres of non-agricultural development plus five percent of the total area of each property or a total of 54 additional acres of development. Although detailed plans for proposed future uses on the St. Vincent's / Silveira properties have not been defined under this alternative, this alternative would either result in substantially greater density in the development area or require a larger development footprint than would the *Draft 2005 CWP Update*. In either situation, there could be significant visual impacts from U.S. 101 and the loss of the community separator between Novato and San Rafael.

Similar to the *Draft 2005 CWP Update*, development consistent with *Alternative 2* would result in significant visual impacts associated with outdoor lighting (e.g., sky glow, light trespass, and glare). This would be a significant unavoidable project and cumulative impact.

5.3 ALTERNATIVE 3

Alternative 3 is based on the *Environmental Preservation* scenario prepared as a part of the County's Countywide Plan visioning process. The goal of *Alternative 3* is to maximize protection of environmentally sensitive lands. Using concepts from Community Marin, a consortium of interest groups focused on environmental issues, this alternative creates a Bayfront Protection Corridor. In addition, the alternative proposes to protect environmentally sensitive lands by the following:

- Remove development potential, through public and / or private acquisition, throughout the county in areas with environmental significance including wetlands, associated upland areas, sub-tidal areas, undeveloped 100-year flood plains and other areas subject to inundation, steep slopes, riparian corridors, and other geologically sensitive areas;

- Reduce commercial development potential;

- Retain existing policy related to ridgelines, including restrictions on ridgeline development, reduced densities on hillside areas, and clustering of development that is permitted to lower portions of the site;

- Base planning decisions and land use designations on sound ecological principles and direct development away from sensitive habitats;

- Prohibit expansion of existing development and uses into sensitive habitats;

- Require new development to use green-building techniques and concentrate that development in already-developed areas proximate to transit service;

- Cap new home sizes to minimize resource consumption; and

- Target parking lots for infill development instead of new development in "greenfields" such as undeveloped lands without available urban services or on the periphery of urbanized areas;

Exhibit 5.0-1 above provides a comparison of *Alternative 3* with the *Draft 2005 CWP Update* and the other three alternatives. **Exhibits 5.0-2** and **5.0-3** above show the number of housing units and nonresidential floor area for *Alternative 3* compared to each of the other alternatives considered by planning area. This alternative would result in 1,028 fewer housing units than the *Draft 2005 CWP Update.* The 31,686 housing units under this alternative would be the least of any of the alternatives. Similarly, *Alternative 3* would result in 494,191 square feet less of nonresidential floor area (i.e., 3,947,139 square feet versus 4,441,330 square feet) compared to the *Draft 2005 CWP Update.* This alternative would result in an increase of 4,363 housing units and 742,590 square feet of nonresidential floor area in the unincorporated area over existing conditions.

Proposals specific to the Coastal Corridor include:

- Continue to direct development into existing villages rather than onto surrounding undeveloped lands;

- Encourage environmentally sound agricultural operations by offering allowances for agricultural-worker housing;

- Protect creek habitat from developments and agricultural runoff with streamside and wetland policies;
- Preclude inappropriate hillside development along Bolinas Ridge with new guidelines; and
- Eliminate new development potential along the shore of Tomales Bay;

Specific policies recommended in *Alternative 3* include:

- Reduce additional development potential to existing levels for parcels meeting any of the following criteria:
  - Within a ridge and upland greenbelt;
  - Within a 100-year floodplain;
  - Containing diked baylands and associated uplands;
  - Below sea level;
  - Containing wetland habitat; and
  - Within 100 feet of a perennial, intermittent, or ephemeral stream, or man-made channel.
- Reduce by half the overall additional development for the Inland Rural and Coastal Corridor;
- Assume second units are to be on one of every ten lots with an existing single-family home;
- Continue existing policies in the Coastal Corridor and apply to parcels within the Inland Rural Corridor; and
- For nonresidential parcels not affected by any of the above criteria, remove half the potential additional development and convert to residential at the rate of one unit per every 1,000 square feet of nonresidential development removed.

Proposed development potential for the project sites below includes:

St. Vincent's / Silveira

- 65 housing units

Gnoss Field Area

- One unit per parcel

Tomales Bay Shoreline

- No development inboard of Highway 1 and Sir Frances Drake Boulevard

Novato Narrows

- No additional development above what is currently permitted (agriculture).

Tiburon Peninsula

- Existing development levels but not less than one unit per parcel.

Strawberry Shopping Center

- 130 housing units

Marin City Shopping Center

- 170 housing units

Marinwood Shopping Center

- 5 housing units

Analysis of Alternative 3

LAND USE, POPULATION, AND HOUSING

Under *Alternative 3*, conflicts with adopted public plans would be similar to or the same as those identified in the *Draft 2005 CWP Update*.[6] Therefore, this would be a less-than-significant impact under CEQA, as described in *Impact 4.1-1 Applicable Land Use or Other Plans* there would not be any plan inconsistencies that would result in adverse physical effects to the environment. *Alternative 3* would result in similar growth and concentration of population impacts as the *Draft 2005 CWP Update*. It is assumed that similar amendments to existing land use designations described for the *Draft 2005 CWP Update* would occur with this alternative. With 1,028 less housing units than the *Draft 2005 CWP Update*, population growth in the unincorporated area for *Alternative 3* would be less than ABAG projections. However, the same as the *Draft 2005 CWP Update*, *Alternative 3* would induce substantial growth within the unincorporated portion of Marin County resulting in a significant unavoidable project and cumulative impact.

Land use conflicts between agricultural and urban uses would be similar with this alternative as with the *Draft 2005 CWP Update*. With similar policies and programs as the *Draft 2005 CWP Update* and the continued application of the Right to Farm Ordinance this would be a less-than-significant impact.

The amount of agricultural processing, retail sales, and visitor-serving uses that would occur under this alternative would be similar to or the same as under the *Draft 2005 CWP Update* as existing provisions of the Development Code would continue to allow these uses on agricultural lands. Such uses would result in land use conflicts with existing agricultural production and, as discussed in various sections of this EIR, would generate additional traffic and noise as well as remove agricultural land from production. This would represent a significant impact.

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6 As previously discussed, it is assumed that the goals, policies and programs of the *Draft 2005 CWP Update* would be incorporated into Alternatives 2, 3, and 4.

Land use conflicts associated with development on Housing Overlay Designation (HOD) sites proposed by the *Draft 2005 CWP Update* would not occur under this alternative as no Housing Bank would be established. Therefore, this alternative would result in greater amount of development in the West Marin Planning Area as housing units would not be transferred from environmentally sensitive parcels to the City-Centered Corridor.

TRANSPORTATION

As discussed in ***Section 4.2 Transportation***, traffic analysis was prepared using Marin County's Travel Model for the *Draft 2005 CWP Update* and each of the alternatives. This alternatives analysis uses the same thresholds of significance as those in ***Section 4.2 Transportation***.

Exhibit 5.0-4 shows traffic volumes, volume-to-capacity (V/C) ratios and levels of service (LOS) for the AM peak hour for existing conditions, the *Draft 2005 CWP Update*, and each of the alternatives. **Exhibit 5.0-5** shows the same information for the PM peak hour. **Exhibit 5.0-6** describes the existing level of service for the eight intersections studied for existing conditions, the *Draft 2005 CWP Update* and each of the alternatives. **Exhibit 5.0-7** shows that *Alternative 3* would generate the least VMT of all the alternatives. Traffic impacts to roadways and intersections would be minimized as this alternative would result in the least amount of additional housing units and nonresidential floor area.

Alternative 3 would locate new infill development on existing parking lots instead of undeveloped / vacant land. This would reduce additional development in the Inland Rural and Coastal Corridors by half. In addition, it would remove half of the development potential for nonresidential floor area on nonresidential parcels and replace it with housing units. Increased densities and mixes of land uses that would result from policies under *Alternative 3* would increase the relative amount of trips made by walking, biking, and transit. Accordingly, this alternative could reduce traffic congestion on roadways and at intersections.

Screenlines

As shown in **Exhibits 5.0-4** and **5.0-5**, under *Alternative 3* significant transportation project and cumulative impacts would occur at the following screenlines

#1 Highway 101 at Golden Gate Bridge

In the AM peak hour – northbound (cumulative) and southbound (cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (cumulative)

#3 State Route 1 – U.S. 101 to Almonte Boulevard

In the AM peak hour – southbound (project and cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (project and cumulative)

#4 State Route 131 – U.S. 101 and Strawberry Drive

In the PM peak hour – eastbound (project and cumulative)

#7 Sir Francis Drake Boulevard – U.S. 101 to Elisso Drive

In the AM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

In the PM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

#9 I-580 at Richmond Bridge

In the PM peak hour – westbound (cumulative)

#11 U.S. 101 Cal Park Hill – from I-580 to Sir Francis Drake Boulevard

In the AM peak hour – southbound (cumulative)

#12 U.S. 101 north of I-580 – from 2nd Street to I-580

In the AM peak hour – southbound (cumulative)

In the PM peak hour – northbound (cumulative)

#15 Lucas Valley Road – between Las Gallinas Avenue and Los Gamos

In the AM peak hour – eastbound (project and cumulative)

In the PM peak hour – eastbound (cumulative) and westbound (cumulative)

#17 South Novato Boulevard – U.S. 101 to Sunset Parkway

In the PM peak hour – northbound (cumulative) and southbound (cumulative)

#19 at Sonoma/Marin County Line

In the AM peak hour – southbound (project and cumulative)

In the PM peak hour – northbound (project and cumulative)

As compared to the *Draft 2005 CWP Update*, a screenline impact analysis shows that *Alternative 3* would:

- Not result in the significant cumulative impact experienced on Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6) that would occur westbound during the PM peak hour under all *Draft 2005 CWP Update* scenarios.

- Not result in the significant cumulative impact experienced on East Sir Francis Drake Boulevard from Larkspur Ferry to San Quentin (Screenline #8) that would occur eastbound during the PM peak hour under *Draft 2005 CWP Update* Scenario 1 and in both directions during the PM peak hour under Scenario 3.

Another way of comparing *Alternative 3* to the *Draft 2005 CWP Update* is to examine what percentage of screenline / directions (e.g., Screenline #2 / southbound or Screenline #2 / northbound) would have less or more congestion (as measured by LOS) under the *Draft 2005 CWP Update* scenarios compared to *Alternative 3*. Looking at cumulative impacts during the AM peak, the *Draft*

2005 CWP Update scenarios, on average, would reduce congestion at 22 percent of screenlines and make congestion worse at 25 percent of screenlines compared to the *Alternative 3*. Looking only at project impacts during the AM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 19 percent of screenlines and make congestion worse at 26 percent of screenlines compared to *Alternative 3*. Looking at cumulative impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 33 percent of screenlines and make congestion worse at 32 percent of screenlines compared to *Alternative 3*. Looking only at project impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 17 percent of screenlines and make congestion worse at 23 percent of screenlines compared to *Alternative 3*. In general, the *Draft 2005 CWP Update* scenarios would cause traffic congestion to be similar to *Alternative 3* conditions.

Intersections

As shown in **Exhibit 5.0-6**, under *Alternative 3* significant cumulative transportation impacts would occur at the following intersections:

- State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road – in the AM and PM peak hour
- Second Street and Grand Avenue – in the AM and PM peak hour
- Third Street and Grand Avenue – in the AM and PM peak hour
- Miller Creek Road and Las Gallinas Avenue – in the AM peak hour
- Miller Creek Road and U.S. 101 southbound off-ramp – in the AM and PM peak hour
- Miller Creek Road and U.S. 101 northbound off-ramp – in the PM peak hour

Under *Alternative 3,* the intersection of Miller Creek Road and U.S. 101 Northbound Off-ramp (Intersection H) would not be significantly impacted during the AM peak hour. In comparison, the *Draft 2005 CWP Update* Scenarios 1, 2, and 3 would result in a significant impact to this intersection during the AM peak hour.

AIR QUALITY

As shown in **Exhibit 5.0-7**, implementation of *Alternative 3* would cause VMT in Marin County to increase at a rate greater than population. Daily VMT would increase by approximately 25.4 percent between 2005 and 2030, while population within Marin County would increase by approximately 12.1 percent. Therefore, *Alternative 3* would be inconsistent with the Clean Air Plan.

With the exception of a *Draft 2005 CWP Update* policy that would directly address parking strategies to reduce vehicle travel (i.e., TCM #15), *Alternative 3* would have goals, policies, and programs similar to or the same as the *Draft 2005 CWP Update.* As such, *Alternative 3* would be supportive of the Clean Air Plan Transportation Control Measures.

Similar to the *Draft 2005 CWP Update*, this alternative could result in the exposure of new sensitive receptors to unhealthy levels of diesel particulate matter resulting in a significant impact. The same air

quality mitigation measures required for the *Draft 2005 CWP Update* would be required for *Alternative 3*.

Land uses and development consistent with the *Alternative 3* would result in an increase in greenhouse gas emissions over existing levels. This would be a significant unavoidable project and cumulative impact.

NOISE

Noise impacts of *Alternative 3* would be similar to those of the *Draft 2005 CWP Update*. Although land uses and development consistent with this alternative would increase traffic volumes, there would not be a substantial increase in vehicular traffic noise.

Although this alternative would reduce development on environmentally sensitive parcels, it would not establish the Housing Overlay Designation. Therefore, this alternative would not result in the transfer of housing units from quieter areas (e.g., West Marin) to noisier areas (e.g., City-Centered Corridor). This in turn would reduce potential noise and land use conflicts associated with concentrating housing units in noisier areas as well as reduce the potential effects of noise from new housing construction and associated traffic to existing residents and other sensitive resources located in various environmentally-sensitive areas.

Similar to the *Draft 2005 CWP Update,* with the exception of construction noise, this alternative would not result in any significant environmental noise impact that could not be mitigated through project level environmental review. Construction noise would be a significant unavoidable project and cumulative impact.

HYDROLOGY, WATER QUALITY AND FLOOD HAZARDS

Implementation of *Alternative 3* would result in substantially less housing units and nonresidential floor area than would the *Draft 2005 CWP Update.* While this alternative would result in less grading and earthmoving activities associated with new construction, it would still result in impacts related to water quality and flooding, if not properly mitigated.

In the West Marin Planning Area, *Alternative 3* would result in 806 more housing units but 20,239 fewer square feet of nonresidential floor area than would occur under the *Draft 2005 CWP Update*. These additional housing units would not be concentrated in a given community but rather spread throughout the planning area. This would result in greater impacts to sensitive ecological resources that are prevalent in West Marin. These impacts would include degraded water quality caused by common residential pollutants (e.g., fertilizers, petrochemicals and increased sediment loading) and septic system use. Although fish numbers may be low, streams flowing west in the West Marin Planning Area likely support anadromous fish runs. Increases in peak flows from additional impervious surfaces and degradation of water quality would adversely affect these fisheries. The aquaculture industry in Tomales Bay also depends on good water quality for production of oysters.

The other six planning areas would have less housing units and nonresidential floor area under *Alternative 3* than under the *Draft 2005 CWP Update* except for the Central San Rafael Planning Area, which would have the same amount of nonresidential floor area. This would likely lead to fewer secondary impacts from construction associated with the extension of sewer lines to undeveloped portions of unincorporated Marin County. Reduced development would result in less impervious

surface coverage and fewer common urban pollutants originating from residential and commercial uses. Therefore, flooding and adverse effects to water quality in the City-Centered Corridor and (and to the bodies of water these areas drain) would be reduced under *Alternative 3* relative to the *Draft 2005 CWP Update* but still be significant impacts. Impacts to the West Marin Planning Area, where sensitive ecological resources are prevalent, would be increased under *Alternative 3* due to the increased number of housing units and associated impacts related to water quality and increased flooding potential.

BIOLOGICAL RESOURCES

Alternative 3 could result in significant impacts to sensitive biological and wetland resources due to anticipated future land uses and development. The intent of this alternative would be to maximize the protection of environmentally sensitive lands including wetlands, sub-tidal areas, undeveloped 100-year flood plans, riparian corridors, and other areas.

For the St. Vincent's / Silveira properties, *Alternative 3* would result in the development of 65 housing units instead of between 221 and 501 housing units under the *Draft 2005 CWP Update*. Although detailed plans for proposed future uses on the St. Vincent's / Silveira properties have not been defined under this alternative, this substantial reduction in the intensity of proposed development would provide greater flexibility to site residential development while avoiding direct impacts to sensitive resources. Depending on the ultimate development footprint under this alternative, this alternative could also serve to preserve opportunities to protect and enhance habitat connectivity between the sensitive resources on the St. Vincent's / Silveira properties such as the scattered seasonal wetlands.

In addition, as future development potential would be reduced in the Coastal Recreation and the Inland Rural Corridors, adverse affects to sensitive resources in these areas would be reduced. Increases in the number of housing units in the Kentfield and Strawberry community areas of the City-Centered Corridor would still require avoidance of any sensitive resources in the vicinity of development.

The severity of impacts to biological resources due to the amount of development that would occur under this alternative would depend on details of the individual project-specific development plans, the degree to which sensitive resources are avoided, and the specifics of any required mitigation. Further site assessment, resource avoidance, and appropriate mitigation would be required as called for under the relevant policies and programs contained in the *Draft 2005 CWP Update*.

Compared to the *Draft 2005 CWP Update*, no new unavoidable significant impacts would be anticipated under *Alternative 3* given the general reduction in the extent of future development, including the substantial reduction in development on the St. Vincent's / Silveira properties. Similar to the *Draft 2005 CWP Update*, potential impacts to special-status species, sensitive natural communities, and wetlands would be reduced to a level of less-than-significant. However, the potential impacts to wildlife habitat and movement opportunities may remain a significant unavoidable project and cumulative impact depending on the ultimate development footprint under this alternative.

GEOLOGY, SOILS AND SEISMICITY

Similar to the *Draft 2005 CWP Update, Alternative 3* would result in significant unavoidable impacts related to geologic hazards. Exposure to geologic hazards would likely be greater in West Marin Planning Area but lesser at the St. Vincent's / Silveira properties relative to the proposed project due to the levels of development that would occur in these areas under *Alternative 3*. Overall, this

alternative would result in the fewest housing units and nonresidential floor area of any of the alternatives. Therefore, countywide it would expose fewer people and structures to geologic hazards (e.g., collapsible soils or landsliding). Furthermore, it would substantially reduce the amount of mitigation (e.g., grading) necessary to reduce identified impacts, especially at the St. Vincent's / Silveira properties.

Alternative 3 would not include a Housing Bank or the Housing Overlay Designation. Therefore, more housing units would be located in the West Marin Planning Area than would occur under the *Draft 2005 CWP Update.* This would expose more people and structures to impacts associated with surface fault rupture and stronger seismic ground shaking of the San Andreas Fault. In addition, due to the lack of available wastewater treatment in the West Marin Planning Area, more structures would rely on septic systems, which would increase the potential for adverse effects to groundwater resources and other impacts described in *Impact 4.7-7 Septic Suitability of Soils.* Greater development in the West Marin Planning Area under this alternative would also expose more people and structures to tsunami / seiches compared to the *Draft 2005 CWP Update. Alternative 3* would result tin significant unavoidable project and cumulative geology impacts.

AGRICULTURE

Similar to the *Draft 2005 CWP Update*, land use amendments consistent with *Alternative 3* would result in a significant and unavoidable impact from the conversion of both County and State designated farmlands to non-agricultural uses. These changes primarily would reflect existing State and federal ownership of these lands as part of their respective park and recreational areas as well as the purchase of lands to protect existing habitat.

In addition, some agricultural land would be removed from production because existing provisions of the Marin County Development Code would allow development of agricultural processing, retail sales, and visitor-serving uses on agricultural land. However, quantifying the amount of conversion that could occur would be speculative. Such conversion would represent a significant unavoidable project and cumulative impact, the same as would occur under the *Draft 2005 CWP Update*.

Similar to the *Draft 2005 CWP Update*, conflicts with Williamson Act contracts would be a less-than-significant impact. Under this alternative, changes to land use designation of parcels under Williamson Act contracts to an Open Space (e.g., OS) designation would occur to recognize acquisition of these lands by the National Park Service as part of the Point Reyes National Seashore. However, future use of these lands as open space would be compatible with the provisions of the Williamson Act.

WATER SUPPLY AND DEMAND

Exhibits 5.0-13 and **5.0-14** present comparisons of *Alternative 3* to the *Draft 2005 CWP Update* for each water service area and the unserved areas in unincorporated Marin County. *Alternative 3* would result in 1,029 fewer housing units and 494,191 square feet less of nonresidential floor area at buildout than would the *Draft 2005 CWP Update*. These values are shown at the bottom of columns four and seven from the left in **Exhibit 5.0-13**. While *Alternative 3* would result in more housing units in all the water service areas except NMWD-Novato, MMWD, and SBCWD, the decrease of 1,532 housing units in MMWD would result in an overall net decrease of 1,029 housing units for the unincorporated are as compared to the *Draft 2005 CWP Update.* Compared to the *Draft 2005 CWP Update,* the amount of nonresidential floor area would be either the same or less in all water service areas except BCPUD, which would increase by 1,464 square feet.

Exhibit 5.0-14 presents corresponding water demands for *Alternative 3*. Housing and nonresidential floor area demands would be 306 AFY and 99 AFY, respectively, less than those for the *Draft 2005 CWP Update*. To compare *Alternative 3* water demands to current conditions, the resulting water demand difference of 405 AFY (306 + 99 AFY) can be subtracted from the *Draft 2005 CWP Update* demand increase (1,871 AFY) to get the demand increase above current conditions (1,871 - 405 = 1,466 AFY). Thus, at buildout, *Alternative 3* water demands would be 1,466 AFY above the existing water demands in the unincorporated area.

Impacts associated with *Alternative 3* would be similar to those of the *Draft 2005 CWP Update*. Supply deficits would occur in NMWD-West Marin, MMWD, and BCPUD but not in SBCWD due to fewer housing units and nonresidential floor area than would occur under the *Draft 2005 CWP Update*. However, a relatively small supply deficit would also occur in EMWS due to increased housing. The same mitigation measures for the *Draft 2005 CWP Update* would be required for *Alternative 3*.

Due to the relatively small decrease in water demands, the level of these impacts would be less than those of the *Draft 2005 CWP Update* for the NMWD-Novato, MMWD, and SBCWD service areas. However, relatively small increases in demand in the other seven water service areas (NMWD-West Marin, BCPUD, IPUD, MBCSD, CSWS, EMWS, and unserved areas) would result in greater water supply related impacts in these service areas than would occur under the *Draft 2005 CWP Update* (see last column from left in **Exhibit 5.0-14**) Impacts such as those described in *Impacts 4.9-1 Adequacy of Water Supply During a Normal Year*, *4.9-2 Adequacy of Water Supply During a Drought and Multi-Drought Years*, *4.9-4 Impact to Groundwater Supply*, *4.9-5 Interference with or Degradation of Water Supply*, and *4.9-6 Secondary Impacts* would all be significant unavoidable project and cumulative impacts.

Exhibit 5.0-13
Comparison of Draft 2005 CWP Update to Alternative 3 at Buildout - Unincorporated Area

Water Service Area	Housing Units [a]			Nonresidential Floor Area (Square Feet)		
	Draft 2005 CWP Update	Alternative 3	Difference	Draft 2005 CWP Update	Alternative 3	Difference
NMWD-Novato	3,116	3,089	-27	507,189	308,719	-198,470
NMWD-West Marin	1,262	1,322	+60	269,698	267,378	-2,320
MMWD	24,297	22,765	-1,532	2,309,424	2,038,695	-270,729
BCPUD	797	1,143	+346	38,173	39,637	+1,464
SBCWD	885	797	-88	57,674	47,458	-10,216
IPUD	647	684	+37	90,953	87,533	-3,420
MBCSD	153	158	+5	5,779	5,779	0
CSWS	276	290	+14	2,486	2,486	0
EMWS	173	187	+14	0	0	0
Unserved Areas	1,109	1,251	+142	1,159,954	1,149,454	-10,500
Total	***32,715***	***31,686***	***-1,029***	***4,441,330***	***3,947,139***	***-494,191***

a Includes single and multifamily units

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

Exhibit 5.0-14
Water Demand Difference Between Draft 2005 CWP Update and Alternative 3 at Buildout - Unincorporated Area

Water Service Area	Housing Difference [a]		Nonresidential Floor Area Difference		Demand Difference (Alternative 2 minus Draft 2005 CWP Update) (AFY)
	Number of Units	Demand (AFY) [b]	Square Feet	Demand (AFY) [c]	
NMWD-Novato	-27	-10	-198,470	-40	-50
NMWD-West Marin	+60	+21	-2,320	0	+21
MMWD	-1,532	-460	-270,729	-54	-514
BCPUD	+346	+93	+1,464	+0.3	+94
SBCWD	-88	-18	-10,216	-2	-20
IPUD	+37	+6	-3,420	-1	+6
MBCSD	+5	+1	0	0	+1
CSWS	+14	+2	0	0	+2
EMWS	+14	+2	0	0	+2
Unserved Areas	+142	+57	-10,500	-2	+55
Total	***-1,029***	***-306***	***-494,191***	***-99***	***-405***

a Includes single and multifamily units
b Used 2030 estimated demand per unit in Water District Current and Projected Water Demand tables
c Used an estimated demand of 0.20 AF per 1,000 square feet based on 2005 non-residential use per square foot

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

PUBLIC SERVICES

Hazardous Waste Management

Alternative 3 would result in fewer impacts related to hazardous materials than would the *Draft 2005 CWP Update*. This alternative would result in the least number of housing units and nonresidential floor area; thereby, it would likely result in less hazardous materials being transported, used and stored in the county.

Proposed protection of environmentally sensitive lands, including creating a Bayfront Protection Corridor and specific proposals in the Coastal Corridor would likely provide a greater buffer to sensitive lands from hazardous materials in areas of existing development. Even though this alternative would result in the least amount of development, the lack of a Housing Overlay Designation could result in more hazardous materials associated with residential and commercial uses being transported, stored and used within the West Marin Planning Area. However, this could be offset by environmental protection proposals in this alternative; such as, removing development potential in sensitive areas and preventing development in greenfields (i.e., vacant land). The very low housing density proposed for the St. Vincent's / Silveira properties would greatly reduce impacts related to the use, transport, or storage of hazardous materials use in this area relative to the other alternatives.

Wastewater Management Services

Exhibit 5.0-10 lists the seven main agencies that provide wastewater treatment within Marin County. **Exhibit 5.0-10** illustrates the ability of these district's wastewater treatment plants to accommodate projected wastewater flows generated by land uses and development in the unincorporated area consistent with each alternative. Similar to the *Draft 2005 CWP Update*, except for the Bolinas Community Public Utility District (BCPUD), the treatment plants of the remaining six agencies would have sufficient capacity to accommodate the additional demand for treatment generated by *Alternative 3*. Similar to the *Draft 2005 CWP Update*, the BCPUD would be unable to treat additional wastewater flows generated by new land uses and development consistent with *Alternative 3*.

Solid Waste Management

Similar to the proposed project, *Alternative 3* would not substantially increase the amount of solid waste generated in Marin County. Such an increase would not exceed the County's landfill capacity or conflict with the County's adopted Integrated Waste Management Plan. Similar to the *Draft 2005 CWP Update*, this would be a less-than-significant impact.

Energy

Alternative 3 would result in increased energy consumption and require additional energy resources in order to meet this demand. However, similar to the *Draft 2005 CWP Update*, *Alternative 3* would have a less-than-significant impact with respect to energy consumption and land use patterns. Since this alternative would result in the least number of housing units and nonresidential floor area, it would result in the least amount of VMT (see **Exhibit 5.0-7**) of all alternatives, thus resulting in the least demand for energy associated with transportation.

Fire Protection and Emergency Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 3* would increase the demand for County fire protection and emergency services. Such demand could require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Criminal Justice Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 3* would increase the demand for police and detention services provided by the Marin County Sheriff's Department. Such demand could require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Public Education Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 3* would generate a demand for school services beyond the existing public school capacity and could result in the need for additional facilities. Construction of such facilities could result in adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Parks and Recreation Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 3* would require new or expanded Community and Neighborhood Parks in order to achieve recognized park planning standards. Construction of these facilities could result in adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

CULTURAL RESOURCES

Land uses and development consistent with *Alternative 3* could result in the disturbance of designated local, State, and national historical resources (see **Map 4-1** [Historic Resources] in the *Draft 2005 CWP Update*). In addition, potential but as of yet undesignated historical resources exist that could be affected by future development. Similar to the proposed project this would be a significant impact.

Land uses and development consistent with *Alternative 3* could also result in the disturbance of subsurface archaeological and paleontological resources as well as human remains. The St. Vincent's / Silveira properties have been identified as an area of high archaeological sensitivity. The *Draft 2005 CWP Update* policies and programs to protect archaeological resources would reduce this to a less-than-significant impact.

VISUAL QUALITY

Alternative 3 would not include the establishment of the Housing Bank (Policy **CD-2.2**) or the transfer of housing units from environmentally sensitive sites, primarily from West Marin to the City-Centered Corridor (Policy **CD-1.3** and Program **CD-1.c**). Without this transfer of housing units, this alternative

could have a greater adverse impact to scenic resources, community character, and views from highways, than would the *Draft 2005 CWP Update*.

The West Marin Planning Area contains numerous scenic resources described in the environmental setting of ***Section 4.12 Visual Resources***. Compared to existing conditions, increased development (i.e., of both housing units and nonresidential floor area) in the West Marin Planning Area could result significant impacts to scenic resources. As *Alternative 3* would result in more housing units but less nonresidential square floor area in the West Marin Planning Area, these impacts would be similar to those that would occur under the *Draft 2005 CWP Update*. **Exhibit 3.0-7** shows many of the sites that would have housing units relocated under the *Draft 2005 CWP Update* would be along State Route 1. Thus, this alternative could result in a significant visual impact along State Route 1.

This alternative would reduce the development potential to existing levels for parcels meeting any of several criteria (see the description of *Alternative 3* above), including those within the Ridge and Upland greenbelt. Such provisions would further protect views of hillsides within the ridge and upland greenbelt areas.

Alternative 3 would result in the development of up to 65 housing units on the St. Vincent's / Silveira properties. Similar to the *Draft 2005 CWP Update*, visual impacts from U.S. 101 toward the St. Vincent's / Silveira properties would be less-than-significant. Relative to the *Draft 2005 CWP Update, Alternative 3* would result in less visual impacts at the St. Vincent's / Silveira properties as substantially less housing units would occur.

Similar to the *Draft 2005 CWP Update*, development consistent with *Alternative 3* would result in significant visual impacts associated with outdoor lighting (e.g., sky glow, light trespass, and glare). This would be a significant unavoidable project and cumulative impact.

5.6 ALTERNATIVE 4 (MITIGATED ALTERNTIVE)

Alternative 4 (*Mitigated Alternative*) adds mitigation measures to those identified in the Draft EIR to reduce significant impacts of the *Draft 2005 CWP Update*, such as those related to transportation, groundwater recharge, water supply and demand, and public services. For example, *Alternative 4* would include further refinements to the Housing Overlay Designation than what is recommended in Mitigation Measure 4.1-5 for *Impact 4.1-5 Development of Residential Land Uses Incompatible with Established Land Use*. In addition, *Alternative 4* includes a proposed new policy directed at protecting groundwater recharge areas. *Alternative 4* also includes additional mitigation directed at ensuring adequate infrastructure would be available to serve new development in the unincorporated area of the county. *Alternative 4* is intended to add additional measures to reduce project impacts further even though impacts may remain significant and unavoidable.

Even with these new mitigation measures, significant impacts associated with transportation, biological resources, geology, agriculture, water supply and demand, and visual resources would not be reduced to less than significant because of the relatively small amount of new development that would occur in the unincorporated areas compared with the amount of new development that would occur in the county's cities and towns. The cities and towns contribute the majority of nonresidential development to the countywide total. The unincorporated area only constitutes approximately 11 percent of the incremental projected nonresidential growth. To this end, *Alternative 4* also recommends a new policy directed at both the County and its cities and towns to revise their land use planning and regulatory documents to enable more affordable housing and mixed uses rather than the theoretical full buildout of non-residential uses allowed in their respective general plans.

Similar to the *Draft 2005 CWP Update*, this alternative would calculate potential residential density and commercial floor area ratio at the low end of the applicable range on sites with sensitive habitat or within the Ridge and Upland Greenbelt, the Baylands Corridor, or properties lacking public water and sewer (Policy **CD-1.3**). In addition, this alternative would establish a Housing Overlay Designation (Policy **CD-2.3**) and Housing Bank (Policy **CD-2.2**).

Under this alternative, the number of housing units in several community areas in the City-Centered Corridor would be reduced as compared to the *Draft 2005 CWP Update* in order to prevent further deterioration of existing screenlines and intersections with existing LOS E and reduce demand for water in impacted water districts.

Under *Alternative 4*, the number of sites with a Housing Overlay Designation (see **Exhibit 3.0-6**) would be reduced to be consistent with the revised criteria (discussed below) and to reduce identified impacts related to the Housing Overlay Designation. Under *Alternative 4,* policies and programs related to the Housing Overlay Designation would be revised as follows:

> **CD-2.2** *Establish Housing Bank.* A "Housing Bank" is established, representing ~~adjustments to~~ limits on the development potential of certain environmentally constrained sites within the county. The Housing Bank includes ~~1,763~~ 758 units, which may be allocated to sites within the Housing Overlay Designation, as described in Policies **CD-2.3** and **CD-2.4**. The Housing Bank will be drawn down as qualifying units are constructed and will be eliminated when all ~~1,763~~ 758 units have been constructed.
>
> **CD-2.3** Establish *a Housing Overlay Designation.* The Housing Overlay Designation is established, as shown on Maps 3-2a and 3-2b. The Housing Overlay is an alternative to, and

would fulfill, the County's inclusionary housing policy. In the instance that the overlay designation was to be combined with a density bonus, the levels of affordability as outlined in this designation must be achieved. The purpose of the Housing Overlay Designation is to encourage construction of units to meet the need for workforce housing, especially for very low- and low-income households, and for special needs housing, in the City-Centered Corridor close to transit, employment, and / or public services, including redevelopment of existing shopping centers or other underutilized sites. Up to ~~1,763~~ 758 housing units from the Housing Bank may be approved within the Housing Overlay Designation in addition to the development permissible under the underlying land use category as shown on the applicable Land Use Policy Map, subject to a discretionary approval process.

The criteria used in establishing the Housing Overlay Designation include:

~~Located within the unincorporated portion of the City-Centered Corridor.~~

Designated by the Countywide Plan as Planned Designation (PD) Transit Village Area or Reclamation Area, Multifamily (MF), General Commercial (GC), Neighborhood Commercial (NC), Office Commercial (OC), Recreation Commercial (RC), or Public Facility (PF).

Located within:

The unincorporated portion of the City-Centered Corridor:

One-half mile of a transit node or route with daily, regularly scheduled service: and

One mile of a medical facility, library, post office, or commercial center.

~~Located within one-half mile of a transit node or route with daily, regularly scheduled service.~~

~~Located within one mile of a medical facility, library, post office, or commercial center.~~

The area to be developed:

Does not exceed an average 20 percent slope and is not within the Ridge and Upland Greenbelt;

Is not within a Wetlands Conservation Area or Streamside Conservation Area; and

Is not a park or public open space area.

~~Does not exceed an average of 20% slope and is not within the Ridge and Upland Greenbelt.~~

~~Is not within a Wetlands Conservation Area or Streamside Conservation Area.~~

Preliminary feasibility of site to meet affordability requirements.

The County would engage in discussions with cities and towns within Marin County regarding the possibility of locating residential units otherwise allocated to the Housing Overlay Designation within these cities and towns, subject to the criteria described above.

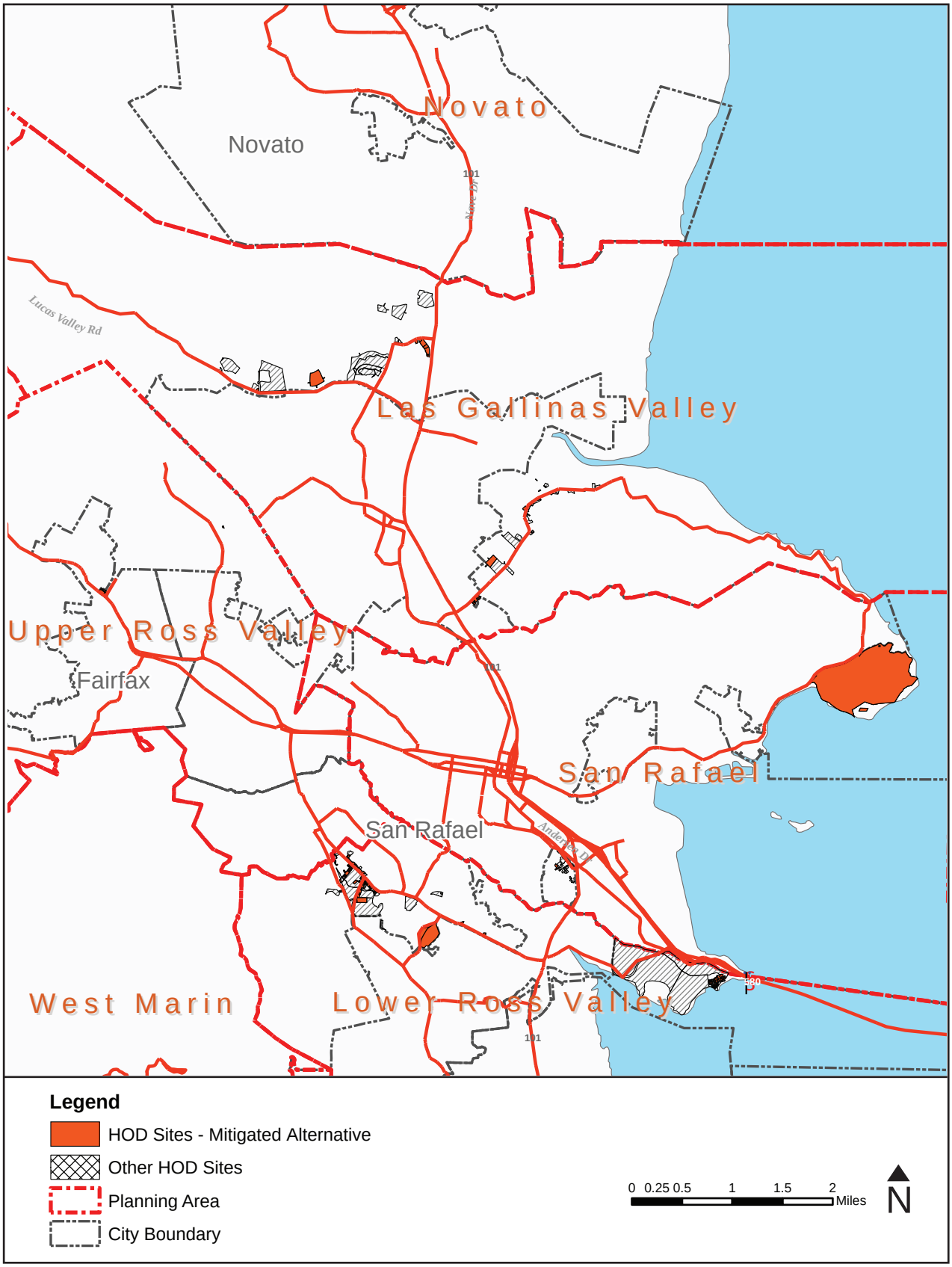
Based on the above, the potential Housing Overlay Designation sites for *Alternative 4* are listed in **Exhibit 5.0-15** and shown in **Exhibit 5.0-16**.

Exhibit 5.0-15
Housing Overlay Designation Sites

Site	***HOD Unit Potential Including Density Bonus (Units)***
Lomita Park (San Rafael)	50
Marin General Hospital (Kentfield)	100
Tam Junction (Mill Valley)	75
Marin City Shopping Center	75
Marin Waldorf School (Marinwood)	10
Marinwood Shopping Center	100
Santa Venetia Market	25
College of Marin (Kentfield)	50
Strawberry Shopping Center	100
Gallinas Elementary School (Santa Venetia)	25
San Rafael Rock Quarry	75
Fireside Motel (Mill Valley)	50
Toussin (Kentfield)	13
Oak Manor (Fairfax)	10
Total	***758***

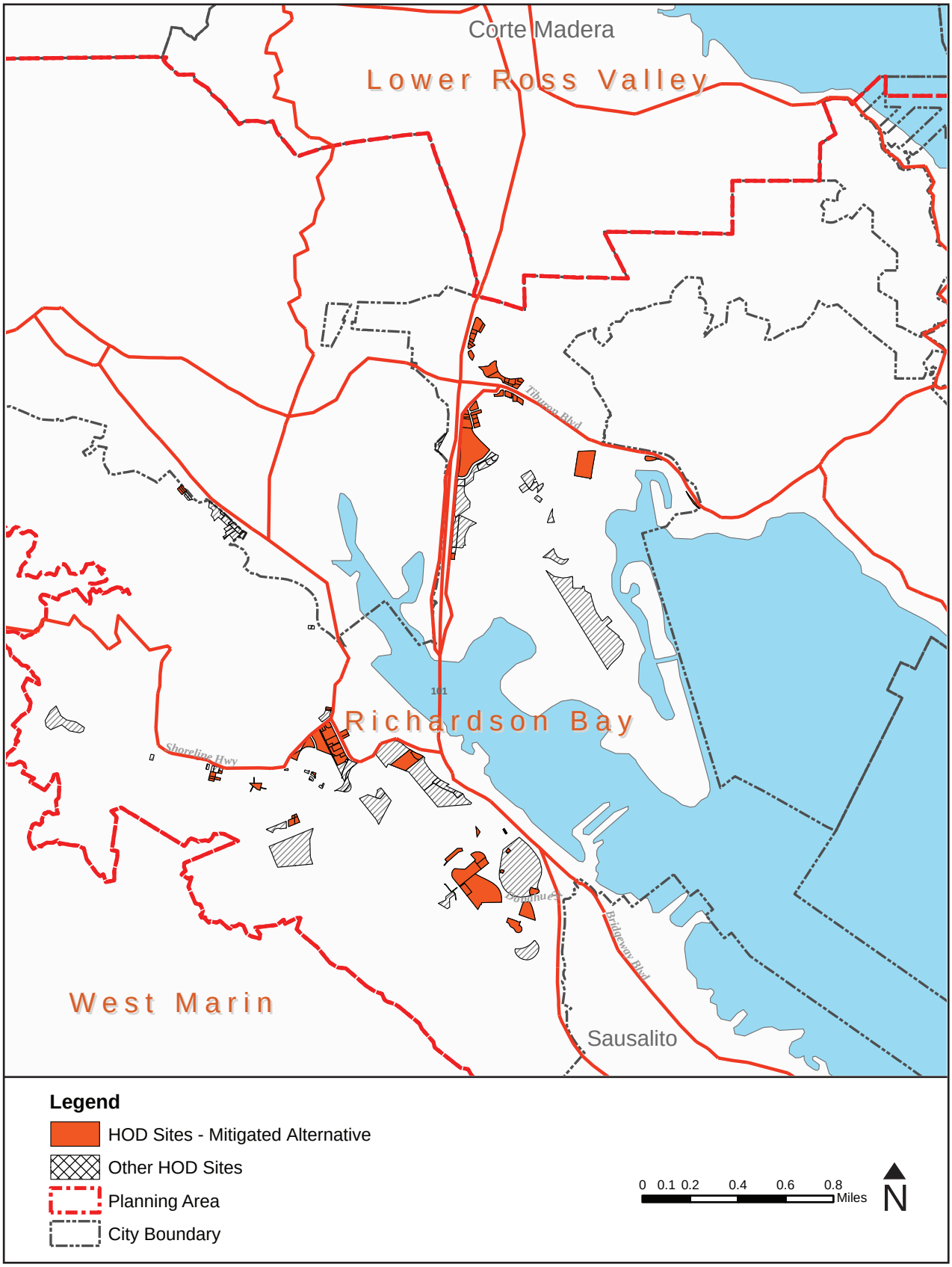
Source: Marin County Community Development Agency, November 2006.

Exhibit 5.0-16(a)
Housing Overlay Designation - Alternative 4 (Mitigated Alternative)



Source: County of Marin Community Development Agency, 2006.

Exhibit 5.0-16(b)
Housing Overlay Designation - Alternative 4 (Mitigated Alternative)



Source: County of Marin Community Development Agency, 2006.

Program **CD-2.d** is revised as follows:

CD-2.d *Implement the Housing Overlay Designation Program*. ~~The reviewing authority may allocate residential units form the Housing Bank upon application for a project within the Housing Overlay Designation and subject to the following standards.~~ The base land use density (base density) for each HOD site shall be the density allowed under the existing land use designation applicable to each parcel. A increase of up to the specified units per HOD site listed in **Exhibit 5.0-15** (or fraction thereof) may be granted for HOD sites if: (a) the applicant has developed a Master Plan through a community based planning process in compliance with Chapter 22.44 of the Development Code and (b) the HOD project meets all of the following standards:

~~a) Project site within the City Centered Corridor~~

~~b) Project must adhere to environmental constraint policies in the Countywide Plan including, but not limited to Ridge and Upland Greenbelt, Stream Conservation Areas, and Wetland Conservation Areas.~~

c) Developer is ~~strongly~~ encouraged to maintain ownership interest in the project.

d) High-quality building and site design ~~must be utilized,~~ that fits with the surrounding neighborhood and incorporates attractive and usable common/open space areas must be utilized, consistent with design guidelines.

e) Affordability levels to be based on area median income as determined by the U.S. Department of Housing and Urban Development (HUD).

f) At least 60% of the units should ~~must~~ be income-restricted and occupied by households whose incomes are 80% or less of area median income, adjusted for family size OR at least 50% of the units should ~~must~~ be income-restricted and occupied by households whose incomes are 60% or less of area median income, adjusted for family size.

g) Affordable ownership and rental units shall be deed restricted in perpetuity or for a period of not less than 55 years to meet lenders' requirements ~~(the required timeframes shall also take into consideration lenders' requirements)~~ to ensure a stock of affordable ownership and rental units.

~~h) Projects qualifying for the designation are not included in applicable base density or floor area ratio calculations.~~

i) Housing densities of at least 25 units per acre of the housing area to be developed are encouraged.

j) Projects that qualify for the designation and meet the affordability requirements may be entitled to development standard adjustments and density bonus concessions, such as parking, floor area ratio, height and fee reductions and other considerations.

k) The inclusion of workforce housing, especially for very low- and low-income households and for special needs housing, will be strongly encouraged at the time of commercial or other expansion and major remodeling proposals.

l) Additional "units" of senior housing equivalent to the traffic generated by the permissible amount of development on a parcel may be permitted on an HOD site if: (1) the additional "units" are affordable to below market households; and (2) projected peak-hour traffic impacts of the proposed affordable senior housing are no greater than that for the maximum permissible amount of development on the site based on a traffic study to verify reduced trips and reduced parking.

m) Parking requirements may be adjusted on a case-by-case basis for senior and affordable housing using criteria established in the URBEMIS model to encourage transit oriented development Trip reduction credits may be obtained through utilization of the following mitigation measures locating development close to transit, or in a location where the jobs-housing balance will be optimized; commitments from the developer to implement demand management programs including parking pricing; use of tandem parking, off-site parking and parking leases, among other measures to permanently reduce parking need. Reduction of parking requirements are subject to discretionary approval and may require a parking study to verify reduced parking demand.

n) Potential impacts are mitigated.

o) Occupancy or resident preferences for HOD projects should be analyzed for appropriateness in each project, taking into consideration applicable vehicle impacts, jobs/housing balance opportunities, and fair housing laws.

Application can be made by a property owner to the County for the designation of a new HOD site which meets all of the criteria identified in Policy **CD-2.3**. In such cases, the reviewing authority may designate an additional HOD site and reallocate units "assigned to" HOD sites within the same Planning Area and traffic zone within the 758 total potential Housing Bank units. The County shall seek funding to prepare Master Plans and related environmental review documents to facilitate mixed use development on HOD sites.

A new program is added to the Community Development section of the Built Environment Element as follows:

CD-2.(new) *Processing on Affordable Housing Projects.* The County will provide technical assistance and priority process affordable housing projects which meet established requirements for very low and low income housing as determined by state and federal criteria and HOD projects. The Community Development Agency director may waive or transfer In-Lieu Housing Trust funds to pay for up to 100 percent of the community development agency fees for qualifying projects. The amount of fee waiver or transfer will be determined based on the proportion of the project that is below market rate housing and the length of time the housing shall remain affordable.

In addition to the above, Program **CD-2.c** is revised to include the following:

Adjust the maximum permitted density of environmentally constrained sites that contribute to the Housing Bank to reflect the lower end of the density range for such sites as established by the Countywide Plan.

Add a policy regarding workforce housing as follows:

CD-(new) *Expand Countywide Efforts to Increase Workforce Housing Rather Than Full Commercial Build-out*. Provide technical assistance and collaborate with Marin's Towns and Cities to provide increased opportunities for affordable and workforce housing – especially on sites near employment centers and public transportation. Provide model planning and regulatory language and otherwise strongly encourage Marin County, Cities and Towns to revise their land use planning and regulatory documents to enable more affordable and workforce housing and mixed uses rather than the theoretical full build-out" [7] of non-residential uses allowed in their respective community and general plans.

Exhibit 5.0-1 above provides a comparison of the number of housing units and nonresidential floor area at specific sites under each of the three land use scenarios identified in the *Draft 2005 CWP Update* with *Alternative 4* and the other alternatives. **Exhibits 5.0-2** and **5.0-3** above compare the existing number of housing units and nonresidential floor area, respectively with *Alternative 4* and the other alternatives considered by planning area. *Alternative 4* would result in 915 fewer housing units (31,799 versus 32,714) than the *Draft 2005 CWP Update* but the same amount of nonresidential floor area (4,441,330 square feet) in the unincorporated areas. *Alternative 4* would provide 113 more housing units than *Alternative 3* but 1,032 fewer housing units than *Alternative 2* and 915 fewer housing units than Alternative 1. *Alternative 4* would provide more nonresidential floor area than *Alternative 3* but less than either *Alternative 1* or *Alternative 2*. This alternative would result in an increase of 4,476 housing units and 1,236,781 square feet of nonresidential floor area in the unincorporated area over existing conditions.

Other aspects of *Alternative 4* include:

St. Vincent's / Silveira

Alternative 4 would designate up to 501 housing units on the St. Vincent's / Silveira properties (Policy **SV-2.5** Option 3) within the footprint limitations recommended in Policy **SV-2.4**. While Baylands Corridor Options 1 and 2 would provide adequate protection of on-site resources, this alternative would apply Baylands Corridor Option 2 (see **Exhibit 3.0-3**). Specifically, Baylands Corridor Option 2 would expand the boundary of the Baylands Corridor designation west to U.S. 101 within the St. Vincent's / Silveira properties to provide additional protection to adjacent uplands that are ecologically connected to the historic baylands at this location. The development potential assigned to the each of the two propeerties is based on their relative percentage of the total acreage. The property owners are encouraged to plan the properties collaboratively and consider transfer of potential development to the most appropriate locations.

San Rafael Rock Quarry

This alternative would assume a range of housing units (75 to 350 housing units) for future development at the San Rafael Rock Quarry. *Alternative 4* evaluates a range of traffic at the San Rafael Rock Quarry based on what is currently allowed as well as the potential trips created by the amended San Rafael Rock Quarry Reclamation Plan since it is reasonably foreseeable that a project would occur within the life expectancy of the Countywide Plan Update. The application for an

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[7] Theoretical full buildout refers to General Plan Floor Area Ratio or intensity limits applied to each parcel in a jurisdiction. Realistic buildout refers to the likely buildout of all parcels in a jurisdiction based on constraints, existence of economically viable uses under the allowable FAR, application of policy restrictions, and the like.

amended Reclamation Plan [8] proposes as many as 350 housing units with 3,500 vehicle trips / day as the end use for this site. These 350 units would represent the upper end of density for evaluating the range of traffic. Both the current and proposed Reclamation Plan provide that:

> *Residential densities will need to be responsive to traffic impacts they will impose and land use studies will be submitted as quarrying on the property nears completion to fully analyze that problem in relation to a development plan that will be designed to fit the market demands and local objectives of that time. It is impossible to make more detailed predictions at this time (approximately ten to 12 years before the earliest development is likely to take place).* [9]

Since current quarry operations as well as the application for an amended quarry permit would only allow for 250 truck trips / day, the lower end of the density traffic range can be calculated based on existing road capacity utilized by quarry operations converted to an equivalent level of residential automobile traffic. Since a six-axle truck equates to approximately three personal vehicles, the equivalent residential use (i.e., for traffic counting purposes) would be 750 vehicle trips or 75 housing units. *Alternative 4*, therefore, analyzes this range of residential unit numbers for the site although; neither this alternative nor the *Draft 2005 CWP Update* proposes an increase in intensity in the Planned Designation: Reclamation Area (PD-Reclamation Area) as it would be premature to do so prior to completion of a Reclamation Plan and a Master or Specific Plan. The range of housing units varies from 75 to 350 housing units for the purposes of traffic modeling. [10] When 75 housing units are considered, the remaining 275 housing units are eliminated from the total number of housing units in the unincorporated area.

ROADWAY IMPROVEMENTS

This alternative would assume the same list of major proposed roadway transportation improvements (see **Exhibit 4.2-15**) as the *Draft 2005 CWP Update*. In addition to these roadway improvements, this alternative includes the Marin-Sonoma Narrows (MSN) road improvement project. The MSN Project extends 17 miles on U.S. 101 between State Route 37 in Novato (Marin County) and Old Redwood Highway in Petaluma (Sonoma County).

The MSN Project proposes to add High Occupancy Vehicle (HOV) facilities throughout the corridor to adjoin the HOV lanes south of the project limits and tie to the proposed HOV lanes to the north extending from Petaluma to Windsor. Widening to include HOV facilities would require replacing the Petaluma River Bridge and upgrading the "Narrows" [11] segment of U.S. 101 from an expressway to a freeway with controlled access points.

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8 *San Rafael Rock Quarry Amended Reclamation Plan* 2004, October 12, 2004.

9 *San Rafael Rock Quarry Amended Reclamation Plan* 2004, October 12, 2004.

10 The amended quarry permit and amended reclamation Plan propose cessation of mining and development of end uses beginning 17 years from approval of the proposed amended Reclamation Plan. Assuming approval in 2007, this means the quarry would cease operation in 2024.

11 U.S. 101 narrows from six to four lanes between the north side of Novato and the south side of Petaluma. This segment of U.S. 101 is commonly referred to as "the narrows".

Once the EIS / EIR process has been completed (expected Summer 2007) and a preferred alternative has been identified, funding will be sought for constructing individual project elements based on the operational priority (i.e., level of need) and funding availability. Caltrans and its partner agencies, the Transportation Authority of Marin and Sonoma County Transportation Authority, continue to seek new funding sources for the project. Assuming necessary funding is available, construction is anticipated to begin in 2010.

This alternative would also include a policy for transportation demand management measures, and would address the $25 million Non-Motorized Transportation Pilot Program grant to build a bicycle and pedestrian network that would connect directly with transit stations, schools, residences, businesses, recreation areas, and other community activity centers.

OTHER ASPECTS OF ALTERNATIVE 4

The Natural Systems and Agriculture Element

Biological Resources

The Marin Resource Conservation District (RCD) includes the watersheds of Stemple, Walker, and Lagunitas creeks. Using grants and funds from State, federal and local agencies, the RCD works with landowners to conserve soil and water resources. The RCD also offers education and outreach through landowner workshops, watershed newsletters and school education and service learning programs. In addition to erosion control and project assistance for agricultural lands, the RCD functions also include:

- Agricultural land conservation
- Watershed planning and management
- Water conservation
- Water quality protection and enhancement
- Soil and water management on non-agricultural lands
- Wildlife enhancement
- Wetland conservation
- Irrigation management, and
- Conservation education and forest stewardship.

The programs offered by the RCD are voluntary. The RCD cooperatively works with landowners interested in restoring or enhancing the natural resources of their property to improve water quality and wildlife values. This cooperative relationship is key to obtaining buy-in from the landowners to ensure success of the programs. One successful program is the Marin Coastal Watersheds Permit Coordination Program, where regulatory agencies issue permits to the RCD and the National Resource Conservation Service (NRCS) that cover projects on private lands, provided landowners work under the supervision of the RCD and/or NRCS. Under this partnership, the RCD obtains the permits and the landowner agrees to participate in the implementation, maintenance, and monitoring of projects on their properties.

Add a new policy and programs as follows:

Policy

> **BIO 4.(new)** *Continue Collaboration with the Marin Resource Conservation District*. Continue to collaborate with, support, and participate in programs provided by the Marin Resource Conservation District and the Natural Resource Conservation Service to encourage agricultural operators who conduct farm or ranch activities within a Streamside Conservation Area to minimize sedimentation and erosion to enhance habitat values.

Programs:

> **BIO-4.(new)** *Encourage Conservation Plans within the Stream Conservation Area*. Continue to collaborate with the Marin Resource Conservation District to encourage and support the continued implementation of the Marin Coastal Watersheds Permit Coordination Program, especially the preparation of management and conservation plans where appropriate for agricultural activities within the Stream Conservation Areas.
>
> **BIO-4.(new)** *Provide Information to Reduce Soil Erosion and Sedimentation*. Provide information and fact sheets on programs offered by the Marin Resource Conservation District at the Community Development Agency front counter to landowners and applicants who submit development proposals within the Streamside Conservation Area in the Stemple, Walker and Lagunitas creek watersheds.

Water Resources

Alternative 4 includes measures to reduce potential impacts to water demand, particularly in water districts with a buildout supply deficit. Because water conservation is almost always more cost effective than new water supply projects, both in direct water costs and in the associated environmental impacts, the new measures focus on conservation. Despite ongoing water conservation practices in Marin County, there is still potential for additional water savings through water conservation and efficient water use.

Greatly expanding the use of reclaimed water from wastewater treatment plants, for example, could provide for additional water supply, particularly for uses in the City-Centered corridor where water supply is limited. Currently, of the 7,243 million gallons per year (MGY), only 801.5 MGY or 12 percent are reused. Central Marin Sanitary District, which serves central San Rafael, Corte Madera, Larkspur, and Ross Valley, and the Sausalito and Tiburon sanitary districts, do not reclaim any of their wastewater. Novato Sanitary District reclaims 30 percent of its wastewater while Las Gallinas Sanitary District reclaims 55 percent of its wastewater. Incentives could be created to encourage use of reclaimed water in the City-Centered corridor.

In addition, some measures are proposed below that would supplement water supply. Specific measures can be summarized with these general themes:

- Promote and expand the use of existing water conserving technologies including low-flow faucets and showerheads; low-flow or waterless restroom facilities; efficient residential and commercial washing machines and dishwashers; drip and precision irrigation sprinklers; and commercial and industrial recycling systems;

- Work with water districts to institute tiered pricing;
- Add "appliance standards" to the green points checklist for permit applicants;
- Require site-appropriate, low-water use landscaping;
- Promote on-site water catchments for irrigation using rebates or other incentives;
- Promote reclaimed and recycled water as a supply source;
- Encourage and consider requiring pervious material for residential, commercial and municipal paving projects; and

As a part of *Alternative 4*, the following revisions to goals, policies, and programs related to water supply are included:

GOAL WR-1

Healthy Watersheds. Achieve and maintain proper ecological functioning of watersheds including sediment transport, ground water recharge and filtration, biological processes, and natural flood mitigation, while ensuring high-quality water.

GOAL WR-2

Policies

WR-2.2: "…and nutrient management in urban and rural watersheds."

WR-2.4: "…buildings, landscaped areas, roads, bridges, drainages, and other facilities to minimize the volume of toxics, nutrients, sediment and other pollutants in storm water flows."

Programs

WR-2.k *Establish Educational Partnerships to Protect Water Quality*.

GOAL PFS-1

Policies

PFS-1.4 "…through integrated and cost-effective design, technology and demand reduction standards for new development and redevelopment."

GOAL PFS-2

Policies

PFS-2.(new) *Sustainable Water Supply Required*. No new development project shall be approved without a specific finding, supported by facts in the administrative record, that an adequate, long-term, and sustainable water supply is available to serve the project.

PFS-2.(new) *Offset New Water Demand*. In water district where there is insufficient water to serve new development, the County shall require new development to offset demand so that there is no net increase in demand and through one or more the of the following measures: Use of reclaimed water; water catchments and reuse on site; water retention serving multiple sites; retrofits of existing uses in the district to offset increased demand; other such means. These measures should be achieved in partnership with the applicable water district.

Programs

PFS-2.g *Promote Xeriscaping, Site Appropriate Landscaping and Native Plants*. Amend the Development Code to require site appropriate, drought-tolerant, low water use, native landscaping and ultra-efficient irrigation systems where appropriate for development applications and re-landscaping projects. ~~and l~~Limit the amount of water intensive landscaping, particularly lawn area allowed to reduce the amount of water needed ~~required~~ for irrigation.

PFS-2.h *Promote Site Appropriate, Low-water Use and Drought Tolerant Native Plants in Public Facilities*. Restore and promote the native plants ~~garden~~ at the Civic Center~~,~~ and incorporate ~~the development of~~ similar landscaping for all public facilities. Create a Landscaping Master Plan for Public Facilities that specifies appropriate species, methods, and technologies for water-wise landscaping.

PFS-2.m *Promote Onsite Rainwater Capture and Retention~~Catchments~~*. ~~Encourage~~ Support the use of on-site rainwater ~~catchments~~ capture, storage, and infiltration for irrigation and other non-potable uses, where appropriate. ~~and work with service providers to e~~Establish standards for rainwater quality and use, and include provisions to prevent contaminating local groundwater and surface water or damaging local septic and water systems.

PFS-2.p *Investigate and Consider Appropriate Small-Scale Wastewater Reduction, Treatment, and Use Technologies*. Work with water agencies to identify and resolve conflicting regulations regarding pre-treated septic drip dispersal systems and appropriate graywater use, ~~to~~ evaluate the potential of small-scale portable graywater converter systems as ~~possible~~ sources for landscaping water, and ~~to~~ modify regulations as necessary to encourage safe graywater use (such as by allowing dual systems that employ graywater to support landscaping). Include potential use of composting toilets, waterless urinals and other appropriate water saving technologies.

PFS-2.q *Adopt Tiered Billing Rates*. Encourage all Marin County water agencies to adopt the California Urban Water Conservation Council's Best Management Practice of tiered billing rates to encourage water conservation. Encourage the establishment of tiers that are based on conserving levels of per capita water use, rather than those based on historical non-conserving levels. Offer comprehensive conservation incentive programs to assist customers to achieve conserving levels of use.

GOAL WR-2

Programs

WR-2.b *Integrate Bay Area Stormwater Management Agencies Association (BASMAA) stormwater quality protection guidelines into permitting requirements for all development and construction activities*. All projects should integrate stormwater pollution prevention design features such as those included in the BASMAA *Start-at-the-Source* manual for stormwater quality protection and their *Tools Handbook*. In addition, the relevant development code sections should be modified accordingly.

WR-2.(new): *Non-Toxic Building Materials Standards* Consider adoption of standards for non-toxic exterior building materials criteria to reduce the potential of toxics entering stormwater.

WR-2.d *Continue Alternative Septic / Waste System Monitoring.* Establish a Septic / Waste Alternatives Maintenance and Inspection Program to ensure the proper installation, maintenance and use of alternatives to septic systems. Work with manufacturers, suppliers and installers to provide guidelines for approvable alternative septic/waste systems.

WR-2.(new) *Implement Least Toxic Methods for Maintenance and Pest Control*. Utilize Integrated Pest Management (IPM) practices for County facilities. Develop a maintenance program for all County facilities that specifies least toxic methods. Minimize the need for toxic materials by designing and constructing facilities and landscaping to be durable, easily maintained and pest resistant.

GOAL PFS-2

Programs

PFS-2.o *Assess Project Impacts to Surface and Ground Water*: "…or deplete surface or ground water resources…"

PFS-2.p *Investigate and Consider Appropriate Small-Scale Wastewater Reduction, Treatment and Use Technologies*. (At end) "Also evaluate the potential to use waterless urinals, National Science Foundation (NSF) approved composting toilets, and other appropriate water saving technologies."

Add a policy regarding groundwater supply as follows:

PFS-(new) *Manage Groundwater* Manage groundwater as a valuable and limited shared resource by protecting potential groundwater recharge areas and stream conservation areas from urban encroachment. The County shall use discretionary permits to control construction of impervious surfaces in important groundwater recharge areas. Potential recharge area protection measures at sites in important recharge areas include, but are not limited to the following:

a) Restrict coverage by impervious materials and require use of pervious materials;

b) Limit building and parking footprints;

c) Require construction of percolation ponds on large-scale (projects of 4,000 square feet or greater on sites overlying identified recharge areas) development project sites overlying identified recharge areas where development cannot be relocated outside the recharge area recognizing that percolation ponds on small scale sites may not be practical or feasible in terms of their development, maintenance and management.

GOAL PFS-3

Reduction, Safe Processing, and Re-Use of Wastewater. Continue to enhance the Alternative Onsite Wastewater Monitoring Program. This program ensures the proper operation of alternative and innovative wastewater system designs. Continue to work with manufacturers, designers, installers, end users, and the Regional Water Quality Control Board to evaluate the effectiveness and capabilities of these alternatives to traditional septic system designs. Work with stakeholders to periodically update design guidelines and regulations in the light of evolving best practices.

Policies

PFS-3.(new) *Reduce Stormwater Volume* Implement appropriate upstream water-saving technologies to reduce stormwater volumes and increase percolation. Increase permeable surfaces and encourage on-site percolation to reduce stormwater volume and potential overflow of wastewater treatment facilities.

Programs

PFS-3.a *Reduce Wastewater Volume.* Work with sanitary districts and Environmental Health to assess alternative point-source wastewater technologies including State-approved graywater systems NSF-approved waterless urinals, composting toilets, pervious surfaces for roads, driveways and parking lots, and subsurface drip dispersal. Provide public information and update Codes to promote safe, appropriate technologies. Urge water districts to consider volumetric billing and tiered water rate structure and to partner with water districts to reduce the volume of wastewater that must be treated.

PFS-3.(new) *Develop Appropriate Wastewater Treatment Technologies* Work with sanitary districts to assess appropriate wastewater treatment technologies including advance biological treatments, living machines, bio-solid composting and methane capture for electrical generation.

GOAL EH-3

Policies

EH-3.3 *Monitor Environmental Change.* Consider ~~changes~~ cumulative impacts to hydrological conditions, including alterations in drainage patterns and the potential for rising sea level, when processing development applications in watersheds with flooding or inundation potential.

Programs

EH-3.(new) *Assess the Cumulative Impacts of Development in Watersheds on Flood Prone Areas.* Consider the effects of upstream development including impervious surfaces, alteration of drainage patterns, reduction of vegetation, increased sedimentation and others on the potential for flooding in low lying areas. Consider watershed studies to gather detailed information.

EH-3.(new) *Develop Watershed Management Plans* Develop watershed specific, wholistic watershed management plans that include development guidelines, natural flood mitigation measures, biomechanical technologies, and the enhancement of hydrological and ecological processes. The guiding principles of the watershed plans shall equally consider habitat and species protection as well as the protection of human life and property.

Agriculture and Food

Alternative 4 incorporates Option 2 of Policy **AG-1.a** regarding the residential building size in agricultural areas with the following revision:

i. ~~The total floor area for all dwelling units and accessory structures not used as the primary place of residence by the property owner(s), family members, and agricultural employers who are directly engaged in the production of agricultural commodities for commercial purposes shall not exceed 2,500 square feet unless affirmative findings are made consistent with the criteria set out in items (iii) and (iv) below, in addition to other applicable findings. Total floor area for these dwelling units hall not exceed 6,000 square feet.~~ The total floor area for all dwelling units and residential accessory structures on a parcel shall not exceed an aggregate of 6,000 square feet.

~~ii. The primarily place of residence of the property owner(s), family members or lessee who are directly engaged in the production of agricultural commodities for commercial purposes on the property, buildings and structures accessory to such residences, and agricultural worker housing shall be excluded from the above floor area limits.~~

iii. Residential development shall not be allowed to diminish current or future agricultural use of the property or convert it to primarily residential use.

iv. Dwellings subject to criteria (i), above, that are in excess of 2,500 square feet of floor area, but not more than 6,000 square feet of floor area may be allowed if there is evidence of a bona fide commercial agricultural production on the property. In making this determination, the County may require an Agricultural Production and Stewardship Plan demonstrating that: (1) the long term agricultural use of the property will be preserved; (2) agricultural infrastructure, such as fencing, processing facilities, marketing mechanisms, agricultural worker housing or agricultural land leasing opportunities have been established or will be enhanced; agricultural uses proposed in connection with the

residence are appropriate to the site; and (3) sound land stewardship, such as Marin Organic Certification, riparian habitat restoration, water recharge projects, and erosion control measures, have been implemented or will be enacted. Dedication or sale of perpetual agricultural conservation easements may be voluntarily offered to ensure continued agricultural production.

The square footage limitations noted in the above criteria represent maximum potential dwelling unit sizes and do not establish a mandatory entitlement or guaranteed right to develop.

Revise Program **AG-1.f** as follows:

AG-1.f *Review the TDR Program.* Evaluate the potential for an expanded ~~the~~ Transfer of Development Rights program to achieve effective protection of agricultural lands and the viability of existing agricultural operations. The Community Development Agency in collaboration with the Marin Agricultural Land Trust will seek funding to prepare a feasibility study to include, but not be limited to, the following:

a) Evaluate the potential for donor and receiver sites within the unincorporated county as well as consider the feasibility of potential receiver sites within cities and towns in Marin.

b) Identify possible criteria for identifying donor and receiver sites and recommend procedures for the resale and transfer of purchased residential development rights

c) Evaluate the feasibility of the Marin Agricultural Land Trust or another non-profit entity to administer or participate in an expanded program.

d) The feasibility study should be prepared by qualified consultants with expertise in developing and implementing TDR programs.

Revise Program **AG-2.c** as follows:

AG-2.c *Prepare Criteria and Standards*. ~~Prepare criteria and standards to identify compatible agricultural activities and applicable development code requirements.~~ Amend the Development Code to include criteria and standards to encourage agricultural processing and strengthen Marin's agricultural industry, including limitations on uses that are not compatible with sustainable agriculture. Continue to support the efforts of the UC Cooperative Extension, Marin Resource Conservation District, the Marin County Farm Bureau, Marin Agricultural Land Trust, Marin Organic, Marin County Agriculture Commissioner, and the Marin County Farmer's Market to plan for agriculture in Marin and ensure that the new criteria and standards are consistent with the County's goals of improved agricultural viability and a preserved and restored natural environment.

The Built Environment Element

Community Development

Prior to creating the Countywide Planning Agency and the Congestion Management Agency in preparation for a 1990 Transportation Sales Tax Initiative, Marin cities, towns, and the County agreed to create and maintain a land use database of Assessor parcels. The database contained land use codes, number of housing units, and volume of commercial square footage for both "existing conditions" and "buildout" under local General Plans and Zoning ordinances. The database was to be updated at least two times per year (i.e., in January and July). Existing conditions and buildout, therefore, could

change twice a year. If a jurisdiction changed its General Plan or Zoning ordinance in a way that would change permitted development potential of a parcel, the jurisdiction would update the database at the time of approval. The term "buildout" would not be associated with any particular year in the future, but would represent potential development as a "worst case" scenario for purposes of environmental review under the California Environmental Quality Act. The primary purpose of the database was to facilitate transportation modeling of land use in traffic zones that were smaller than Census Tracts and of local significance. The data could be used for other types of modeling as well.

Since the late 1980's when this agreement was reached, local jurisdictions formed MarinMap, a consortium of local public agencies that have agreed to maintain a shared database of spatial data for the benefit of those agencies' business operations. The land use database was included in that larger database. There is currently a graphic user interface with a Geographic Information System component (i.e., live digital maps) that allows local staff to update land use data by finding parcels on a digital map. Each Marin city, town and the County are asked to sign a "Service Level Agreement" which formalizes their commitment to maintaining the data.

The Transportation Authority of Marin (TAM) maintains a transportation model on behalf of jurisdictions in Marin County. The model output is used for a variety of forecasting and project review applications. Essential to the quality of model output is the quality of the land use data that serves as the model's primary input. However, under the current system, TAM and MarinMap rely upon updated information to be provided by the individual Marin cities and towns. The existing update process needs to be revised to ensure that current, complete and accurate data is consistently maintained.

Add a new policy and program to the Community Development section as follows:

Policy

> **CD-4.(new)** *Ensure Current Land Use Data***.** Consult with the Transportation Authority of Marin and MarinMap to review and revise the process to update the land use database to ensure the data is kept current, complete and accurate. This could be accomplished through either of the following two options:
>
> (1) Collaborate with the Transportation Authority of Marin to allocate additional funds from TAM's budget to pay County staff to work with the Cities to maintain and update the database; or
>
> (2) Consider amending the Marinmap Service Level Agreement to allocate additional funds from Marinmap member agencies lacking sufficient staff time and resources to maintain the database or a similar approach to enable County staff to work with the Cities to perform the updates.

Program

> **CD-4.(new)** *Continue to Fund MarinMap*. Provide funding for MarinMap according to the adopted member dues schedule.

Countywide Planning and Collaboration

The County Wide Planning Agency (CWPA) was created on October 16, 1990 when eleven cities and the Board of Supervisors adopted the Joint Powers Agreement (JPA) to implement countywide

performance standards for traffic, housing, water and sewer facilities, and environmental protection to ensure that residential growth did not exceed local water, sewer, and transportation capacities. The JPA also was established to support a countywide effort to adopt a transportation sales tax. In 1993, the JPA was amended to designate the CWPA as the agency responsible for developing, adopting, and annually updating the countywide Congestion Management Program required by the passage of Proposition 111 in June 1990. This function was eventually assigned to the Transportation Authority of Marin in 2004, leaving the state of the CWPA in flux and essentially no longer a functioning agency since that time.

A Special Committee of the Transportation Authority of Marin (Committee) was formed in November 2005 to discuss the mission, goals, priorities, form, and function of the CWPA. The Committee, which met semi-monthly through March 2006, consisted of members from TAM, city and town council members and senior staff, along with representatives from a wide range of local and community organizations. The Committee agreed that it was important to provide a forum among elected leaders and the community to foster dialogue and learning, but not create local mandates, wrest planning control from local jurisdictions, or create another layer of review.

The Committee's preliminary recommendations (which were *not* accepted by TAM) included supporting the functional continuation of the CWPA through the creation of a City County Planning Committee (CCPC) to convene as a committee of TAM. The purpose of the CCPC is to provide a public forum on mutually agreed upon issues among elected representatives from the cities, towns, and the County to:

- Collaborate on housing, transportation, land use, and sustainability issues;
- Evaluate and monitor the cumulative impacts of planning and development;
- Provide a forum for the sharing of ideas, information, resources, and best approaches for Marin; and
- Pursue funding opportunities for planning efforts on topics of mutual interest.

Add new policies and programs to the Community Development section as follows:

Policies

> **CD-4.(new)** *Provide a Forum to Monitor Issues of Concern.* Provide periodic forums with the cities and towns, other local agencies, and members of the public to engage in discussions on issues of mutual concern, and to promote the sharing of ideas, information, resources, and best practices for Marin.
>
> **CD-4.(new)** *Achieve Consensus.* Work with the cities and towns to achieve consensus regarding housing and nonresidential growth projections.

Programs

> **CD-4.(new)** *Initiate Periodic Meetings.* Collaborate with representatives from each of the cities, such as elected officials and planning staff, to initiate periodic meetings to provide a forum to jointly discuss and monitor issues of mutual concern (such as traffic, jobs/housing balance, and affordable housing opportunities) and potential policy solutions to those issues.

CD-4.(new) *Establish a City-County Committee*. Consult with the cities and towns to consider establishing a committee consisting of elected representatives and staff from the cities, towns, and the County to:

a) Collaborate on housing, transportation, land use, and sustainability issues;

b) Evaluate and monitor the cumulative impacts of planning and development;

c) Provide a forum for the sharing of ideas, information, resources, and best approaches for Marin; and

d) Pursue funding opportunities for planning efforts on topics of mutual interest.

With respect to transportation concerns, add a new policy and programs as follows:

Policy

CD-(new) *Provide Adequate Infrastructure Capacity*. Plan the circulation system and public infrastructure and services to provide capacity for the unincorporated County's realistic buildout.

Programs

CD-(new) *Monitor Growth and Circulation*. At least every five years review the unincorporated County's growth, planned land use, traffic capacity, funded traffic improvements, traffic mitigation list and traffic fees. Assess growth assumptions and modify land use and circulation policies as needed to ensure adequate circulation capacity to serve development.

CD-(new) *Review and Correlate Countywide Growth and Infrastructure*. Work with the proposed City- County Committee or a similar collaborative venue (to be established pursuant to Policy CD-4) to review the countywide growth, planned land use and traffic and service capacity. As warranted by the monitoring information, encourage all jurisdictions to amend their respective general plans and zoning from allowing "theoretical full buildout" [12] of non-residential uses to allowing "realistic buildout" to ensure correlation of planned land uses and traffic capacity and the capacity of all essential public services.

In addition, in order to monitor and evaluate the CWP programs, add a new program as follows:

CD-(new) *Monitoring of Programs and Indicators*. Establish a formal process to periodically monitor and evaluate indicators, targets, and program implementation charts included in the Countywide Plan to alert the public and decision-makers regarding the ongoing effectiveness of the Plan.

An additional policy related to the correlation of new development and availability of infrastructure plus a program to ensure each development project is reviewed for consistency with Countywide Plan goals and policies is added as follows:

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[12] Theoretical full buildout refers to General Plan Floor Area Ratio or intensity limits applied to each parcel in a jurisdiction. Realistic buildout refers to the likely buildout of all parcels in a jurisdiction based on constraints, existence of economically viable uses under the allowable FAR, application of policy restrictions, and the like.

Policy

CD-(new) *Correlate Development and Infrastructure.* For health, safety and general welfare, new development should only occur when adequate infrastructure is available consistent with the following findings:

a) Project related traffic will not cause level of service established in the circulation element to be exceeded;

b) Any circulation improvements needed to maintain the level of service standard established in the Circulation Element have been programmed and funding has been committed;

c) Environmental review of needed circulation improvement projects has been completed;

d) The time frame for completion of the needed circulation improvements will not cause the level of service in the Circulation element to be exceeded.

e) Wastewater, water and other infrastructure improvements will be available to serve new development by the time the development is constructed.

Program

CD-(new) *Development Review:* Through the development and environmental review processes, ensure that policy provisions are evaluated and implemented. If required by statute or case law, the County Review Authority may waive or modify policy requirements determined to have removed all economically viable use of the property.

Design

Add a new program as follows:

TR-(new) *Reduce Parking Requirements* Consider reducing parking requirements for residential and commercial buildings in high-density, mixed use areas in the City Centered Corridor near public transportation or transit hubs. Senior and/or below-market projects in these locations are especially encouraged to request reduced parking.

Public Facilities and Services

Foodwaste collection would target the largest category remaining of landfill refuse that is not currently being recycled. Waste to energy conversion or large-scale composting of green waste and food waste, when not used for alternative daily cover, would generate a useful product while reducing pressure on landfills for expansion.

Specific goals, policies, and programs have been included in the *Draft 2005 CWP Update* to reduce potential impacts on waste generation related to population and landfill capacity. These measures focus on a reduction early in the process of waste creation and include support for product buy back programs, product redesign, composting, and waste to energy activities, product reuse, and recycling.

This specific activity would be supported by programs in the *Draft 2005 CWP Update* including: **PFS-4.c** *Reduce Waste at Landfill* and **PFS-4.d** *Offer Recycling Education.*

As a part of *Alternative 4* the following revisions to goals, policies, and programs related to solid waste are included:

GOAL PFS-4

Efficient Processing and Reduced Landfill of Solid Waste Materials. Minimize, treat, and safely process solid waste materials in a manner that protects natural resources from pollution while planning for the eventual reuse or recycling of discarded material to achieve zero waste.

Policies

PFS 4.1 *Reduce the Solid Waste Stream*. ~~Decrease the amount of solid waste generated and increase recycling and reuse of materials.~~ Promote the highest and best use of discarded materials through redesign, reuse, composting and shared producer responsibility, emphasizing a closed-loop system of production and consumption.

PFS-4.3 *Plan for Waste Transformation or Disposal*. Plan for the transformation or ~~disposal~~ elimination of waste materials generated that cannot be reused, recycled, or composted.

PFS 4.(new) *Promote Regulatory Efforts*. Support State legislative or regulatory efforts that will aid in achieving zero waste.

Programs

PFS-4.d *Offer Recycling Waste Materials Education*. Enact educational programs to inform residents about reuse, recycling, composting waste to energy, and zero waste programs.

PFS-4.(new) *Promote Product Redesign*. Pursue and support upstream redesign strategies to reduce the volume and toxicity of discarded products and materials.

PFS-4.(new) *Stimulate Waste-Reuse Economic Activities*. Foster and support use of discarded products and waste materials to stimulate and drive local economic and workforce development.

PFS-4.(new) *Phase in Highest and Best Use of Products*. Improve downstream reuse/recycling of end-of-life products and materials to ensure their highest and best use.

PFS-4.(new) *Foodwaste Collection Program* The County should actively promote the launching of a curbside foodwaste collection program by integrating this measure into bid specification.

The Socioeconomic Element

Historical and Archaeological Resources

To ensure consistency with SB18 (tribal consultation requirements) add a new policy as follows:

HAR-2.(new) *Implement SB18 Tribal Consultation Requirements*. In accordance with the new state law, SB18, the following policy should be added to require local governments to consult with tribes prior to making certain planning decisions and to provide notice to tribes at certain key points in the planning process. The law specifically requires tribal consultation prior to adopting or amending any general plan or specific plan.

a) Send proposal information to the Native American Heritage Commission (NAHC) and request contact information for tribes with traditional lands or places located within the geographical areas affected by the proposed changes.

b) Contact each tribe identified by NAHC in writing and provide the opportunity to consult about the proposed project.

c) Organize a consultation with tribe(s) that responds to the written notice within 90 days.

d) Refer proposals to adopt or amend the Countywide Plan or specific plans to each tribe included on the NAHC list at least 45 days prior to the proposed action.

e) Provide at least 10 days before a public hearing, notice of hearing to tribes and any other persons who have requested such notice is provided.

Additional proposed changes to the Historical and Archaeological Resources section of the *Draft 2005 CWP Update* text:

- Information about the name of the tribe should be updated from "Miwok", to "Federated Indians of Graton Rancheria, including the Coast Miwok and Southern Pomo."

- Status of the tribe as a Federated Indian tribe with an adopted democratic constitution needs to be recognized. The relationship between the County and the tribe should therefore be specifically considered government to government.

Analysis of Alternative 4

LAND USE, POPULATION, AND HOUSING

Under *Alternative 4*, conflicts with adopted land use and other plans would be similar to or the same as those identified in the *Draft 2005 CWP Update*.[13] Therefore, this would be a less-than-significant impact under CEQA, as described in *Impact 4.1-1 Applicable Land Use or Other Plans* there would not be any plan inconsistencies that would result in adverse physical effects to the environment. Additional policies of *Alternative 4* (see discussion under Countywide Planning and Collaboration section above) would likely further reduce inconsistencies as they would improve planning coordination between the County and cities / towns.

Land use amendments similar to or the same as those described for the *Draft 2005 CWP Update* would occur under this alternative. *Alternative 4* would result in similar growth and concentration of population impacts as the *Draft 2005 CWP Update*. With 915 less housing units than the *Draft 2005 CWP Update*, population growth in the unincorporated area for *Alternative 4* would not exceed ABAG projections. However, the same as the *Draft 2005 CWP Update*, *Alternative 4* would induce

[13] As previously discussed, it is assumed that the goals, policies and programs of the *Draft 2005 CWP Update* would be incorporated into Alternatives 2, 3, and 4.

substantial growth within the unincorporated portion of Marin County resulting in a significant unavoidable impact.

Land use conflicts between agricultural and urban uses would be similar under this alternative as with the *Draft 2005 CWP Update*. With similar policies and programs as the *Draft 2005 CWP Update* and the continued application of the Right to Farm Ordinance, this would be a less-than-significant impact.

The amount of agricultural processing, retail sales, and visitor-serving uses that would occur under this alternative would be the same as or less than under the *Draft 2005 CWP Update* as existing provisions of the Development Code would continue to allow these uses on agricultural lands. Such uses could result in land use conflicts with existing agricultural production and, as discussed in various sections of this EIR, would generate additional traffic and noise as well as remove agricultural land from production. *Alternative 4* would result in the development of new criteria to reduce the amount of this type of development that would be incompatible with or not directly related to existing on-site agricultural production. Such measures would reduce this impact to a less-than-significant level.

Under *Alternative 4*, land use conflicts associated with development on Housing Overlay Designation (HOD) sites proposed by the *Draft 2005 CWP Update* would be reduced. Both the number of HOD sites as well as the total number of housing units in the Housing Bank (**Exhibit 3.0-6**) would be reduced to be consistent with the revised criteria. **Exhibits 5.0-15** and **5.0-16** show the reduced number of sites, their locations, and the total number of units that could be developed. Such policies would eliminate HOD sites shown in the *Draft 2005 CWP Update* that do not meet criteria established to avoid land use conflicts. As a result of these policies, land use conflicts associated with development of the HOD would be reduced to a less-than-significant impact.

It would be beneficial to Marin County to maintain the highest number of housing units in the Housing Bank as such units will be needed to meet the County's share of regional housing needs.

The Association of Bay Area Governments (ABAG) anticipates that the Regional Housing Need Number allocated by the California Department of Housing and Community Development (HCD) to the Bay Area region will be approximately 25 percent higher in the fourth RHNA cycle than the last (third) cycle. In the third RHNA cycle, the Marin countywide and unincorporated figures were 6,515 and 521 respectively. Under the proposed revised allocation methodology, the countywide figure could be approximately 6,716 units. The unincorporated figure will likely increase more than 25 percent to between 860 and 1,050 units, as a result of revisions to the regional allocation methodology and recent Sphere of Influence reductions by cities and towns in Marin.

HCD will announce the new regional total on March 1, 2007. The ABAG draft allocation will come out on June 30, 2007, and appeals will be heard until early 2008.

The HOD will provide an essential land use tool in meeting the Regional Housing Needs Allocation and the successful adoption of a certified Housing Element.

TRANSPORTATION

As discussed in ***Section 4.2 Transportation***, traffic analysis was prepared using Marin County's Travel Model for the *Draft 2005 CWP Update* and each of the alternatives. This alternatives analysis uses the same thresholds of significance as those in ***Section 4.2 Transportation***.

Exhibit 5.0-4 shows traffic volumes, volume-to-capacity (V/C) ratios and levels of service (LOS) for the AM peak hour for existing conditions, the *Draft 2005 CWP Update*, and each of the alternatives. **Exhibit 5.0-5** shows the same information for the PM peak hour. **Exhibit 5.0-6** shows the existing level of service for the eight intersections studied for existing conditions, the *Draft 2005 CWP Update*, and each of the alternatives. **Exhibit 5.0-7** shows the projected VMT for *Alternative 4*.

Alternative 4 would produce less significant transportation impacts than any other alternative or the proposed project. This would occur, in part, because this alternative would result in the second fewest number of housing units and second least amount of nonresidential floor area. *Alternative 4* would result in the same amount of nonresidential floor area but 17 percent less housing units than would the *Draft 2005 CWP Update* overall.

Reducing the number of housing units in Marin County would alter the jobs-housing balance relative to adjacent counties and therefore change traffic patterns on primary inter-county roadways. Compared to the *Draft 2005 CWP Update* and the alternatives, *Alternative 4* would reduce traffic across the Golden Gate Bridge southbound during the AM peak hour and northbound during the PM peak hour, because fewer housing units in Marin County would likely reduce the number of commuters to San Francisco based on the indication of this effect in the travel model.

The opposite would occur on the I-580 Richmond Bridge connection to the East Bay where increased travel westbound during the AM peak hour and eastbound during the PM peak hour would occur due to an increase in the number of commuters from the East Bay to Marin County. U.S. 101 at Sonoma County Line would experience a substantial increase in traffic volume in both directions during both time periods due to expanded capacity provided by HOV lanes that would occur under *Alternative 4*.

State Route 1 (Screenline #3) and Sir Francis Drake Boulevard (Screenline #7) are two of the most congested routes that primarily carry intra-county traffic. These routes would not substantially improve under this alternative. While *Alternative 4* would reduce traffic volumes in both directions during both time periods on State Route 1, this reduced volume would not be enough to eliminate the significant traffic impact because volumes at this screenline would still exceed LOS standards.

For this alternative, the travel model assumed development of only 75 housing units at San Rafael Rock Quarry. This alternative would allow up to 350 housing units at the San Rafael Rock Quarry. Travel model results for the *Draft 2005 CWP Update* Scenarios 1, 2, and 3 can be used to estimate the potential impact of the 350 housing units because Scenarios 2 and 3 assumed 350 housing units would occur at the quarry while Scenario 1 assumed zero. The travel model results show that Scenarios 2 and 3 with 350 housing units would have, on average, ten percent higher hourly traffic volumes in the peak direction during the peak hour than would Scenario 1 with no housing units at the quarry. Therefore, it would be reasonable to estimate that traffic volumes at Third Street and Union Street in San Rafael (Screenline #13) could be up to ten percent higher under *Alternative 4*. This increase in traffic would not exceed the significance threshold for this roadway.

Screenlines

As shown in **Exhibits 5.0-4** and **5.0-5** under *Alternative 4* significant transportation project and cumulative impacts would occur at the following screenlines

#1 Highway 101 at Golden Gate Bridge

In the AM peak hour – northbound (cumulative) and southbound (cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (cumulative)

#3 State Route 1 – U.S. 101 to Almonte Boulevard

In the AM peak hour – southbound (project and cumulative)

In the PM peak hour – northbound (project and cumulative) and southbound (project and cumulative)

#4 State Route 131 – U.S. 101 and Strawberry Drive

In the PM peak hour – eastbound (cumulative)

#7 Sir Francis Drake Boulevard – U.S. 101 to Elisso Drive

In the AM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

In the PM peak hour – eastbound (project and cumulative) and westbound (project and cumulative)

#8 East Sir Francis Drake Boulevard – Larkspur Ferry to San Quentin

In the PM peak hour – eastbound (cumulative)

#9 I-580 at Richmond Bridge

In the PM peak hour – westbound (cumulative)

#11 U.S. 101 Cal Park Hill – from I-580 to Sir Francis Drake Boulevard

In the AM peak hour – southbound (cumulative)

#12 U.S. 101 north of I-580 – from 2nd Street to I-580

In the AM peak hour – southbound (cumulative)

In the PM peak hour – northbound (cumulative)

#15 Lucas Valley Road – between Las Gallinas Avenue and Los Gamos

In the AM peak hour – eastbound (project and cumulative)

In the PM peak hour – eastbound (cumulative) and westbound (cumulative)

#17 South Novato Boulevard – U.S. 101 to Sunset Parkway

In the PM peak hour – northbound (cumulative)

#18 State Route 37 – U.S. 101 and Atherton Avenue

In the PM peak hour – eastbound (cumulative)

#19 at Sonoma / Marin County Line

In the PM peak hour –northbound (project and cumulative)

As compared to the *Draft 2005 CWP Update*, a screenline impact analysis shows that *Alternative 4* would:

- Not result in the significant project impact experienced on State Route 131 between U.S. 101 and Strawberry Drive (Screenline #4) that would occur eastbound during the PM peak hour under all *Draft 2005 CWP Update* scenarios.

- Not result in the significant cumulative impact experienced on Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6) that would occur westbound during the PM peak hour under all *Draft 2005 CWP Update* scenarios.

- Not result in the significant cumulative impact on East Sir Francis Drake Boulevard from Larkspur Ferry to San Quentin (Screenline #8) that would occur westbound during the PM peak hour under *Draft 2005 CWP Update* Scenario 3.

- Not result in the significant cumulative impact experienced on South Novato Boulevard between U.S.101 and Sunset Parkway (Screenline #17) that would occur southbound during the PM peak hour under all *Draft 2005 CWP Update* scenarios.

- Result in a significant cumulative impact on State Route 37 between U.S. 101 and Atherton Avenue (Screenline #18) that would occur eastbound during the PM peak hour. This would not occur under any of the *Draft 2005 CWP Update* scenarios.

- Not result in a significant cumulative impact on U.S. 101 at the Sonoma/Marin County Line (Screenline #19) that would occur southbound during the AM peak under all *Draft 2005 CWP Update* scenarios or a significant project impact that would occur under Scenarios 2 and 3.

Another way of comparing *Alternative 4* to the *Draft 2005 CWP Update* is to examine what percentage of screenline / directions (e.g., Screenline #2 / southbound or Screenline #2 / northbound) would have less or more congestion (as measured by LOS) under the *Draft 2005 CWP Update* scenarios compared to *Alternative 4*. Looking at cumulative impacts during the AM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 36 percent of screenlines and make congestion worse at 29 percent of screenlines compared to the *Alternative 4*. Looking only at project impacts during the AM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 27 percent of screenlines and make congestion worse at 27 percent of screenlines compared to *Alternative 4*. Looking at cumulative impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at 26 percent of screenlines and make congestion worse at 40 percent of screenlines compared to *Alternative 4*. Looking only at project impacts during the PM peak, the *Draft 2005 CWP Update* scenarios, on average, would reduce congestion at nine percent of screenlines and make congestion worse at 39 percent of screenlines compared to *Alternative 4*. In general, the *Draft 2005 CWP Update* scenarios would cause traffic congestion to be worse in the PM peak and better in the AM peak when compared to *Alternative 4*.

Intersections

As shown in **Exhibit 5.0-6**, under *Alternative 4* significant cumulative transportation impacts would occur at the following intersections:

- State Route 131 (Tiburon Boulevard) and Redwood Highway Frontage Road – in the AM and PM peak hour
- Second Street and Grand Avenue – in the AM and PM peak hour
- Third Street and Grand Avenue – in the AM and PM peak hour
- Miller Creek Road and Las Gallinas Avenue – in the AM peak hour
- Miller Creek Road and U.S. 101 southbound off-ramp – in the AM and PM peak hour
- Miller Creek Road and U.S. 101 northbound off-ramp – in the AM and PM peak hour

Under *Alternative 4*, the intersection of 2nd Street and Grand Avenue (Intersection D) would have LOS F during the AM peak hour. This would be a significant impact. In comparison, there would be no significant impact to this intersection during the AM peak hour under any of the *Draft 2005 CWP Update* scenarios.

Pedestrian and Bicycle Impacts

Although not identified as a significant impact, *Alternative 4* would result in additional pedestrian and bicycle facilities / improvements consistent with the *Draft 2005 CWP Update*. Implementation of the Non-Motorized Transportation Pilot Program would result in improvements to these facilities to accommodate additional user demand and improve safety.

Sonoma-Marin Narrows

Alternative 4 includes the construction of the Marin-Sonoma Narrows project. This project would increase roadway capacity on U.S. 101 and, by helping to create a continuous HOV lane on U.S. 101 through the most of Marin County, could provide a greater incentive to carpool in this corridor. In addition, upgrading U.S. 101 from an expressway to a limited access freeway would increase capacity and safety. Under *Alternative 4*, during the AM and PM peak hour, both northbound and southbound, traffic volumes would increase, drawn to U.S. 101 by the increased capacity, as indicated by the travel model.

AIR QUALITY

As shown in **Exhibit 5.0-7**, VMT in Marin County would increase at a rate greater than population. Implementation of *Alternative 4* would increase daily VMT in Marin County by approximately 26.6 percent between 2005 and 2030, while population within Marin County would increase by 12.2 percent. Therefore, *Alternative 4* would be inconsistent with the Clean Air Plan. *Alternative 4* would result in the greatest increase of daily VMT than would any of the alternatives or the *Draft 2005 CWP Update.*

With the exception of a *Draft 2005 CWP Update* policy that would directly address parking strategies to reduce vehicle travel (i.e., TCM #15), *Alternative 4* would have goals, policies, and programs similar to or the same as the *Draft 2005 CWP Update.* As such, *Alternative 4* would be supportive of the Clean Air Plan Transportation Control Measures.

Similar to the *Draft 2005 CWP Update*, this alternative could result in the exposure of new sensitive receptors to unhealthy levels of diesel particulate matter. The same air quality mitigation measures required for the *Draft 2005 CWP Update* would be required for *Alternative 4* to reduce these impacts to a less-than-significant level.

Land uses and development consistent with the *Alternative 4* would result in an increase in greenhouse gas emissions over existing levels. This would be a significant unavoidable project and cumulative impact.

NOISE

Although land uses and development consistent with this alternative would increase traffic volumes above existing conditions, similar to the *Draft 2005 CWP Update*, this alternative would not cause a substantial increase in vehicular traffic noise at sensitive receivers in the county. Similar to the proposed project, this alternative would include a Housing Overlay Designation and would focus new housing construction on higher density, infill areas and would add housing to existing shopping centers. Even though slightly fewer housing units would be developed in the City-Centered Corridor, noise-related issues associated with proposed higher density residential development along transportation corridors (e.g., infill projects) or in existing shopping centers would be similar to the *Draft 2005 CWP Update.*

Similar to the *Draft 2005 CWP Update*, with the exception of construction noise, this alternative would not result in any significant environmental noise impact that could not be mitigated through project level environmental review. However, construction noise would be a significant unavoidable project and cumulative impact.

HYDROLOGY, WATER QUALITY AND FLOOD HAZARDS

Implementation of *Alternative 4* would add additional policies and programs associated with reducing adverse changes to water quality from agricultural operations, reducing off-site peak runoff, reducing stormwater flow, developing individual watershed based management programs, and others. These programs would aim to maintain proper ecological functioning of watersheds including sediment transport, ground water recharge and filtration, biological processes, and natural flood mitigation, while ensuring high-quality water (Goal **WR-1**).

Alternative 4 would result in fewer housing units and the same amount of nonresidential floor area as would occur under the *Draft 2005 CWP Update*. Such development would increase the amount of impervious surfaces (e.g., roofs, parking lot area, and roadways) above existing levels. Impacts to water quality from pollutants contained in runoff from increased impervious surface areas and from increased automobile trips to commercial areas (e.g., heavy metals and petrochemicals), would be significant, the same as the *Draft 2005 CWP Update*. Furthermore, additional impervious surfaces associated with *Alternative 4* could increase peak flow rates, a significant impact.

Construction of increased housing and nonresidential floor area in the City-Centered Corridor would have significant impacts on water quality and flooding potential if not properly mitigated. Similar to the *Draft 2005 CWP Update*, this alternative would concentrate development in areas that have existing development (e.g., shopping centers). Although this alternative would have less housing units than the *Draft 2005 CWP Update*, this would be a significant impact and mitigation measures to protect against water quality and flooding impacts associated with new development would still be required.

BIOLOGICAL RESOURCES

Alternative 4 could result in significant impacts to sensitive biological and wetland resources due to anticipated future land uses and development. This alternative would result in 501 housing units on the St. Vincent's / Silveira properties; the same as would occur under Scenario 3 of the *Draft 2005 CWP Update*. Impacts to sensitive resources on the St. Vincent's / Silveira properties such as the scattered seasonal wetlands, the Miller Creek Stream Conservation Area, areas of native oak woodlands, and existing wildlife habitat and movement opportunist would be similar to those that would occur under the *Draft 2005 CWP Update*.

Implementation of this alternative would result in the adoption of Baylands Corridor Option 2. For the St. Vincent's / Silveira properties, Option 2 would extend the boundary of the Baylands Corridor to U.S. 101. Option 2 would provide greater protection for biological resources than either Option 1 or Option 3 as it would provide linkages between the mapped biological features on the St. Vincent's / Silveira properties and therefore maintain wildlife connectivity between the scattered seasonal wetlands, Miller Creek corridor, and oak woodlands. Adoption of Option 2 would not preclude development at the St. Vincent's / Silveira properties.

The severity of impacts to biological resources due to the amount of development that would occur under this alternative would depend on details of project-specific development plans, the degree to which sensitive resources would be avoided under such plans, and the specifics of any required mitigation. However, potentially significant impacts to wetlands, sensitive natural communities, and special-status species would be expected under *Alternative 4*. Potential impacts to wildlife habitat and movement opportunities would be significant unavoidable project and cumulative impacts.

Implementation of *Alternative 4* would result in additional programs that would continue collaboration with the Marin Resource Conservation District (RCD) to minimize sedimentation and erosion from agricultural activities within Stream Conservations Areas (SCAs) and to develop related conservation plans.

GEOLOGY, SOILS, AND SEISMICITY

Similar to the *Draft 2005 CWP Update, Alternative 4* would result in significant project and cumulative impacts related to geologic hazards. Exposure to geologic hazards would be reduced the in West Marin Planning Area due to the transfer of units to the Housing Overlay but similar to or the same as at the St. Vincent's / Silveira properties relative to the *Draft 2005 CWP Update* due to the levels of development that would occur in these areas. This would expose fewer people and structures in West Marin to impacts associated with surface fault rupture and stronger seismic ground shaking of the San Andreas Fault. In addition, due to the lack of available wastewater treatment in the West Marin Planning Area, less development would mean fewer structures would rely on septic systems, which would decrease the potential for adverse effects to groundwater resources and other impacts

described in *Impact 4.7-7 Septic Suitability of Soils*. Less development in the West Marin Planning Area would also expose fewer people and structures to tsunami or seiches compared to the *Draft 2005 CWP Update.*

This alternative proposes to concentrate new development in the City-Centered Corridor and other unincorporated communities. Therefore, it would expose fewer people and structures to geologic hazards (e.g., collapsible soils or landsliding) than would the other alternatives. *Alternative 4* would reduce the amount of mitigation (e.g., grading) necessary to reduce identified impacts. Nevertheless, this alternative would result in significant unavoidable project and cumulative geologic impacts.

AGRICULTURE

Similar to the *Draft 2005 CWP Update*, land use amendments consistent with *Alternative 4* would result in a significant and unavoidable impact from the conversion of both County and State designated farmlands to non-agricultural uses. These changes primarily would reflect existing State and federal ownership of these lands as part of their respective park and recreational areas as well as the purchase of lands to protect existing habitat.

In addition, some agricultural land would be removed from production because existing provisions of the Marin County Development Code would allow development of agricultural processing, retail sales, and visitor-serving uses on agricultural land. As described above (see the *Land Use, Population, and Housing* section), additional policies of *Alternative 4* would create compatibility standards that would likely reduce the amount of future development of these uses. While quantifying the amount of development and conversion that could occur would be speculative, this alternative would likely result in the least amount of such development of any of the alternatives. However, such conversion would represent a significant unavoidable project and cumulative impact, the same as would occur under the *Draft 2005 CWP Update*.

As explained above, *Alternative 4* would include Option 2 regarding the size of residential buildings in agricultural areas with a revision to include the primary place of residence in the total allowable square footage.

Similar to the *Draft 2005 CWP Update*, conflicts with Williamson Act contracts would be a less-than-significant impact. Under this alternative, changes to land use designation of parcels under Williamson Act contracts to an Open Space (e.g., OS) designation would occur to recognize acquisition of these lands by the National Park Service as part of the Point Reyes National Seashore. However, future use of these lands as open space would be compatible with the provisions of the Williamson Act.

WATER SUPPLY AND DEMAND

Exhibits 5.0-17 and **5.0-18** present comparisons of *Alternative 4* to the *Draft 2005 CWP Update* for each water service area and the unserved areas for unincorporated Marin County. Inspection of these two exhibits indicates that *Alternative 4* differs from the *Draft 2005 CWP Update* only in the MMWD service area when comparing number of unincorporated housing units. *Alternative 4* would result in 1,016 fewer housing units in the MMWD service area but 100 more housing units in the unserved areas at buildout than would the *Draft 2005 CWP Update*. *Alternative 4* would result in the same amount of nonresidential floor area as would the *Draft 2005 CWP Update*. These values are shown in columns four and seven from the left in **Exhibit 5.0-17**.

Exhibit 5.0-18 presents water demands for *Alternative 4*. Water demands would be 305 AFY less in the MMWD service area but 40 AFY more in the unserved areas than they would be under the *Draft 2005 CWP Update.* Overall demands would be 265 AFY less. To compare *Alternative 4* water demands to current conditions, the resulting water demand difference of 265 AFY can be subtracted from the *Draft 2005 CWP Update* demand increase (1,871 AFY) to get the demand increase above current conditions (1,871 - 265 = 1,606 AFY). Thus, at buildout, *Alternative 4* water demands would be 1,606 AFY greater than existing water demands for the unincorporated area.

Impacts associated with *Alternative 4* would be similar to those identified in the *Draft 2005 CWP Update*. Supply deficits would still occur in NMWD-West Marin, MMWD, BCPUD, and SBCWD. The same mitigation measures for the *Draft 2005 CWP Update* are included as part of *Alternative 4*.

Accordingly, impacts related to adequacy of water supply during a normal year, adequacy of water supply during a drought and multi-drought years, groundwater supply, interference with or degradation of water supply, and secondary impacts (i.e., *Impacts 4.9-1, 4.9-2, 4.9-4, 4.9-5* and *4.9-6*) would all be significant unavoidable project and cumulative impacts. In other words, while the additional water conservation and reuse policies of *Alternative 4* would reduce such impacts, they have already been evaluated as mitigation for the *Draft 2005 CWP Update* and it was determined that they would not reduce these impacts to a less-than-significant level.

Alternative 4 would result in a slight decrease in water demands (305 AFY) in the MMWD service area. Therefore, impacts related to adequacy of water supply during a normal year, adequacy of water supply during a drought and multi-drought years, the need for new or expanded water supply facilities, interference with or degradation of water supply, and secondary impacts (i.e., *Impacts 4.9-1*, *4.9-2*, *4.9-4*, *4.9-5*, and *4.9-6*) would be less than those of the *Draft 2005 CWP Update;* especially in the MMWD service area.

Since *Alternative 4* would have more housing units in unserved areas, impacts associated with groundwater resources would be slightly greater than under the *Draft 2005 CWP Update* in the unserved areas. However, the estimated increase in demand (40 AFY) in the unserved areas would be less than the estimated decrease in demand (305 AFY) in MMWD.

Exhibit 5.0-17
Comparison of Draft 2005 CWP Update to Alternative 4 at Buildout - Unincorporated Area

Water Service Area	Housing Units [a]			Nonresidential Floor Area (Square Feet)		
	Draft 2005 CWP Update	Alternative 4	Difference	Draft 2005 CWP Update	Alternative 4	Difference
NMWD-Novato	3,116	3,116	0	507,189	507,189	0
NMWD-West Marin	1,262	1,262	0	269,698	269,698	0
MMWD	24,297	23,281	-1,016	2,309,424	2,309,424	0
BCPUD	797	797	0	38,173	38,173	0
SBCWD	885	885	0	57,674	57,674	0
IPUD	647	647	0	90,953	90,953	0
MBCSD	153	153	0	5,779	5,779	0
CSWS	276	276	0	2,486	2,486	0
EMWS	173	173	0	0	0	0
Unserved Areas	1,109	1,209	+100	1,159,954	1,159,954	0
Total	***32,715***	***31,799***	***-916***	***4,441,330***	***4,441,330***	***0***

a Includes single and multifamily units

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

Exhibit 5.0-18
Water Demand Difference Between Draft 2005 CWP Update and Alternative 4 at Buildout - Unincorporated Area

Water Service Area	Housing Difference [a]		Nonresidential Floor Area Difference		Demand Difference (Alternative 2 minus Draft 2005 CWP Update) (AFY)
	Number of Units	Demand (AFY) [b]	Square Feet	Demand (AFY) [c]	
NMWD-Novato	0	0	0	0	0
NMWD-West Marin	0	0	0	0	0
MMWD	-1,016	-305	0	0	-305
BCPUD	0	0	0	0	0
SBCWD	0	0	0	0	0
IPUD	0	0	0	0	0
MBCSD	0	0	0	0	0
CSWS	0	0	0	0	0
EMWS	0	0	0	0	0
Unserved Areas	+100	+40	0	0	+40
Total	***-916***	***-265***	***0***	***0***	***-265***

a Includes single and multifamily units
b Used 2030 estimated demand per unit in Water District Current and Projected Water Demand tables
c Used an estimated demand of 0.20 AF per 1,000 square feet based on 2005 non-residential use per square foot

Sources: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers, December 2006.

Alternative 4 would include several policies and programs directed to reduce potential impacts to water demand. One proposed policy states that no new development project shall be approved without a specific finding, supported by the facts in the administrative record, that an adequate, long-term, and sustainable water supply is available to serve the project. Another proposed policy states that in water districts where there is insufficient water to serve new development the County shall require new development to offset demand so that there is no net increase in demand. Such measure would include the use of reclaimed water, water catchments and reuse on site, water retention serving multiple sites, and retrofits of existing uses in the district to offset increased demand. Water supply and demand impacts, however, would remain significant unavoidable project and cumulative impacts.

PUBLIC SERVICES

Hazardous Waste Management

Alternative 4 would result in fewer impacts related to hazardous materials than would the *Draft 2005 CWP Update*. This alternative would result in less housing units and nonresidential floor area; thereby, it would likely result in less hazardous materials being transported, used and stored in the county. Additional policies of *Alternative 4* related to Integrated Pest Management (IPM) would reduce the amount of pesticides used at County facilities.

Wastewater Management Services

Exhibit 5.0-10 lists the seven main agencies that provide wastewater treatment within Marin County. **Exhibit 5.0-10** illustrates the ability of these district's wastewater treatment plants to accommodate projected wastewater flows generated by land uses and development in the unincorporated area consistent with each alternative.

Similar to the *Draft 2005 CWP Update,* except for the Bolinas Community Public Utility District (BCPUD), the treatment plants of the remaining six agencies would have sufficient capacity to accommodate the additional demand for treatment generated by *Alternative 4*. As with the *Draft 2005 CWP Update,* the BCPUD would be unable to treat additional wastewater flows generated by new land uses and development consistent with *Alternative 4*. Additional programs included in *Alternative 4* related to the assessment and expanded use of new wastewater and water conserving technologies (e.g., graywater systems and waterless toilets) would further reduce the demand for wastewater treatment.

Solid Waste Management

Similar to the proposed project, *Alternative 4* would not substantially increase the amount of solid waste generated in Marin County. Such an increase would not exceed the County's landfill capacity or conflict with the County's adopted Integrated Waste Management Plan. Similar to the *Draft 2005 CWP Update,* this would be a less-than-significant impact. Additional policies and programs included in *Alternative 4* related to increased recycling, reuse, and product redesign would likely result in the smallest solid waste stream of any of the alternatives.

Energy

Similar to the *Draft 2005 Update*, *Alternative 4* would result in increased energy consumption and require additional energy resources in order to meet this demand. While *Alternative 4* would result in less housing units and and the same amount of nonresidential floor area as well as maintain a similar

concentrated land use pattern, it would result in a greater amount of VMT than would the *Draft 2005 CWP Update*.

Fire Protection and Emergency Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 4* would increase the demand for County fire protection and emergency services. Additional policies and programs to improve planning coordination between the County and the cities / towns would likely reduce the demand for new services. However, such demand could still require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Criminal Justice Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 4* would increase the demand for police and detention services provided by the Marin County Sheriff's Department. Additional policies and programs to improve planning coordination between the County and the cities / towns would likely reduce the demand for new services. However, such demand could still require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Public Education Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 4* could generate a demand for school services beyond the existing public school capacity. Additional policies and programs to improve planning coordination between the County and the cities / towns would likely reduce the demand for new services. However, such demand could still require new or expanded facilities, the construction of which could cause adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

Parks and Recreation Services

Similar to the *Draft 2005 CWP Update*, implementation of *Alternative 4* would require new or expanded Community and Neighborhood Parks in order to achieve recognized park planning standards. Construction of these facilities could result in adverse physical effects to the environment. With incorporation of the same policies described in ***Section 4.10 Public Services***, construction related impacts would be reduced to a less-than-significant level.

CULTURAL RESOURCES

Land uses and development consistent with *Alternative 4* could result in the disturbance of designated local, State, and national historical resources (see **Map 4-1** [Historic Resources] in the *Draft 2005 CWP Update*). In addition, potential but as of yet undesignated historical resources exist that could be affected by future development. Similar to the proposed project this would be a significant impact.

Land uses and development consistent with *Alternative 3* could also result in the disturbance of subsurface archaeological and paleontological resources as well as human remains. The St. Vincent's / Silveira properties have been identified as an area of high archaeological sensitivity. The

Draft 2005 CWP Update policies and programs to protect archaeological resources would reduce this to a less-than-significant impact. Furthermore, *Alternative 4* would include a program to implement SB18 Tribal Consultation requirements, thus further reducing impacts to native American deposits.

VISUAL QUALITY

Alternative 4 would include the establishment of the Housing Bank (Policy **CD-2.2**) and the transfer of housing units from environmentally sensitive sites, primarily from West Marin to the City-Centered Corridor (Policy **CD-1.3** and Program **CD-1.c**). Under *Alternative 4*, views from highways, especially State Route 1, would be similar to the *Draft 2005 CWP Update*. Impacts to visual resources in the West Marin Planning Area, which contains numerous scenic resources described in the environmental setting of ***Section 4.12 Visual Resources***, would be less than for any of the alternatives.

Alternative 4 would result in the development of up to 501 housing units on the St. Vincent's / Silveira properties. Similar to the *Draft 2005 CWP Update*, visual impacts from U.S. 101 toward the St. Vincent's / Silveira properties would be less-than-significant.

Similar to the *Draft 2005 CWP Update*, development consistent with *Alternative 4* would result in significant visual impacts associated with outdoor lighting (e.g., sky glow, light trespass, and glare).

5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The *State CEQA Guidelines* require that an EIR's analysis of alternatives identify the "Environmentally Superior Alternative" among all of those considered. Based on a comparison of impacts discussed in this chapter, the EIR finds that *Alternative 4* (*Mitigated Alternative*), would be the overall environmentally superior alternative.

LAND USE, POPULATION, AND HOUSING

None of the alternatives, or the *Draft 2005 CWP Update* would result in significant conflicts with applicable land use or other plans that involve significant CEQA impacts from adverse physical effects to the environment. As noted previously, the only potential plan policy inconsistencies that might result from the adoption of the *Draft 2005 CWP Update* (or the alternatives analyzed in the EIR), would involve the updated Countywide Plan in relation to previously adopted Community Plans or LCP, which may require future amendment or update of those Community Plans or LCP to ensure continued consistency with the new CWP as adopted.

None of the alternatives, or the *Draft 2005 CWP Update* would result in significant conflicts with growth and concentration of population or land use conflicts between agricultural and urban uses. In regard to agricultural processing, retail sales, and visitor-serving uses *Alternative 4* would result in the development of new criteria to reduce the amount of this type of development that would be incompatible with or not directly related to existing on-site agricultural production. With the reduction in the number of Housing Overlay Designation sites, land use conflicts associated with development on HOD sites would be reduced under *Alternative 4*. Therefore, *Alternative 4* would be environmentally superior with respect to land use, population, and housing.

TRANSPORTATION

Exhibit 5.0-19 compares the impact to of each alternative to the *Draft 2005 CWP Update* for each of the screenlines for the AM peak hour. **Exhibit 5.0-20** provides the same comparison for the PM peak hour.

Exhibit 5.0-21 compares the number of significant screenline impacts among the *Draft 2005 CWP Update* Scenarios and the alternatives. The exhibit shows that *Alternative 4* would produce the least number of significant impacts, both project and cumulative, and therefore, would be the environmentally superior alternative with respect to transportation.

Exhibit 5.0-19
Impact Comparison – Draft 2005 CWP Update versus Alternatives for AM Peak Hour

Screen Line *Segment*	***Direction***	***Draft 2005 CWP Update (2030)***						***Alternative 1***		***Alternative 2***		***Alternative 3***		***Alternative 4***	
		Scenario 1		*Scenario 2*		*Scenario 3*									
		Cumulative	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*
1. Hwy. 101	N/B	●		●		●		●		●		●		●	
at Golden Gate Bridge	S/B	●		●		●		●		●		●		●	
2. Bridgeway Blvd.	N/B														
Gate 5 & Gate 6 Rd.	S/B														
3. State Route 1	N/B														
U.S. 101 to Almonte Blvd.	S/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4. State Route 131	E/B														
U.S. 101 & Strawberry Dr.	W/B														
5. Hwy. 101 - Alto Hill	N/B														
Paradise Dr. to SR 131	S/B - MFL														
	S/B - HOV														
6. Sir Francis Drake Blvd.	E/B														
Bon Air Road to Wolfe Grade	W/B														
7. Sir Francis Drake Blvd.	E/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
U.S. 101 to Eliseo Dr.	W/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
8. E. Sir Francis Drake B.	E/B														
Larspur Ferry to San Quentin	W/B														
9. I-580	E/B														
at Richmond Bridge	W/B														
10. I-580	E/B														
SFD Blvd. to Bellam Blvd.	W/B														
11. Hwy. 101 - Cal Park Hill	N/B														
from I-580 to SFD Blvd.	S/B - MFL	●		●		●		●		●		●		●	
	S/B - HOV														
12. Hwy. 101 - n/o I-580	N/B														
from 2nd Street to I-580	S/B - MFL	●		●		●		●		●		●		●	
	S/B - HOV														
13. 3rd Street (in San Rafael)	E/B														
at Union Street	W/B														
14. Hwy. 101 - s/o LV Rd.	N/B														
Lucas Valley Rd. to Freitas Pkwy.	S/B - MFL														
	S/B - HOV														
15. Lucas Valley Road	E/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Las Gallinas Ave. and Los Gamos	W/B														
16. Hwy. 101 - Pacheco Hill	N/B														
Nave Dr. and Miller Creek	S/B - MFL														
	S/B - HOV														
17. South Novato Blvd.	N/B														
U.S. 101 to Sunset Parkway	S/B							●							
18. State Route 37	E/B														
U.S. 101 and Atherton Ave.	W/B														
19. Hwy. 101	N/B														
at Sonoma/Marin County Line	S/B	●		●	●	●	●	●	●	●	●	●	●		

Sources: Marin Travel Model and Nelson / Nygaard, December 2006.

Exhibit 5.0-20
Impact Comparison – Draft 2005 CWP Update versus Alternatives for PM Peak Hour

Screen Line *Segment*	***Direction***	***Draft 2005 CWP Update (2030)***						***Alternative 1***		***Alternative 2***		***Alternative 3***		***Alternative 4***	
		Scenario 1		*Scenario 2*		*Scenario 3*									
		Cumulative	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*	*Cumulative*	*Project*
1. Hwy. 101	N/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
at Golden Gate Bridge	S/B	●		●		●		●		●		●		●	
2. Bridgeway Blvd.	N/B														
Gate 5 & Gate 6 Rd.	S/B														
3. State Route 1	N/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
U.S. 101 to Almonte Blvd.	S/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4. State Route 131	E/B	●	●	●	●	●	●	●	●	●	●	●	●	●	
U.S. 101 & Strawberry Dr.	W/B														
5. Hwy. 101 - Alto Hill	N/B														
Paradise Dr. to SR 131	S/B - MFL														
	S/B - HOV														
6. Sir Francis Drake Blvd.	E/B														
Bon Air Road to Wolfe Grade	W/B	●		●		●				●					
7. Sir Francis Drake Blvd.	E/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
U.S. 101 to Eliseo Dr.	W/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
8. E. Sir Francis Drake B.	E/B	●				●				●				●	
Larspur Ferry to San Quentin	W/B					●									
9. I-580	E/B														
at Richmond Bridge	W/B	●		●		●		●		●		●		●	
10. I-580	E/B														
SFD Blvd. to Bellam Blvd.	W/B														
11. Hwy. 101 - Cal Park Hill	N/B														
from I-580 to SFD Blvd.	S/B - MFL														
	S/B - HOV														
12. Hwy. 101 - n/o I-580	N/B	●		●		●		●		●		●		●	
from 2nd Street to I-580	S/B - MFL														
	S/B - HOV														
13. 3rd Street (in San Rafael)	E/B														
at Union Street	W/B														
14. Hwy. 101 - s/o LV Rd.	N/B														
Lucas Valley Rd. to Freitas Pkwy.	S/B - MFL														
	S/B - HOV														
15. Lucas Valley Road	E/B	●		●		●		●		●		●		●	
Las Gallinas Ave. and Los Gamos	W/B	●		●		●		●		●		●		●	
16. Hwy. 101 - Pacheco Hill	N/B														
Nave Dr. and Miller Creek	S/B - MFL														
	S/B - HOV														
17. South Novato Blvd.	N/B	●		●		●		●		●		●		●	
U.S. 101 to Sunset Parkway	S/B	●		●		●		●		●		●			
18. State Route 37	E/B							●						●	
U.S. 101 and Atherton Ave.	W/B														
19. Hwy. 101	N/B	●	●	●	●	●	●	●	●	●	●	●	●	●	●
at Sonoma/Marin County Line	S/B														

Sources: Marin Travel Model and Nelson / Nygaard, December 2006.

Exhibit 5.0-21
Impact Comparison – Transportation Impacts

Impacts	Draft 2005 CWP Update			Alternative			
	Scenario 1	Scenario 2	Scenario 3	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Cumulative	25	24	26	25	25	23	23
Project	11	12	12	12	12	12	10
Total	***36***	***36***	***38***	***37***	***37***	***35***	***33***

Source: Nelson / Nygaard Consulting Associates

AIR QUALITY

Each of the alternatives and the *Draft 2005 CWP Update* would have similar air quality impacts. *Alternative 3* would result in the fewest vehicle miles traveled (VMT) and have the least environmental impact overall with respect to air quality. Therefore, *Alternative 4* would not be environmentally superior for air quality in comparison to the other alternatives.

NOISE

With the exception of construction noise, *Alternatives 1*, *2*, *3*, *4*, and the *Draft 2005 CWP Update* would not result in significant noise impacts. However, each of these would result in significant construction noise impacts. Noise impacts would be similar for the *Draft 2005 CWP Update* and all of the alternatives. Therefore, *Alternative 4* would not be the environmentally superior alternative for noise in comparison to the other alternatives.

HYDROLOGY

Alternative 1 does not include the updated policies of the *Draft 2005 CWP Update* in regard to hydrologic issues. As a result *Alternative 1* would result in significant water quality and flooding impacts. Overall, *Alternative 3* would have the fewest number of housing units and nonresidential floor area. Accordingly, it would likely result in the smallest increase in impervious surfaces. Therefore, *Alternative 3* would have the fewest impacts related to water quality (e.g., from pollutants in runoff from increased impervious surface areas) and increased peak flow rates of any of the alternatives. However, under *Alternative 3*, water quality and flooding impacts in the West Marin Planning Area, where sensitive ecological resources are prevalent, would be greater than those under *Alternatives 2*, and *4*, and the *Draft 2005 CWP Update* due to the increased number of housing units that would occur.

Overall, the differences between *Alternatives 2*, *3*, and *4* and the *Draft 2005 CWP Update* would be relatively minor. With the inclusion of the Housing Overlay Designation, *Alternative 4* and the *Draft 2005 CWP Update* would have some benefits over *Alternatives 2* and *3*, primarily for the West Marin Planning Area. However, as *Alternative 4* would include additional policies and programs (e.g., to reduce stormwater volumes, increase percolation, and to develop watershed management plans) it would be environmentally superior for hydrologic impacts.

BIOLOGICAL RESOURCES

Each of the four alternatives and the *Draft 2005 CWP Update* would result in significant biological impacts. *Alternative 1* would result in the greatest impacts to biological and wetland resources of all of the alternatives and the *Draft 2005 CWP update*. This would be due to the less specific policies and programs of the *1994 CWP*, more dispersed development, and the increased amount of nonresidential floor area that would occur under this alternative. Because *Alternative 2* includes 1,500 housing units and 246,000 square feet of nonresidential floor area at the St. Vincent's / Silveira properties, it could have the most significant impacts on the site's sensitive resources. *Alternative 4* would include the adoption of Baylands Corridor Option 2, thus resulting in greater protection for biological resources than the other alternatives or the *Draft 2005 CWP Update*. *Alternative 4* would also result in additional programs that would continue collaboration with the Marin Resource Conservation District to minimize sedimentation and erosion from agricultural activities within Stream Conservation Areas. *Alternative 4* would be environmentally superior for biological resources impacts.

GEOLOGY

Each of the four alternatives and the *Draft 2005 CWP Update* would have significant geologic impacts. *Alternative 1* would have the greatest geologic impacts because it would not include the Housing Overlay Designation and therefore more housing would be located in West Marin. Furthermore, *Alternative 1* would have the most square feet of nonresidential floor area thus exposing more nonresidential structures to geologic hazards. *Alternative 2* would have the greatest amount of development at the St. Vincent's / Silveira properties thus requiring the most grading to mitigate geologic hazards at the site. *Alternatives 1, 2,* and *3* would not establish a Housing Overlay Designation and therefore would expose more structures and people to impacts associated with surface fault rupture and stronger seismic ground shaking of the San Andreas Fault as more housing would occur in West Marin. *Alternative 3* would have the least number of housing units and the least amount of nonresidential floor area and would have the least environmental impact overall in relation to geology. Therefore, *Alternative 4* would not be environmentally superior for geology in comparison to *Alternative 3*.

AGRICULTURE

Alternatives 2, 3, and *4* and the *Draft 2005 CWP Update* would result in significant agriculture impacts due to the conversion of agricultural lands to non-agricultural uses. Under *Alternative 1,* the proposed changes to County land use designations from agricultural to non-agricultural designations would not occur. Since the proposed land use designation changes would reflect existing land ownership even under *Alternative 1*, these lands would likely be used for non-agricultural uses.

Existing provisions of the Marin County Development Code would allow development of agricultural processing, retail sales, and visitor-serving uses on agricultural land under each of the four alternatives and the *Draft 2005 CWP Update*. The benefit of *Alternative 4* over the *Draft 2005 CWP Update* and the other alternatives would be the inclusion of policies and programs related to the preparation of criteria and standards regarding agricultural processing facilities and the revision to Option 2 regarding the size of residential buildings in agricultural areas to include the primary place of residence in the total allowable square footage. Because of the inclusion of these policies and programs, *Alternative 4* would be environmentally superior in regard to agriculture.

WATER SUPPLY AND DEMAND

Each of the four alternatives and the *Draft 2005 CWP Update* would result in significant unavoidable impacts associated with adequacy of water supply in normal and drought years, groundwater supply, and interference with or degradation of water supply, and other secondary impacts. *Alternative 1* would result in a greater number of significant unavoidable impacts because the new policies and programs in the *Draft 2005 CWP Update* would not be initiated.

Exhibit 5.0-22 shows estimated water demand increases above current conditions for each alternative and the *Draft 2005 CWP Update*. As shown in the exhibit, unincorporated buildout water demands are estimated to range from an increase of 1,466 AFY (*Alternative 3*) to 2,059 AFY (*Alternative 1*) above current demands. The *Draft 2005 CWP Update* demands would be 1,871 AFY above current conditions for unincorporated areas. Excluding agricultural use, system losses, and water used for firefighting, current water demands are approximately 42,000 AFY. System losses and water used for firefighting typically account for an additional ten percent of water use. For perspective, the total projected water demand for housing and nonresidential uses at buildout under the *Draft 2005 CWP Update* would be approximately 48,400 AFY (excluding agricultural use, system losses, and water used for firefighting) with 10,800 AFY in unincorporated areas and 37,600 AFY in incorporated areas. The estimated increase in incorporated demand under the *Draft 2005 CWP Update* would be about 4,500 AFY.

Exhibit 5.0-22
Water Demand Increase by Alternative – Unincorporated Area

Draft 2005 CWP Update (AFY)	*Alternative 1 (AFY)*	*Alternative 2 (AFY)*	*Alternative 3 (AFY)*	*Alternative 4 (AFY)*
1,871	1,871 + 188 = 2,059	1,871 + 120 = 1,991	1,871 – 405 = 1,466	1,871 – 265 = 1,606

Source: Todd Engineers, November 2006.

Exhibit 5.0-23 shows the difference in water demand for each water service area for each alternative compared to the *Draft 2005 CWP Update*. As shown in the exhibit, *Alternative 3* would have a demand of 405 AFY less than the *Draft 2005 CWP Update* and a 514 AFY reduction in the MMWD service area. *Alternative 2* would have an increase of 120 AFY over the *Draft 2005 CWP Update* with an increase of 106 AFY in the MMWD service area. *Alternative 4* lies in between these two alternatives with a demand of 265 AFY less than the *Draft 2005 CWP Update.*

The benefit of *Alternative 4* over the *Draft 2005 CWP Update* and the other alternatives would be the inclusion of policies and programs to reduce potential impacts to water demand. The most important of these would be the proposed policy that states that no new development project shall be approved without a specific finding, supported by the facts in the administrative record, that an adequate, long-term, and sustainable water supply is available to serve the project. Because of the inclusion of these additional policies and programs, *Alternative 4* would be environmentally superior with respect to water supply.

Exhibit 5.0-23
Alternative Comparisons at Buildout - Unincorporated

Water Service Area	***Draft 2005 CWP Update Demand Increase***		***Demand Difference between Alternatives and Draft 2005 CWP Update***			
	Unincorporated Supply-Demand (AFY)	***Total Supply-Demand (AFY)***	***Alternative 1 (AFY)***	***Alternative 2 (AFY)***	***Alternative 3 (AFY)***	***Alternative 4 (AFY)***
NMWD-Novato	+3,427	+1,461	+200	+1	-50	0
NMWD-West Marin	-81	-81	+63	+11	+21	0
MMWD	-7,500	-10,049	-299	+106	-514	-305
BCPUD	-64	-64	+96	+1	+94	0
SBCWD	-2	-2	+4	+1	-20	0
IPUD	+30	+30	+10	0	+6	0
MBCSD	+19	+19	+1	0	+1	0
CSWS	+24	+24	+2	0	+2	0
EMWS	+1	+1	+2	0	+2	0
Unserved Areas	Not quantified	Not quantified	+110	0	+55	+40
Total	***-***	***-***	***+188***	***+120***	***-405***	***-265***

Source: NMWD, MMWD, BCPUD, SBCWD, IPUD, MBCSD, CSWS, EMWS, Marin County, Todd Engineers

PUBLIC SERVICES

Hazardous Waste Management

Alternatives 3 and *4* would result in the fewest housing units and nonresidential floor area of any of the alternatives. Accordingly, they would likely result in less hazardous materials being transported, used, and stored in the county and therefore, result in the fewest impacts. However, *Alternative 4* would benefit from additional policies to reduce the amount of hazardous materials used (e.g., pesticides at County facilities) in the county and would, therefore, be environmentally superior with respect to hazardous waste management.

Wastewater Management Services

As shown in **Exhibit 5.0-10**, *Alternative 3* would generate the least amount of additional wastewater flows for three of the seven main treatment providers (i.e., the Sewerage Agency of Southern Marin, Central Marin Sanitation Agency, and Las Gallinas Valley Sanitary District), and generate an amount equal to all of the other alternatives for a fourth provider (i.e., Sanitary District #5 [Tiburon]). *Alternative 4* would generate the least amount of additional flows for two of the providers (i.e., Novato Sanitary District and Bolinas Community Public Utilities District) and, like *Alternative 3*, would generate an amount equal to all of the other alternatives for a third provider (i.e., Sanitary District #5 [Tiburon]). *Alternative 1* would generate the least additional flow to one provider (i.e., the Sausalito / Marin City Community Service District.). Both *Alternatives 3* and *4* would each help reduce wastewater flows to service providers that, as shown in **Exhibit 6.0-2**, would experience a cumulative impact: *Alternative 3* would generate the least additional flow to the Central Marin Sanitation Agency, and *Alternative 4* would generate the least additional flow to the Novato Sanitary District.

While *Alternative 3* would generate the least additional wastewater flow to the most number of treatment agencies and plants, it would not benefit from additional policies to investigate and consider appropriate small-scale wastewater reduction, treatment, and use technologies or (e.g., gray water and waterless urinals) as would *Alternative 4*. Furthermore, *Alternative 3* would not benefit from additional coordination in planning between the County and the 11 cities and towns as would *Alternative 4*. Therefore, *Alternative 4* would be environmentally superior with respect to wastewater treatment.

Solid Waste Management

All of the alternatives would generate a similar increase in the amount of solid waste generated in Marin County. Such an increase would not exceed the County's landfill capacity or conflict with the County's adopted Integrated Waste Management Plan. *Alternative 4*, however; would include additional policies to further reduce the county's solid waste stream including increased recycling and reuse of materials; promote the highest and best use of discarded materials through redesign, reuse, composting, and shared producer responsibility; emphasize a closed-loop system of production and consumption; to develop recycling educational programs; and other measures. Therefore, *Alternative 4* would be environmentally superior with respect to solid waste management.

Energy

All of the alternatives would increase energy consumption in the county and require additional energy resources in order to meet this demand. The land use patterns for the *Draft 2005 CWP Update* and

Alternatives 2, *3*, and *4* would be similar and concentrate development in the City-Centered Corridor. Policies associated with energy efficiency in buildings would be the same for the *Draft 2005 CWP Update* and *Alternatives 2*, *3*, and *4*. *Alternative 3* would result in the lowest Vehicle Miles Traveled (VMT) of any of the alternatives, be the most energy efficient and would have the least energy impact overall. Therefore, *Alternative 4* would not be environmentally superior for energy in comparison to *Alternative 3*.

Fire Protection and Emergency Services

All of the alternatives would result in a similar increased demand for fire protection and emergency services. *Alternative 4* would decrease the development potential in West Marin (i.e., where response times and levels of service would be impaired) and concentrate that development in the City-Centered Corridor (i.e., where services would be more readily available). In addition, *Alternative 4* would also result in increased coordination in planning between the County, the 11 cities and towns, and other agencies to meet these needs. Therefore, *Alternative 4* would be environmentally superior with respect to fire protection and emergency services.

Criminal Justice Services

All of the alternatives would result in a similar increased demand for police and detention services provided by the Marin County Sheriff's Department. *Alternative 4* would result in increased coordination in planning between the County, the 11 cities and towns, and other agencies to meet these needs. Therefore, *Alternative 4* would be environmentally superior with respect criminal justice services.

Public Education Services

All of the alternatives would result in a similar increased demand for public education services. *Alternative 4* would result in increased coordination in planning between the County, the 11 cities and towns, and other agencies to meet these needs. Therefore, *Alternative 4* would be environmentally superior with respect to public education services.

Parks and Recreation Services

All of the alternatives would result in a similar increased demand for parks and recreation services. Implementation of *Alternative 4* would result in the $25 million Non-Motorized Transportation Pilot Program grant to build a bicycle and pedestrian network. Therefore, *Alternative 4* would be environmentally superior with respect to parks and recreation services.

CULTURAL RESOURCES

Alternatives 1, *2*, *3*, and *4*, and the *Draft 2005 CWP Update* would all have significant impacts to historical resources. The *Draft CWP Update* and *Alternatives 1* and *4* would mitigate these impacts to a less-than-significant level. *Alternative 4* would result in additional tribal consultation through the included policy to implement SB 18 requirements (see description of *Alternative 4*) and impacts to cultural resources would be relatively less than under any of the other alternatives or the *Draft 2005 CWP Update*. Therefore, *Alternative 4* would be environmentally superior with respect to cultural resources.

VISUAL RESOURCES

Alternatives 1, *2*, *3*, and *4*, and the *Draft 2005 CWP Update* would all have significant impacts to community character and would create additional sources of lighting resulting in sky glow, light trespass, and glare. *Alternative 1* would have more visual impacts than would either the *Draft 2005 CWP Update or Alternatives 2, 3,* and *4* due to more development potential in the West Marin Planning Area and the lack of a requirement to cluster future development on the St. Vincent's / Silveira properties.

With development of up to 1,500 housing units and 246,000 square feet of nonresidential floor area on the St. Vincent's / Silveira properties, *Alternative 2* would result in significant visual impacts from U.S. 101 and the loss of the community separator between Novato and San Rafael. With the establishment of the Housing Overlay Designation as well as a development potential of up to 501 housing units on the St. Vincent's / Silveira properties, *Alternative 4's* visual impacts would be similar to the *Draft 2005 CWP Update*. Therefore, the *Draft 2005 CWP Update* and *Alternative 4* would be very similar in each resulting in the fewest impacts to visual quality. *Alternative 4* would not be substantially environmentally superior to the *Draft CWP Update* with regard to visual resources.

6.0 GROWTH INDUCING AND CUMULATIVE IMPACTS

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6.1 GROWTH INDUCING IMPACTS

The *State CEQA Guidelines* (Section 15126.2(d)) requires that an EIR evaluate the growth-inducing impacts of a proposed project. Specifically, an EIR must discuss the ways in which a proposed project could foster population growth or the construction of additional housing near the project and how that growth would, in turn, affect the surrounding environment. Growth can be induced either by eliminating obstacles to growth or by stimulating economic activity within the region. For a general plan, the project is a long-term comprehensive plan to balance projected growth of population, housing, and employment with necessary public services and infrastructure. Under CEQA, growth is not considered necessarily detrimental or beneficial.

Based on Government Code section 65300, the *Draft 2005 CWP Update* is required to serve as a comprehensive, long-term plan for the physical development of Marin County. By definition, the *Draft 2005 CWP Update* intends to provide for and address future growth in the unincorporated portions of the county. Even though the *Draft 2005 CWP Update* does not propose any specific development projects, it could still have growth-inducing impacts. Indirect growth-inducing impacts also would occur because the land use maps and designations, as well as the goals, policies, and programs, of the *Draft 2005 CWP Update* are designed to provide a framework for future growth and development in the unincorporated area of Marin County. Projected growth is described in ***Chapter 3.0 Description of the Proposed Project*** and the environmental consequences related to the potential growth are fully assessed in ***Chapter 4.0 Environmental Setting, Impacts, and Mitigation Measures***.

Land uses and development consistent with the *Draft 2005 CWP Update* would result in additional housing, agricultural, commercial, industrial, and public services and infrastructure development within the unincorporated area. For example, development consistent with the *Draft 2005 CWP Update* would result in approximately 5,391 additional housing units and 1,236,781 square feet of nonresidential floor area in the unincorporated area above existing conditions. Implementation of the proposed goals, policies, and programs of the *Draft 2005 CWP Update* would intend to manage this growth in ways that protect the environment and quality of life in Marin County.

Implementation of the *Draft 2005 CWP Update* would result in increased economic activity and population growth in Marin County. Although anticipated growth would be indirect in nature because the *Draft 2005 CWP Update* does not directly propose development, the CEQA definition includes indirect growth as well as direct growth. The *Draft 2005 CWP Update* provides the framework for development planning and implementation to proceed. For example, Policy **CD-1.1** would direct land uses to appropriate areas. Furthermore, the policy would concentrate urban development in the City-Centered Corridor where infrastructure and facilities could be made available most efficiently. Policy **CD-1.2** would discourage extension of urban levels of service to serve new development beyond urban service areas.

Goal **CD-5** would aim to manage growth so that transportation, water, sewer, wastewater facilities, fire protection, and other infrastructure components remain adequate. Goal **CD-6** would concentrate new medium- to high-intensity land uses at infill areas where services could be provided. It is the County's intent to locate urban development in urbanized areas because these locations are best equipped to provide efficient water, sewer, police, and fire protection services.

The *Draft 2005 CWP Update* acknowledges that public facilities and services may be more readily available in the county's cities and towns than the unincorporated areas. For this reason, the policies and programs in the Built Environment Element would direct major construction activity toward the City-Centered Corridor and within incorporated cities and towns. It is the intent of the *CWP Update* to provide public facilities and services that do not exceed its own projected land uses and level of development. Goal **PFS-1** would aim to provide basic public facilities to accommodate the level of development planned by the cities / towns and County.

In conclusion, the *Draft 2005 CWP Update* would result in growth that would lead to significant unavoidable adverse impacts. Implementation of the goals, policies, and programs of the *Draft 2005 CWP Update* would incrementally increase the demand and / or require new facilities for public services and utilities including water supply, wastewater treatment, fire protection and other emergency services, public education, and parks and recreation facilities. Accordingly, the *Draft 2005 CWP Update* would be growth inducing. Physical environmental impacts and mitigation measures associated with the growth expected with the *Draft 2005 CWP Update* are analyzed in the appropriate sections throughout this EIR.

6.2 CUMULATIVE IMPACTS

Cumulative impacts refer to two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. A cumulative impact is the change in the environment that results from an incremental impact of the project (in this situation, the *Draft 2005 CWP Update*) combined with the impacts of other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant impacts that occur over a given period. [1]

In this context, cumulative impacts are those that, if combined with impacts of the *Draft 2005 CWP Update,* would increase the severity or the significance of impacts of the *Draft 2005 CWP Update.* By requiring an evaluation of cumulative impacts, CEQA attempts to identify environmental impacts that would be ignored due to the project-by-project nature of the project-level analyses contained in EIRs. If a significant cumulative impact is identified, the EIR considers whether the project's contribution to that impact is cumulatively considerable.

This EIR evaluates cumulative impacts from two points of view. The first is cumulative impacts that would occur in the unincorporated area of Marin County under the *Draft 2005 CWP Update*. Each of the topical impact assessments in the EIR take into consideration, where applicable, the cumulative impacts of the *Draft 2005 CWP Update*. For these cumulative analyses the geographic area of concern is the unincorporated area of Marin County. This analysis of cumulative impacts is, for the most part, limited to development pursuant to the *Draft 2005 CWP Update*. **Exhibit 3.0-14** in ***Chapter 3.0 Description of the Proposed Project*** shows the distribution of housing units under existing conditions, buildout of the *1994 CWP*, and buildout of the *Draft 2005 CWP Update* by planning area for unincorporated Marin County. **Exhibit 3.0-17** shows the distribution of nonresidential floor area for existing conditions, buildout of the *1994 CWP*, and buildout of the *Draft 2005 CWP Update* by planning area for unincorporated Marin County. Since cumulative development

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1 *CEQA Guidelines*, Section 15355.

in the unincorporated area is integrated into the project description itself, the analyses contained in ***Chapter 4.0 Environmental Setting, Impacts, and Mitigation Measures*** consider cumulative issues.

Additionally, this analysis evaluates the level of cumulative impact resulting from growth in the unincorporated portion of Marin County, as a result of the *Draft 2005 CWP Update*, together with projected growth in each of the 11 incorporated towns and cities within the county. For most of this cumulative analysis, therefore, the geographic area of concern is all of Marin County. Traffic impacts are a regional concern. Accordingly, for transportation impacts and related air quality and noise impacts, the EIR analysis also considers growth in adjacent counties. The analyses contained in ***Chapter 4.0 Environmental Setting, Impacts, and Mitigation Measures*** discuss these cumulative impacts and whether, or not, the implementation of the *Draft 2005 CWP Update* would make a cumulatively considerable contribution to the cumulative impact.

The *State CEQA Guidelines* identify two basic methods for establishing the cumulative environment in which the project is to be considered: the use of a list of past, present, and reasonably anticipated future projects, or the use of adopted projections from a general plan or other regional planning document. For this EIR, the plan approach is used, supplemented by a list of specific projects discussed below.

In June 2006, Marin County CDA staff met with staff of each of the incorporated cities and towns in Marin County to establish anticipated General Plan buildout projections for each entity. Based on these analyses, **Exhibit 6.0-1** shows the existing number of housing units and nonresidential floor area in 2005 and the projected buildout for housing units and nonresidential floor area through 2030 for Marin County for the unincorporated area and each of the 11 cities and towns.

Buildout is based on calculating allowable development under the applicable general plans by parcel for each jurisdiction. As such, these figures represent full theoretical buildout under the general plans and may not represent development that may realistically occur. For example, the calculation of amount (in square feet) of nonresidential floor area assumes full buildout of areas that already are developed at floor area ratio's well under the allowable floor area ratio. Furthermore, the buildout projections do not take site specific constraints, such as steep slopes or the presence of wetlands, into consideration.

Full theoretical buildout, therefore, represents the highest possible development potential and may not represent a realistic buildout due to a number of factors, including: [2]

- Many non-residential sites are developed already with viable economic uses at less intensity than allowed by the applicable General Plan.
- On some parcels, environmental constraints would result in a lower intensity than allowed.
- Other policies or regulations (e.g., parking, height limits, setbacks) may lower the amount of development allowed on a particular parcel.
- Less development than allowed under the General Plan may be sought by a landowner.

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[2] For example, the County's estimate of full theoretical buildout for the City of Novato, derived from determining the Floor Area Ratio (FAR) for each nonresidential parcel in the City, is approximately 7.7 million square feet over existing conditions. The City of Novato recently projected its realistic buildout over existing conditions to be approximately 1.5 million square feet based on the potential development of the remaining larger undeveloped commercial parcels and in-fill trends on smaller parcels. This estimate does not include full theoretical buildout if all nonresidential designated parcels developed and / or redeveloped at the full allowable FAR.

Exhibit 6.0-1
Housing and Nonresidential Floor Area Growth

Jurisdiction	***Housing Units*** [a]		***Nonresidential Floor Area*** [b] ***(Square Feet)***	
	2005	***2030***	***2005***	***2030***
Belvedere	1,027	1,044	95,083	95,083
Corte Madera	3,973	4,468	2,479,896	3,047,969
Fairfax	3,418	3,651	308,165	412,011
Larkspur	6,292	6,583	1,931,448	2,083,404
Mill Valley	6,350	6,847	1,346,390	1,319,370
Novato	21,045	22,185	8,260,250	15,924,611
Ross	861	884	74,029	74,029
San Anselmo	5,362	5,524	841,803	869,466
San Rafael	24,143	29,505	18,089,065	18,786,090
Sausalito	4,195	4,289	2,117,794	2,275,725
Tiburon	4,005	4,153	462,023	543,995
Incorporated Cities and Towns Subtotal	*80,671*	*89,133*	*36,005,945*	*45,431,753*
Unincorporated Marin County	27,323	32,714	3,204,549	4,441,330
Total	***107,994***	***121,847***	***39,210,494***	***49,873,083***

a *Housing units* include permanent dwelling units like single family homes, apartments, and townhouses but excludes group quarters such as dormitories.
b *Nonresidential floor area* refers to the floor area of any nonresidential uses including retail, office, warehouses, hotels, and group quarters.

Source: Marin County Community Development Agency, October 18, 2006.

The *Draft 2005 CWP Update* projects the number of housing units in Marin County would increase from 107,994 in 2005 to 121,847 in 2030, an increase of 13,853 housing units. Marin County's total number of housing units within the cities and towns would increase from 80,671 in 2005 to 89,133 in 2030, an increase of 8,462 housing units. In 2030, city and town housing units would account for 73 percent of the total number of housing units in Marin County. Within the unincorporated areas of Marin County, the number of housing units would increase from 27,323 in 2005 to 32,714 in 2030, an increase of 5,391 housing units. The number of housing units in the unincorporated areas would account for 27 percent of the total number of housing units.

Nonresidential floor area in Marin County would increase from 39,210,494 square feet in 2005 to 49,873,083 square feet in 2030, an increase of 10,662,589 square feet. The total amount of nonresidential floor area within Marin County's cities and towns would increase from 36,005,945 square feet in 2005 to 45,431,753 square feet in 2030, an increase of 9,425,808 square feet. In 2030, the amount of nonresidential floor area in the cities and towns would account for 91 percent of the county total. Within the unincorporated area of Marin County, nonresidential floor area would

increase from 3,204,549 square feet to 4,441,330 square feet by 2030, an increase of 1,236,781 square feet. Unincorporated nonresidential floor area would account for nine percent of the total nonresidential floor area.

In addition to the housing units and nonresidential floor area projections discussed above, a number of additional projects in various stages of entitlement were included to ensure a comprehensive cumulative analysis. These are listed below:

- ***Sonoma-Marin Area Rail Transit Project*** [3]

  The Sonoma-Marin Area Rail Transit (SMART) District proposes the establishment of passenger rail service along a 70-mile corridor from Cloverdale in Sonoma County to Larkspur in Marin County. The right-of-way is the former Northwestern Pacific rail line. The proposed passenger rail service would serve 14 stations: nine in Sonoma County and five in Marin County. Self-propelled rail cars known as diesel multiple units (DMUs) would be used. Because they are self-propelled, no locomotive engine is required. As discussed in ***Section 4.2 Transportation***, in the November 2006 election, Measure R, which would have authorized SMART to construct, operate, and maintain passenger rail and a multi-use pathway on the right of way, and which would have imposed a one-quarter cent sales tax failed. A supermajority or 66.6 percent of those voting in Marin and Sonoma counties combined was required for approval. The measure fell short of passing, with 65 percent voting in favor. SMART is planning to re-introduce the initiative for the 2008 election.

- ***The San Rafael Rock Quarry Project***

  In 2004, the Dutra Group and San Rafael Rock Quarry, Inc. submitted an Amended Reclamation Plan for the San Rafael Rock Quarry to Marin County. The primary purpose of the project is to amend the existing Amended Reclamation Plan to comply with the California Surface Mining and Reclamation Act and Marin County regulations. Project components include cutting the channel to the Bay and flooding the quarry bowl, creating areas to stockpile overburden and mixing pond finds, and creating surcharge berm, soil cover, and general revegetation. Marin County is currently preparing an environmental impact report for the proposed amendment reclamation plan. It is anticipated that the quarry would operate for an additional 17 years after approval of the Amended Reclamation Plan. [4] Assuming approval in 2007, the quarry would cease operation in 2024.

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[3] *Sonoma-Marin Area Rail Transit Project Draft Environmental Impact Report*, Prepared by Parsons Brinckerhoff for Sonoma-Marin Area Rail Transit District, November 2005.

[4] Nichols·Berman communication with Tim Haddad, Marin Community Development Agency, June 2006.

- ***Marin Municipal Water District Desalination Project*** [5]

  The Marin Municipal Water District (MMWD) constructed a pilot desalination plant to enable the district to conduct environment studies, test equipment, refine operating costs, and demonstrate the technology to MMWD customers. The pilot plant opened in June 2005 and ceased operation at the end of April 2006. [6] MMWD proposes to use the results of the pilot plant operations to refine the design requirements and costs of a full-scale desalination facility, should the district decide to build one. It is anticipated that the desalination facility would be located on a MMWD-owned parcel near the end of Pelican Way in San Rafael. The intake for MMWD's desalination plant would likely be near the base of the Richmond Bridge and piped to the new facility. The MMWD is currently undertaking environmental review of the desalination project. A Draft EIR for the project may be ready for circulation by the end of 2006. [7]

- ***Marin County Airport at Gnoss Field Runway Project***

  Marin County proposes extending the existing 3,300-foot long runway at Gnoss Field by 1,100 feet. The proposed improvement would make it safer for small jets to land at Gnoss Field but would not expand the number of airplanes that are based there nor increase the number of take-offs and landings. The County has begun coordination with the U.S. Federal Aviation Administration but a schedule for this project is not available at this time. [8]

- ***The Village at Loch Lomond Marina*** [9]

  A two-phased development of the Loch Lomond Marina in the City of San Rafael is proposed. The proposed mixed-use would include restoration of the existing marina; conservation of major wetlands; neighborhood commercial uses, office space, and mixed residential units; and recreation uses.

  Phase I proposes 39 single-family homes, 29 town homes, 12,516 square feet of retail commercial, 10,017 square feet of office space, 793 square feet of restaurant space, and recreation areas. Marina uses would remain under Phase 1. However, 13,880 square feet of specialty retail space would be removed.

  Phase II proposes eight single-family homes and eight townhomes. The implementation of Phase II, however, is contingent upon the cancellation or non-renewal of the lease of the existing

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5 MMWD website www.marinwater.org accessed May 3, 2006.

6 Nichols Berman communication with Eric McGuire, Marin Municipal Water District, May 2006.

7 Nichols Berman communication with Eric McGuire, Marin Municipal Water District, May 2006.

8 Nichols·Berman communication with Jeff Rawles, Marin County Public Works Department, May 2006 and October 2006.

9 *The Village at Loch Lomond Marina Draft Environmental Impact Report*, prepared by RBF Consulting for the City of San Rafael, Community Development Department – Planning Division, February 2006.

16,300-square foot grocery store, which expires in 2013. Should the lease be terminated, Phase II would be implemented. If the lease is renewed, the grocery store would continue operating.

- ***Redwood Landfill*** [10]

  Redwood Landfill, Inc. has proposed physical and operational changes to its Redwood Landfill facility in Marin County. The proposed project includes changes to landfill capacity and design, including increasing the landfill's capacity and modifying the landfill's final contours without increasing the maximum height or the existing footprint of the landfill. Changes to waste operations (including changes in the quantity and types of waste received), environmental controls at the landfill, and facilities' administrative infrastructure are also proposed. Additional information regarding the status of the Redwood Landfill is provided in ***Section 4.10 Public Services***.

- ***Marinwood Village Concept Master Plan***

  This project would result in the redevelopment of the five-acre Marinwood Plaza shopping center into a pedestrian-oriented, mixed-use village with a grocery store, ancillary neighborhood-serving retail uses, and both market and affordable housing units. The concept includes a 20,000 square foot market, up to 12,000 square feet of ancillary neighborhood-serving retail uses, and 100 housing units with at least 50 percent of the units to be affordable. The residential units would range in size from 1,000 to 1,500 square feet in either a townhome configuration or as apartments that are stacked above ground-floor retail uses.

The cumulative considerations and impacts for each section are summarized below. For each impact area, the discussion below indicates whether cumulative development would have significant cumulative impacts to the environment and whether or not the *Draft 2005 CWP Update* would make a cumulatively considerable contribution to these impacts.

LAND USE, POPULATION, AND HOUSING

Marin County is the geographic area considered for cumulative land use, population, and housing impacts. The cumulative development scenario for land use includes the development consistent with the *Draft 2005 CWP Update* together with development in the county's 11 cities and towns. Cumulative development in the county's cities and towns together with development in the unincorporated area would induce substantial growth in Marin County. This would be a significant cumulative impact and the proposed project would make cumulatively significant contribution to this impact. Mitigation would be the same as Mitigation Measure 4.1-2 for *Impact 4.1-2 Growth and Concentration of Population.* However, this would remain a significant unavoidable cumulative impact.

As the unincorporated area, together with the 11 cities and towns, develop a greater intensification, land use compatibility impacts could result such as land use conflicts between agricultural and urban uses. However, implementation of the *Draft 2005 CWP Update* would not make a cumulatively considerable contribution to cumulative land use compatibility impacts.

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10 *Redwood Landfill Solid Waste Facilities Permit Revision Final Supplemental Environmental Impact Report*, prepared by ESA for County of Marin, July 2005.

TRANSPORTATION

As discussed in ***Section 4.2 Transportation***, a travel forecast model was used to prepare the traffic projections for this EIR. This modeling effort included projected growth in the unincorporated area of Marin County, as projected under the *Draft 2005 CWP Update*, as well as projected growth in each of the county's 11 cities and towns. This effort also included growth outside of Marin County. The regional growth was based on *ABAG Projections 2003* land use data. Therefore, traffic projections within the unincorporated area of Marin County and those made on regional systems (e.g., U.S. 101, Interstate 580, and State Routes 1 and 37) take cumulative development in the San Francisco Bay area into consideration.

Exhibit 4.2-22 shows those roadways that would have a significant impact in 2030 based on adoption and implementation of the *Draft 2005 CWP Update*. The exhibit identifies both projects and cumulative impacts. As indicated in **Exhibit 4.2-22**, unacceptable levels of service would occur on the following roadways under cumulative conditions:

- U.S. 101 at the Golden Gate Bridge (Screenline #1) in both the northbound and southbound direction during both the AM and PM peak hours;
- State Route 1 from U.S. 101 to Almonte Boulevard (Screenline #3) southbound during the AM peak hour and northbound and southbound during the PM peak hour;
- State Route 131 from U.S. 101 to Strawberry Drive (Screenline #4) eastbound in the PM peak hour;
- Sir Francis Drake Boulevard from Bon Air Road to Wolfe Grade (Screenline #6) westbound in the PM peak hour;
- Sir Francis Drake Boulevard from U.S. 101 to Eliseo Drive (Screenline #7) eastbound and westbound during both the AM and PM peak hours;
- East Sir Francis Brake Boulevard from Larkspur Ferry to San Quentin (Screenline #8) eastbound and westbound during the PM peak hour;
- Interstate 580 at the Richmond Bridge (Screenline #9) westbound during the PM peak hour;
- U.S. 101 from I-580 to Sir Francis Drake Boulevard (Screenline #11) southbound during the AM peak hour;
- U.S. 101 from 2nd Street to Interstate 580 (Screenline #12) northbound during the PM peak hour and southbound during the AM peak hour;
- Lucas Valley Road from Las Gallinas Avenue to Los Gamos (Screenline #15) eastbound in the AM peak hour and eastbound and westbound in the PM peak hour;
- South Novato Boulevard from U.S.101 to Sunset Parkway (Screenline #17) northbound and southbound during the PM peak hour; and
- U.S. 101 at the Sonoma / Napa County line (Screenline #19) southbound during the AM peak hour and northbound during the PM peak hour.

As discussed in ***Section 4.2 Transportation***, specific mitigation measures identified for each of these significant impacts may be infeasible. Impacts to the roadway system would be a significant cumulative impact and implementation of the *Draft 2005 CWP Update* would make a cumulatively considerable contribution to these impacts.

Exhibit 4.2-21 shows those intersections that would have a significant impact in 2030 based on adoption and implementation of the *Draft 2005 CWP Update*. As indicated in **Exhibit 4.2-21** unacceptable levels of service would occur on the following intersections under cumulative conditions:

- State Route 131 (Tiburon Boulevard and Redwood Highway Frontage Road) during the AM and PM peak hours;
- Second Street and Grand Avenue during the PM peak hour;
- Third Street and Grand Avenue during the AM and PM peak hours;
- Miler Creek Road and Las Gallinas Avenue during the AM and PM peak hours;
- Miller Creek Road and U.S. 101 Southbound off-ramp during the AM and PM peak hours; and
- Miller Creek Road and U.S. 101 northbound off-ramp during the AM and PM peak hours.

As discussed in ***Section 4.2 Transportation***, specific mitigation measures identified for each of these significant impacts may be infeasible. One reason for this is that many of the mitigation measures are neither funded nor designed, thus implementation of these measures within the *Draft 2005 CWP Update* planning period is unlikely. Adverse changes to intersections would be a significant cumulative impact and implementation of the *Draft 2005 CWP Update* would make a cumulatively considerable contribution to these impacts.

AIR QUALITY

The San Francisco Bay Area is the geographic area considered for air quality cumulative impacts. The cumulative impacts analysis includes development pursuant to the *Draft 2005 CWP Update* as well as development forecast by the Association of Bay Area Governments (ABAG). The Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines provide that an individual project be assessed for cumulative impacts based on an evaluation of the consistency of the project with the local general plan and the consistency of the local general plan with the Clean Air Plan (CAP). No specific cumulative threshold of significance is given for general plans beyond that of consistency with the CAP.

If a general plan was found to have a significant air quality impact related to inconsistency with the CAP it would have a significant cumulative impact. As discussed in ***Section 4.3 Air Quality***, the *Draft 2005 CWP Update* was found to be inconsistent with the CAP (see *Impact 4.3-1 Inconsistency with Clean Air Plan*). As shown in **Exhibit 4.3-6**, vehicle miles traveled (VMT) would grow at a faster rate than population. The *Draft 2005 CWP Update* would, therefore, have a cumulatively significant impact on air quality. Mitigation measures for this cumulative impact would be to adopt policies and programs to limit or reduce VMT (see Mitigation Measure 4.2-1 for *Impact 4.2-1 Increase in Vehicle Miles Traveled*). Even with mitigation, VMT would still increase at a rate greater

than the rate of population increase. Therefore, this would be a significant unavoidable cumulative impact.

There would also be a cumulative impact related to the exposure of new sensitive receptors to unhealthy levels of diesel particulate matter (DPM) (see *Impact 4.3-3 Buffer Zones for Potential Source of Odor / Toxics*). With implementation of Mitigation Measure 4.3-3 for *Impact 4.3-3 Buffer Zones for Potential Source of Odor / Toxics,* the *Draft 2005 CWP Update* contribution to this impact would be less than cumulatively considerable.

As discussed in *Impact 4.3-6 Increase in Greenhouse Gas Emissions* there would be a significant unavoidable cumulative greenhouse gas emissions impact.

NOISE

The analysis of noise impacts in this EIR is in large part based upon the traffic analysis, which considers cumulative development in the unincorporated area of Marin County, Marin County cities and towns, and the San Francisco Bay Area as described above under Transportation. Several of the individual cumulative projects could result in significant impacts.

The Sonoma Marin Area Rail Transit District (SMART) expects to begin operation of the commuter rail project along the old Northwestern Pacific Railroad right-of-way between Cloverdale and the Larkspur Ferry Station, a distance of about 85 miles. It is anticipated that there would be five stations in Marin County and that trains would run every 30 minutes during the peak period. There would be approximately 12 to 16 trains per day.

Currently, it is anticipated that rolling stock would be a state-of-the-art diesel multiple unit built in the United States. These trains are much quieter than standard diesel locomotives. The train under consideration by SMART has been measured to generate a passby sound level of 76-80 dBA at a distance of 50 feet from the passby. This level is similar to noise generated by a medium sized truck passing at a similar speed. Based on the activity level projected in the operations plan, the 60 L_{dn} contour would be located within the right-of-way of the transit line. The L_{dn} at 50 feet from the center track is projected to be about 50 dBA. The project is not anticipated to expose any existing residents to an L_{dn} of greater than 60 dB or to raise the existing L_{dn} by more than three dB.

The *Sonoma Marin Area Rail Transit (SMART) Project Draft EIR* identified significant noise impacts to residents living near grade crossings resulting from horn noise.[11] This would contribute to significant cumulative noise impacts. Mitigation Measure N-5 from the *SMART Project Draft EIR* would identify quiet zones where other crossing controls would be utilized. Local jurisdictions may apply to the Federal Rail Administration for designation as a Quiet Zone where audible warning devices are not required. If quiet zones are designated in each of the communities where significant train horn impacts are predicted, no significant noise impacts would remain after mitigation.[12]

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[11] *Sonoma-Marin Area Rail Transit Project Draft Environmental Impact Report,* Prepared by Parsons Brinckerhoff for Sonoma-Marin Area Rail Transit District, November 2005, Section 3.7 Noise and Vibration.

[12] *Sonoma-Marin Area Rail Transit Project Draft Environmental Impact Report,* Prepared by Parsons Brinckerhoff for Sonoma-Marin Area Rail Transit District, November 2005, page 3-138.

The San Rafael Rock Quarry Project would include cutting the channel to the Bay and flooding the quarry bowl; creating stockpiling overburden and mixing pond find; creating surcharge berms, soil cover, and general revegetation. The San Rafael Rock Quarry is an existing stationary noise source affecting residents of Marin County. As discussed in ***Section 4.4 Noise*** (see *Impact 4.4-3 Stationary Noise Sources*) consistency with policies set forth in the *Draft 2005 CWP Update* would mitigate noise impacts associated with this project to a less-than-significant level.

The Marin Municipal Water District is currently undertaking environmental review of a desalination project proposed near the end of Pelican Way in San Rafael. Stationary noise source standards contained in the *Draft 2005 CWP Update* (see *Impact 4.4-3 Stationary Noise Sources*) would mitigate potential impacts to a less-than-significant level.

Marin County proposes extending the existing 3,300-foot long runway at Gnoss Field an additional 1,100 feet. Program **NO-1.f** of the *Draft 2005 CWP Update* would establish noise guidelines in the Gnoss Field environs and requires review of new development proposals within two miles of Gnoss Field for consistency with the noise criteria set forth in the adopted airport land use plan. Detailed environmental review for the proposed runway extension may result in the identification of project-related impacts. No cumulative noise impacts would result from this project in combination with the proposed *Draft 2005 CWP Update.*

The Village at Loch Lomond Marina and the Marinwood Village Concept Master Plan are both specific mixed-use development proposals in Marin County. These projects, in combination with development proposed in the *Draft 2005 CWP Update* would not result in any significant cumulative noise impacts. As discussed in ***Section 4.4 Noise***, policies and programs identified in the *Draft 2005 CWP Update* would mitigate any potential noise and land use compatibility conflicts to a less-than-significant level. For example, Policy **NO-1.1** would direct the siting, design, and insulation of new development to ensure that acceptable noise levels are not exceeded. Program **NO-1.a** would establish acceptable noise levels for transportation noise sources and stationary noise sources.

The Redwood Landfill has proposed physical and operational changes to its Redwood Landfill facility in Marin County. This project would not affect existing or proposed noise sensitive receivers and would cause no cumulative noise impacts. [13]

With the exception of construction noise, as discussed in ***Section 4.4 Noise***, implementation of the *Draft 2005 CWP Update* would not result in long-term significant noise impacts. With the exception of construction noise, implementation of noise-related policies and programs with the *Draft 2005 CWP Update* would reduce the project's contribution to cumulative noise impacts to less than cumulatively considerable.

As discussed in *Impact 4.4-5 Construction Noise,* there would be a significant unavoidable cumulative construction noise impact.

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[13] *Redwood Landfill Solid Waste Facilities Permit Revision Final Supplemental Environmental Impact Report Volume I: Revisions to the Draft Subsequent Environmental Impact Report*, Prepared by ESA for County of Marin, July 2005, page 4-9.

HYDROLOGY, WATER QUALITY, AND FLOOD HAZARDS

Land uses and development consistent with the *Draft 2005 CWP Update*, together with development in the county's 11 cities and towns would result in cumulative hydrology and water resource impacts. Marin County, therefore, is the geographic area considered for hydrology cumulative impacts. In many locations, surface and groundwater resources of Marin County flow between incorporated and unincorporated portions. Impacts to water quality and increases in flood flow rates (i.e., peak flow rates) are a cumulative result of various types of activities (e.g., common urban chemical use, automobile traffic, and added impervious surface area) in both incorporated and unincorporated Marin County. Flooding impacts would occur on a watershed basis, where as, water quality impacts may be compounded within the receiving waters to which multiple watersheds flow. These receiving waters include San Francisco, San Pablo, Richardson, and Tomales Bays and the Pacific Ocean.

Each of the *Draft 2005 CWP Update* planning areas is composed of many watersheds. Impacts to water quality and peak flow rates upstream would be carried downstream. Because housing units and nonresidential floor area have not been assigned to particular watersheds but rather to planning areas, cumulative impacts to water quality and flooding can not be pinpointed to particular locations within the county.

There are four creeks in the vicinity of the Housing Overlay Designation areas that could incur cumulative impacts if parcels within these areas were to be developed. The creeks include Miller Creek, Corte Madera Creek, Coyote Creek, and Gallinas Creek. There are also a number of other Housing Overlay parcels near Coyote Creek that drain to Richardson Bay, which if developed, could result in cumulative impacts to Richardson Bay.

Construction projects in the unincorporated area of the county together with construction in the 11 cities and towns could cumulatively impact water quality. For example, if multiple construction projects occurred in the same watershed, the projects could cumulatively impair water quality if a storm event carried sediment, hydrocarbons, and other common construction site pollutants from the projects into receiving waters. The result would be excessive sediment loading that would reduce flood flow capacity locally and downstream in flood channels. In-stream ecology would be adversely affected if chemical pollutants from construction projects were to impair water quality. Such impacts would be reduced by compliance with existing County requirements, including the Marin County Stormwater Pollution Prevention Program (MCSTOPPP) and the National Pollution Discharge Elimination System (NPDES) permitting process. Under the Phase II NPDES program, construction sites larger than one acre are required, among other activities, to implement construction-related Best Management Practices (BMPs).

If no peak flow controls are incorporated into new developments, the increased amount of impervious surfaces within a watershed would cumulatively increase flood flows. The increased peak flows would not only be a result of increased impervious surface area within the watershed, but also from installation of stormdrain systems that route stormwater runoff more quickly to stream channels. Increases in peak flows can scour channel beds and increase both erosion and downstream sedimentation. Sedimentation would reduce channel capacities and could further exacerbate flooding problems.

Cumulative hydrology impacts would result from development within Marin County. These include impacts associated with water quality (see *Impact 4.5-1 Water Quality Standards*), groundwater recharge (see *Impact 4.5-3 Groundwater Recharge*), drainage (see *Impact 4.5 Drainage – On-Site and Downstream Erosion and Sedimentation, Impact 4.5-5 Stormwater Drainage System Capacities*, and

Impact 4.5-6 Stormwater Drainage System Expansion), and flood hazards (see *Impact 4.5-7 Exposure of People or Structures to Flood hazards*). These would be significant cumulative impacts.

As discussed in ***Section 4.5 Hydrology, Water Quality, and Flood Hazards***, implementation of policies and programs in the *Draft 2005 CWP Update* and the mitigation measures prescribed in this Draft EIR (e.g., see Mitigation Measure 4.5-1 for *Impact 4.5-1 Water Quality Standards* and 4.5-7 for *Impact 4.5-7 Exposure of People or Structures to Flood Hazards*) would reduce these impact to a less-than-significant level. For example, Policies **WR-2.3**, **WR-2.4**, **BIO-4.16**, **BIO-5.2** and Programs **BIO-5.e** and **WR-2.b** would minimize the generation of stormwater contaminants by addressing water quality protection during the design phase of projects using development techniques described in the *Start-at-the-Source-Design Guidance Manual for Stormwater Quality Protection*. [14]

Policies **BIO-4.1**, **BIO-4.2**, **BIO-4.4**, **BIO-4.7**, **BIO-4.8**, **BIO-4.14**, **WR-1.3**, and **WR-1.4** and Programs **BIO-4.f**, **BIO-4.g**, **BIO-4.h**, **BIO-4.i**, and **BIO-4.k**, would minimize erosion and downstream sedimentation by establishing development setback requirements in SCAs. The programs would also protect streambed, banks, and riparian vegetation, while maintaining natural stream and local hydrologic processes. Protection of riparian vegetation would maintain streambank stability and provide a filtering mechanism to trap sediment. This in turn would preserve stormwater drainage system capacity and reduce the risk of flooding. Therefore, with implementation of the policies in the *Draft 2005 CWP Update* and the mitigation measures prescribed under ***Section 4.5 Hydrology, Water Quality, and Flood Hazards***, the *Draft 2005 CWP Update* contribution to these impacts would be less than cumulatively considerable.

BIOLOGICAL RESOURCES

Land uses and development consistent with the *Draft 2005 CWP Update* together with development in the county's 11 cities and towns would contribute to a cumulative reduction in existing undeveloped habitat. Marin County, therefore, is the geographic area considered for biological resources cumulative impacts. Much of the anticipated future development would be concentrated in existing urbanized areas of the City-Centered Corridor, although sensitive resources may be present in some locations where future development may be proposed (**Exhibit 4.6-1** illustrates the distribution of vegetative cover in Marin County and **Exhibit 4.6-2** shows the general location of special-status plant and animal species in Marin County).

The overall cumulative effect of development would be dependent on the degree to which significant biological and wetland resources are protected or mitigated for as part of individual development projects throughout the county. This includes preservation of areas of sensitive natural communities, protection of essential habitat for special-status plant and animal species, and avoidance of wetlands. Further environmental review of any specific development proposals would further serve to ensure that important biological and wetland resources are identified, protected, and properly managed regardless of whether they are located within incorporated or unincorporated areas. This environmental review should serve to prevent, minimize, or mitigate most significant adverse development-related impacts. With respect to special-status-species (see *Impact 4.6-1 Special-Status Species*) and sensitive natural communities (see *Impact 4.6-2 Sensitive Natural Communities*), these would be significant cumulative impacts. With implementation of the policies in the *Draft 2005 CWP*

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[14] *Start-at-the-Source- Design Guidance Manual for Stormwater Quality Protection*, EOA, Inc., Prepared for the Bay Area Stormwater Management Agencies Association, January 1999.

Update and the mitigation measures prescribed for these two impacts, the *Draft 2005 CWP Update* contribution to these impacts would be less than cumulatively considerable.

Cumulative development would also contribute to an incremental reduction in the amount and connectivity of existing natural communities and wildlife habitat. While mitigation measures may be available to address identified impacts on sensitive resources such as wetlands and sensitive natural communities, the cumulative loss of undeveloped habitat and possible further fragmentation of the remaining natural areas would be cumulatively significant. As discussed under *Impact 4.6-4 Wildlife Habitat and Movement Opportunities*, development and land use activities consistent with *Draft 2005 CWP Update* would result in a reduction of existing natural habitat, contribute to habitat fragmentation, and result in obstruction of movement opportunities. Aspects of the applicable policies contained in *Draft 2005 CWP Update* would serve to partially address these impacts, but the conversion, fragmentation, and obstruction would be a significant cumulative impact.

Numerous policies and implementation programs from the *Draft 2005 CWP Update* address the protection of important wildlife habitat and movement opportunities, such as Policies **BIO-2.4**, **BIO-2.5**, and **BIO-2.6**. Program **BIO-2.b** would call for conduct of a comprehensive assessment of habitat fragmentation and connectivity loss in coordination with resource agencies, landowners and interested public. Important factors to be considered as part of the assessment would include the location of sensitive resources such as special-status species and wetlands, methods to eliminate obstructions along streams that currently limit the functions and values of riparian corridors, effects of intensive development, major roadways and fencing on plant and animal dispersal, and the need to protect and enhance linkages between baylands and undeveloped uplands through the eastern part of the county.

Although this comprehensive assessment would provide some further reduction of the magnitude of cumulative habitat fragmentation and methods to address connectivity loss, it is uncertain when such an assessment would be conducted or how rigorously any recommendations may be implemented. Lands identified as critical wildlife corridors and linkages recommended for acquisition or protection in the assessment may involve both the County and incorporated jurisdictions, further complicating the feasibility of successful and timely implementation. For these reasons, the *Draft 2005 CWP Update* would make a cumulatively considerable contribution to eliminating or diminishing existing wildlife habitat values in the county, and contributing to a substantial reduction in the opportunities for wildlife movement. Mitigation would be the same as Mitigation Measure 4.6-4 for *Impact 4.6-4 Wildlife Habitat and Movement Opportunities*. However, this would remain a significant unavoidable cumulative impact.

GEOLOGY

The geologic analysis considers all development and growth in the unincorporated area as well as considers the cumulative impacts for such development. Marin County, therefore, is the geographic area considered for geology cumulative impacts. As population within unincorporated Marin County together with the 11 cities and towns increases, including growth associated with the cumulative projects, so would the impacts associated with geologic hazards. As more land is exposed to new development, the possibility of increased geologic hazard impacts would accrue.

Implementation of the *Draft 2005 CWP Update* policies and programs would reduce exposure to some of these hazards. For example Policies **EH-1.1** and **EH-1.2** and Programs **EH-1.a**, **EH-1.b**, **EH-1.c** **EH-1.d** and **EH-1.e** would increase public awareness, facilitate preparedness, and continually update hazard related information as it becomes available. In addition, Policies **PS-3.1** and **PS-3.2** and Programs **PS-3.a**, **PS-3.b**, **PS-3.c**, **PS-3.d**, **PS-3.e**, **PS-3.h**, **PS-3.i**, and **PS-3.j** (see Section 4.6, Public

Safety, of the *Draft 2005 CWP Update*) would maintain communications systems and response resources, increase disaster awareness efforts, promote community involvement and structural safety, appropriately locate emergency service facilities and public structures, and develop evacuation plans to ensure effective emergency and disaster preparedness. Such programs and policies would facilitate, when a disaster does occur, that damage would be minimized and the community could recover more quickly. Cumulative development would result in cumulative seismic related impacts (see *Impact 4.7-1 Surface Fault Rupture*, *Impact 4.7-2 Seismic Ground Shaking*, and *Impact 4.7-3 Seismic-Related Ground Failure*), landsliding impacts (see *Impact 4.7-4 Landsliding*), and tsunamis and seiches (see *Impact 4.7-8 Tsunamis and Seiches*).

Section 4.7 Geology identifies several additional policy mitigation measures that would substantially reduce the impacts of the *Draft 2005 CWP Update* (for example, see Mitigation Measures 4.7-1 for *Impact 4.7-1 Surface Fault Rupture*, 4.7-2 for *Impact 4.7-2 Seismic Ground Shaking*, 4.7-3 for *Impact 4.7-3 Seismic-Related Ground Failure*, and 4.7-4 for *Impact 4.7-4 Landsliding*). However, even with these additional mitigation measures, cumulative geologic impacts (including those from surface fault rupture, seismic ground shaking, seismic-related ground failure, landsliding, and tsunamis and seiches) would be substantially reduced, but remain significant.

AGRICULTURE

Marin County is the geographic area considered for agriculture cumulative impacts. Based on a review of the most recent Marin County Important Farmland Map [15] most of the land within the City-Centered Corridor is classified as either Urban and Built-Up Land or as Other Land. Some Grazing Land is mapped north of Novato. East of U.S. 101, north of San Rafael, a combination of Grazing Land and Farmland of Local Importance is mapped. Between 2000 and 2004, the State Department of Conservation Farmland Mapping and Monitoring Program (FMMP) recorded a loss of six acres of Prime Farmland, an increase of 38 acres of Farmland of Statewide Importance, an increase of 88 acres of Unique Farmland, and a loss of 1,394 acres of Farmland of Local Importance in Marin County. Based on this trend, land uses and development consistent with the *Draft 2005 CWP Update* together with development in the county's 11 cities and towns would contribute to a cumulative conversion of agricultural land.

As discussed in ***Section 4.8 Agriculture*** implementation of *Draft 2005 CWP Update* would convert County and State designated agricultural lands to non-agricultural uses (see *Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses*). Therefore, implementation of the *Draft 2005 CWP Update* would, make a cumulatively considerable contribution to the conversion of agricultural land. Mitigation would be the same as Mitigation Measure 4.8-2 for *Impact 4.8-1 Conversion of Agricultural Lands to Non-Agricultural Uses.* However, this would remain a significant unavoidable cumulative impact.

WATER SUPPLY AND DEMAND

Current and projected water supplies are discussed in ***Section 4.9 Water Supply and Demand***. Eight water districts provide water to users in Marin County. These are Marin Municipal Water District

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15 *Marin County Important Farmland 2004*, California Department of Conservation, Division of Land Resource Protection, July 2005.

(MMWD), North Marin Water District (NMWD), Bolinas Community Public Utility District (BCPUD), Stinson Beach County Water District (SBCWD), Inverness Public Utility District (IPUD), Muir Beach Community Services District (MBCSD), California Water Service Company (CSWS), and the Estero Mutual Water System (EMWS). The NMWD has two service areas that have separate sources of supply and are not interconnected, the NMWD-Novato service area and NMWD-West Marin service area.

Only the MMWD and the NMWD-Novato serve water users in the county's incorporated cities and towns. The remaining water districts provide service to water users in the unincorporated area only. Both NMWD and MMWD import water through an agreement with the Sonoma County Water Agency (SCWA) that provides water principally from the Russian River.

The water supply and demand analyses consider both growth pursuant to the *Draft 2005 CWP Update* as well as all projected growth within each water district service area. Cumulative impacts, therefore, have been considered for each of the water districts in ***Section 4.9 Water Supply and Demand***. Land uses and development consistent with the *Draft 2005 CWP Update* together with development in the 11 cities and towns would result in an increased demand for both NMWD-Novato and MMWD.

Exhibit 4.9-35 presents the supply-demand comparison for each of the water service areas for a normal year. As shown in **Exhibit 4.9-35** water supply deficits in the unincorporated areas are projected to occur in NMWD-West Marin, MMWD, BCPUD, and SBCWD. When water demands from development in the 11 cities and towns is added to the unincorporated demand, the water supply deficits for MMWD increases. This would be a significant cumulative impact and implementation of the *Draft 2005 CWP Update* would make a cumulatively considerable contribution to this impact. The mitigation for this cumulative impact would be the same as Mitigation Measure 4.9-1(a) and 4.9-1(b) for *Impact 4.9-1 Adequacy of Water Supply During a Normal Year*. However, this would remain a significant unavoidable cumulative impact.

The 2030 water supply only relies on secure supplies. For example, the NMWD is actively investigating additional supplies, including additional surface water rights. These have not been included in this EIR's analyses as they are not yet secure. Also, MMWD is investigating the used of desalinated water. This project is uncertain at this time and it has not been included as a future supply.

If the proposed MMWD desalination plant were built, the additional water would alleviate MMWD's water supply shortage. Preliminary plans indicate that the proposed facility would be constructed in two phases, with a ten million gallons per day (MGD) first phase, and if needed, a second five MGD phase. [16] Assuming a rate of ten MGD, the first phase could provide approximately 11,000 acre-feet per year (AFY). An additional 5,500 AFY could be available if the second phase were constructed. Projected MMWD water supply deficits at buildout are estimated to be on the order of 10,049 AFY (**Exhibit 4.9-35**). The first phase of the desalination plant would allow MMWD's supply to be slightly greater than projected buildout demand. If the second phase were built, additional water would allow reduced reliance on imported water and provide additional water for emergencies, droughts, and / or sale to other agencies such as NMWD.

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[16] Draft Water Recycling Section of the Wastewater and Water Recycling Chapter of the *San Francisco Bay Integrated Regional Water Management Plan (IRWMP)*, Bay Area Clean Water Agencies (BACWA), December 2, 2005.

PUBLIC SERVICES

Hazardous Materials

As discussed in ***Section 4.9 Public Services***, land use and development consistent with the *Draft 2005 CWP Update* would likely result in increased use, storage, and disposal of hazardous materials in the county. Unincorporated development and growth in the 11 cities and towns would likely result in additional use, transport, and possibly release of hazardous materials in the unincorporated area. Furthermore, this could result in a greater likelihood that sensitive receptors, including schools, would be exposed to hazardous materials, especially as a secondary impact associated with severe seismic ground shaking. In addition, hazardous waste sites or generators could be located near sensitive receptors.

Existing federal, State, and County regulations (e.g., implementation of Marin County's Hazardous Waste Management Plan) together with the *Draft 2005 CWP Update* policies and programs (Policies **PS-4.1**, **EJ-1.1**, **EJ-1.2**, **EJ-1.3** and **EJ-1.4**) would substantially reduce the cumulative impacts associated with the release of hazardous materials. However, the potential for release and adverse effects of exposure to sensitive receptors would be cumulatively significant. The additional policy mitigation measures identified in ***Section 4.9 Public Services*** (e.g., Mitigation Measure 4.10-1 for *Impact 4.10-1 Release of Hazardous Materials*) would facilitate public education regarding the safe use, transport, and disposal of hazardous waste. While, these measures would result in a substantial reduction in the potential for release of hazardous waste, this would remain a significant unavoidable cumulative impact.

As discussed in *Impact 4.10-2 Hazardous Emission, Materials or Waste near School Sites* and *Impact 4.10-3 Development on a Hazardous Waste Site,* since such impacts are typically limited to the proximity of development there would not be a significant cumulative impact.

Wastewater Management Services

As discussed in ***Section 4.10 Public Services,*** seven main agencies operate eight wastewater treatment plants to serve Marin County. With the exception of the Bolinas Community Public Utility District, which only serves unincorporated development, the wastewater treatment plants serve development in both unincorporated and incorporated areas.

Exhibits 4.10-5 and **4.10-6** describe the cumulative growth in each of Marin County's 20 sanitary districts. **Exhibit 4.10-5** describes existing and projected unincorporated and incorporated residential growth and **Exhibit 4.10-6** describes existing and projected nonresidential floor area. **Exhibit 6.0-2** shows additional wastewater flows due to cumulative development and the ability of the wastewater treatment plants to accommodate the projected wastewater flows.

Projected flows were calculated using buildout growth described in **Exhibits 4.10-5** and **4.10-6**. Capacities and wastewater flows reported in millions of gallons per day (MGD) have been rounded to three decimal places. Actual future flows and capacities provided by the various districts are reported in gallons per day (GPD) in parentheses. Cumulative flows include both those of the *Draft 2005 CWP Update* in the unincorporated area and those of the incorporated cities and towns.

The Sausalito-Marin City Sanitary District has current remaining capacity to treat an additional 0.50 MGD (500,000 GPD). Cumulative development of 669 housing units and 184,373 square feet of nonresidential floor area would generate approximately 0.186 MGD (186,000 GPD) of additional

wastewater. [17] [18] Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

The Sewerage Agency of Southern Marin (SASM) and its six member agencies have current remaining capacity to treat an additional 4,624.7 equivalent dwelling units (EDUs) or 1.1 MGD (1,100,000 GPD). [19] [20] Cumulative development of 1,696 housing units and 108,296 square feet of nonresidential floor area would generate approximately 0.469 MGD (469,000 GPD) of additional wastewater. Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

Sanitary District #5 (Tiburon) has current remaining capacity to treat an additional 0.21 MGD (210,000 GPD). Cumulative development of 91 housing units and 53,386 square feet nonresidential floor area would generate approximately 0.082 MGD (82,000 GPD) of additional wastewater. Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment. [21]

The Central Marin Sanitation Agency has current remaining capacity to treat an additional 2.00 MGD (2,000,000 GPD). [22] Cumulative development of 5,406 housing units and 1,617,387 square feet of nonresidential floor area would generate approximately 3.02 MGD (3,020,000 GPD) of additional wastewater. Cumulative development would generate wastewater flows that exceed treatment capacity of the Central Marin Sanitation Agency. This would be a significant cumulative impact.

The Las Gallinas Valley Sanitary District has current remaining capacity to treat an additional 0.59 MGD (590,000 GPD). Cumulative development of 2,654 housing units and 191,669 square feet of nonresidential floor area would generate approximately 0.554 MGD (554,000 GPD) of additional

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[17] This analysis assumes the maximum number of housing units under the three possible land use scenarios in order to give the most conservative estimate of wastewater treatment demand under the *Draft 2005 CWP Update*.

[18] Sausalito-Marin City Sanitary District did not provide a response to request for information on ability to accommodate development related to the *Draft 2005 CWP Update*. The calculations provided are based on available capacity found in the *Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County*, The Marin County Community Development Agency, Planning Division, January 2003.

[19] Email communication from Stephen Danehy, Acting General Manager, Sewerage Agency of Southern Marin, to Kristin Krasnove, Planner, Marin County Community Development Agency, June 5, 2006.

[20] One EDU is approximately equal to one housing unit.

[21] Email communication from Robert L. Lynch, Interim District Manager, Sanitary District #5, to Kristin Krasnove, Planner, Marin County Community Development Agency, June 6, 2006. Additional communication with Nichols·Berman on June 14, 2006.

[22] The Central Marin Sanitary District did not provide a response to request for information on ability to accommodate development related to the *Draft 2005 CWP Update*. The calculations provided are based on available capacity found in the *Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County*, The Marin County Community Development Agency, Planning Division, January 2003

wastewater.[23] Therefore, the district would have sufficient capacity to accommodate the additional demand for treatment.

The two wastewater treatment plants of the Novato Sanitary District have current remaining capacity to treat an additional 1.35 MGD (1,350,000 GPD).[24] Cumulative development of 814 housing units and 7,289,772 square feet of nonresidential floor area would generate approximately 8.91 MGD (8,910,000 GPD) of additional wastewater. Cumulative development would generate wastewater flows that exceed treatment capacity of the Novato Sanitary District. This would be a significant cumulative impact.

The Bolinas Community Public Utility District currently has a moratorium on additional wastewater connections because of lack of treatment capacity and limitations on water. However, this district only serves development in the unincorporated area. Therefore, the lack of adequate capacity at that facility would not make a cumulatively considerable contribution to cumulative wastewater impacts.

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[23] Letter from Al Petrie, District Manager, Las Gallinas Valley Sanitary District, to Kristin Krasnove, Planner, Marin County Community Development Agency, June 5, 2006.

[24] The Novato Sanitary District did not provide a response to request for information on ability to accommodate development related to the *Draft 2005 CWP Update*. The calculations provided are based on available capacity found in the *Marin Countywide Community Facilities Element Technical Background Report Provision of Services in Marin County*, Marin County Community Development Agency, Planning Division, January 2003.

Exhibit 6.0-2
Existing Wastewater Treatment Capacity and Projected Cumulative Wastewater Flows

Agency	*2005 Service Population (Persons)*	*Total Capacity* [a] *(MGD)*	*2005 Flows (MGD)*	*2005 Remaining Capacity (MGD)*	*Cumulative Wastewater Flows* [b] *(MGD)*	*2030 Remaining Capacity (MGD)*
Sausalito / Marin City Community Service District	27,260	1.80	1.30	0.50	0.186	+0.314
Sewerage Agency of Southern Marin	28,000	3.60	2.50	1.10	0.469	+0.631
Sanitary District #5 (Tiburon)	9,500	0.98	0.77	0.21	0.082	+0.128
Central Marin Sanitation Agency	120,000	10.0	8.00	2.00	3.02	-1.02
Las Gallinas Valley Sanitary District	32,000	2.92	2.33	0.59	0.554	+0.036
Novato Sanitary District [c]	60,000	6.55	5.20	1.35	8.91	-7.56
Bolinas Community Public Utility District	1,500	0.065	0.035	n / a [d]	0.059	n / a [d]

a Dry Weather Capacities in million gallons per day (MGD)
b Figures in MGD are rounded to three decimal places. Data that are more exact are provided in gallons per day GPD in the text descriptions that follow this exhibit.
c Data represent combined capacities for both the Novato and the Ignacio treatment plants.
d Bolinas Community Public Utility District currently has a moratorium on additional wastewater hookups because of lack of treatment capacity and limitations on water.

Source: Nichols Berman and the *Marin Countywide Community Facilities Element Technical Background Report, Provision of Services in Marin County*, The Marin County Community Development Agency, Planning Division, January 2003. Updated numbers provided Marin County Development Agency, March 2006.

Solid Waste Management

As discussed in ***Section 4.10 Public Services***, development consistent with the *Draft 2005 CWP Update* would not affect the ability of the County to provide at least 15 years of permitted disposal capacity. Implementation of the *Draft 2005 CWP Update* would make a less than cumulatively significant contribution to cumulative solid waste management impact.

Energy

As discussed in ***Section 4.10 Public Services***, development consistent with the *Draft 2005 CWP Update* would result in less-than-significant energy impacts related to energy consumption. The *Draft 2005 CWP Update* contribution to cumulative energy impacts would be less than cumulatively considerable. However, there would be significant cumulative energy consumption impacts (see *Impact 4.10-8 Energy Consumption from Building Construction and Retrofit*). Mitigation would be the same as Mitigation Measure 4.10-8 for *Impact 4.10-8 Energy Consumption from Building Construction and Retrofit.* However, this would remain a significant unavoidable cumulative impact.

Fire Protection and Emergency Services

Development consistent with the *Draft 2005 CWP Update* together with development in the 11 cities and towns would result in a cumulative demand for fire protection and emergency services facilities. Thee are a total of 16 fire protection districts in Marin County, including the Marin County Fire Department (MCFD). The cities and towns are generally served by their own fire departments. The MCFD has mutual aid agreements with all of the local fire protection districts.

As discussed in *Impact 4.10-9 Increased Demand for Fire Protection and Emergency Services Facilities* such increased demand would require new or expanded facilities, the construction of which could cause adverse effects to the environment. As discussed in this impact, with implementation of the policies in the *Draft 2005 CWP Update*, this would be a less-than-significant impact and the proposed project would make a less than cumulatively considerable contribution to cumulative impacts.

Criminal Justice Services

Cumulative development within the County's 11 cities and towns would not contribute to the increased demand for police and detention services provided by the Marin County Sheriff's Department (MCSO). The MCSO is responsible for crime prevention and law enforcement in the unincorporated areas of Marin County. Increased demand for police and detention services provided by the MCSO, therefore, would not make a cumulatively considerable contribution to cumulative criminal justice services.

Public Education Services

As discussed in ***Section 4.10 Public Services***, projections for Kindergarten through twelfth grade (K-12) students in Marin County by the State Department of Finance are expected to decline from 28,565 students in 2004 / 2005 to 27,448 students in 2014 / 2015. Nevertheless, some individual school districts located in the City-Centered Corridor expect a demand beyond existing school capacity due to additional students generated by new housing units. As discussed in *Impact 4.10-12 Demand for Public Education Services*, with implementation of the policies in the *Draft 2005 CWP Update*, this would be a less-than-significant impact and the proposed project would make a less than cumulatively considerable contribution to cumulative impacts.

Parks and Recreation Services

Growth in the unincorporated area of Sonoma County plus the 11 cities and towns would likely require additional park and recreation services. As discussed in ***Section 4.10 Public Services***, growth in unincorporated Marin County would result in the need for new or expanded community and neighborhood parks in order to achieve recognized park planning standards. As discussed in *Impact 4.10-13 Increased Demand for Park and Recreation Services and Facilities*, with implementation of the policies in the *Draft 2005 CWP Update* this would be a less-than-significant impact and the proposed project would make a less than cumulatively considerable contribution to cumulative impacts.

CULTURAL RESOURCES

The cultural resources analysis considers all growth within the unincorporated area of Marin County and the cumulative impacts of such growth on cultural resources. Marin County, therefore, is the geographic area considered for cultural resources cumulative impacts. Impacts to cultural resources are typically limited to the proximity of development. Therefore, growth beyond the boundaries of the unincorporated area would not compound or increase the severity of impacts to cultural resources from development pursuant to the *Draft 2005 CWP Update*.

Policies and programs of the *Draft 2005 CWP Update* (e.g., Policies **HAR-1.1**, **HAR-1.2**, **HAR-1.3**, and **HAR-2.2** and Programs **HR-1.a**, **HAR-1.b**, **HAR-1.i** and **HAR-2.a**) as well as Mitigation Measure 4.11-1 for *Impact 4.11-1 Historical Resources* would require project applicants to take appropriate measures to protect or preserve cultural resources affected by individual projects. Therefore, this would be a less-than-significant cumulative impact.

VISUAL RESOURCES

Visual quality impacts are typically limited to the proximity of development, thus growth in the county's cities and towns would not typically compound or increase the severity of impacts to visual quality from development pursuant to the *Draft 2005 CWP Update*. One exception to this would be development within the cities and towns within the City-Centered Corridor. Such development could contribute to a cumulative visual impact related to the visual quality from the county's highways, primarily U.S. 101. However, Marin County would exercise design review for proposed development throughout the unincorporated areas of the county, including the City-Centered Corridor. Policies and programs contained in the *Draft 2005 CWP Update* (e.g., Policy **DES-4.1** and Programs **DES-4.a**, **DES-4.b**, **DES-4.c**, **DES-4.d** and **DES-4.e**), together with the County's design review, would ensure that land uses and development consistent with the *Draft 2005 CWP Update* would not make a cumulatively considerable contribution to this cumulative impact.

Cumulative development within Marin County would contribute to cumulative light pollution and nighttime sky impacts. Implementation of Mitigation Measure 4.12-4 for *Impact 4.12-4 Light Pollution and Nighttime Sky* would reduce adverse changes to visual resources resulting from additional sources of lighting that would occur from land uses and development consistent with the *Draft 2005 CWP Update.* Mitigation Measure 4.12-2 would amend the County's Development Code to include lighting design guidelines. New development projects would be required to submit a lighting plan consistent with the lighting design guidelines. However, implementation of *Draft 2005 CWP Update* would still make a cumulatively considerable contribution to this cumulative impact.

7.0 REPORT PREPARATION

7.0 REPORT PREPARATION

7.1 PERSONS RESPONSIBLE FOR REPORT PREPARATION

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