Ladies and Gentleman:

SUBJECT: ON-SITE WASTEWATER TREATMENT SYSTEMS ORDINANCE
DRAFT ENVIRONMENTAL IMPACT REPORT (SCH#201112024)
FILE NO. 10060-0-0-09CP

The enclosed Draft Environmental Impact Report (DEIR) has been prepared to evaluate the potential environmental impacts of the project described below:

The County of Santa Clara proposes to adopt a new ordinance that would update and replace existing County regulations governing individual on-site wastewater treatment systems (OWTS) within the unincorporated part of the County. The proposed modifications would eliminate inconsistencies with Regional Water Quality Control Boards’ regulations and directions. Besides allowing a broader range of treatment and dispersal designs (alternative systems that use pre-treatment technologies), the proposed ordinance would eliminate the 1-acre minimum lot size requirement for installation of OWTS in the Lexington Basin. The proposed project also includes changes to a County General Plan policy and supporting descriptive text relating to use of alternative OWTS as well as a change to the Zoning Ordinance eliminating the minimum lot size requirement for secondary dwelling units in the San Martin Planning Area. These changes would reflect the current state of science regarding OWTS and ensure consistency between the proposed ordinance and the General Plan.

Your comments regarding the significant environmental effects of this project and the adequacy of the DEIR are welcome. Written comments, submitted to the Santa Clara County Planning Office by 5:00 p.m., April 4, 2013, will be included in the Final EIR. Comments on the DEIR should be addressed to:

David Rader
Santa Clara County Planning Office, County Government Center
70 W. Hedding Street, 7th Floor, East Wing
San Jose, CA 95110
david.rader@pln.sccgov.org, Fax: (408) 288-9198

The Planning Commission hearing to take comments on the Draft EIR has been tentatively scheduled for March 28, 2013. The hearing will take place in the Board of Supervisors Chambers; County Government Center, 70 W. Hedding Street, San Jose, CA 95110. The Planning Commission meeting begins at 1:30 p.m. In addition, public workshops on the proposed ordinance will be held at the following locations and times:

- Tuesday, March 12, 6:00 – 7:30, San Martin Lion’s Club, 12415 Murphy Ave in San Martin
- Wednesday, March 19, 6:00 – 7:30, Redwood Estates Pavilion, 21450 Madrone Drive, Los Gatos.

Sincerely,

[Signature]

Rob Eastwood, Principal Planner, AICP
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1.0 EXECUTIVE SUMMARY CHAPTER

1.1. SUMMARY OF THE PROPOSED PROJECT

Development on most unincorporated lots in Santa Clara County (“County”) is served by private on-site wastewater treatment and dispersal systems (on-site systems or OWTS). Regulations governing the installation and maintenance of these OWTS were developed decades ago, and though the County has updated these regulations over the years, the regulations do not fully reflect current industry practices and advances in the knowledge, understanding, and use of on-site systems. In addition, the current regulations contain inconsistencies and do not provide a comprehensive approach covering administrative, design, materials, construction, operation, maintenance, and monitoring matters for OWTS.

Therefore, the County of Santa Clara proposes to adopt a new ordinance that would update and replace the existing County ordinance and regulations governing individual on-site wastewater treatment and dispersal within the unincorporated part of the County, including properties utilizing OWTS within incorporated areas of the County where the municipality formally defers to the County (e.g., through local ordinance) for regulation of OWTS according to County codes. The proposed Ordinance includes provisions for development of an On-site Systems Manual (Manual) that contains the policy, procedural, and technical details for implementation of the Ordinance. The Manual would be developed and maintained under the authority of the Director of Environmental Health, with key elements subject to review and approval by the California Regional Water Quality Control Board. A draft of the Manual can be reviewed at the Department of Environmental Health website: http://www.sccgov.org/sites/deh/Pages/DEH.aspx

The proposed Ordinance would: (a) implement more standardized procedures for soil and site evaluations; (b) incorporate new requirements pertaining to the vertical separation between the bottom of dispersal systems and groundwater or restrictive layers; (c) provide a broader range of treatment and dispersal designs, including alternative OWTS; and (d) institute a program to assure ongoing maintenance of certain types of systems. The proposed Ordinance meets the County Department of Environmental Health’s (DEH) objectives of:

- eliminating inconsistencies with Regional Water Quality Control Boards' regulations and directions;
- reducing the environmental impacts associated with conventional OWTS by updating the regulations to incorporate currently recognized and accepted installation practices that are less harmful to the environment; and
- providing for treatment methods in areas requiring additional protections for groundwater resources.

Two key terms contained in the proposed Ordinance and used extensively in this EIR are “Conventional OWTS” and “Alternative OWTS,” which are defined as follows:

- “Conventional OWTS” is a type of OWTS consisting of a septic tank for primary treatment of sewage followed by a system of drainfield trenches (normally with
perforated pipe and gravel) for subsurface dispersal of effluent in the soil. This is the traditional type of OWTS, and the type of system permitted under the existing Ordinance.

- “Alternative OWTS” is a type of OWTS that utilizes either a method of wastewater treatment other than a conventional septic tank and/or a method of wastewater dispersal other than a conventional drainfield trench. Alternative OWTS are designed and employed to improve the quality of effluent before dispersal into the soil and/or to enhance the rate of manner of absorption of the effluent by the soil. This allows alternative OWTS to overcome certain soil conditions or other site constraints where conventional OWTS would not perform effectively. The proposed Ordinance includes provisions that would allow the use of alternative OWTS under certain specified conditions.

The proposed project also includes changes to a County General Plan policy and supporting descriptive text that reference use of alternative OWTS as well as a change to the Zoning Ordinance affecting the San Martin Planning Area. These changes would reflect the current state of science regarding OWTS and would ensure consistency between the proposed Ordinance and the General Plan.

1.2 SUMMARY OF IMPACTS

As described in the text of the Draft EIR, given existing laws, regulations, and County review procedures for new development applications, the project would have less-than-significant direct and indirect impacts in all of the resource areas evaluated:

- Geology and Soils
- Hydrology and Water Quality
- Traffic and Circulation
- Air Quality and Climate Change
- Noise
- Aesthetic Resources
- Utilities and Public Services
- Hazards and Hazardous Materials
- Land Use
- Energy
- Biological Resources
- Cultural Resources

1.3 SUMMARY OF ALTERNATIVES ANALYSIS

The State CEQA Guidelines require that an EIR include an evaluation of a range of reasonable alternatives to the project that would feasibly attain most of the project objectives (which are listed in the following Section 3.2-C) while avoiding or substantially reducing any of the significant impacts of the project. Section 5.4 of this EIR contains a full description and analysis of the following three project alternatives:

A. Alternative 1 – No Project - Continuation of Existing County Regulations; this alternative would not make any changes to existing County OWTS regulations.
B. Alternative 2 – Limited Use of Alternative OWTS; this alternative includes the proposed changes regulating conventional OWTS but allows alternative OWTS to mainly be used only for repairing failing systems.

C. Alternative 3 – Maintain Lexington Basin 1-acre Minimum Lot Size Restriction; this alternative would retain the existing ban on installing new OWTS on lots smaller than one acre in the Lexington Basin watershed.

The alternatives have been selected to reduce as many impacts as possible. The alternatives selected for analysis provide a range of alternatives, which can be used to test effects of the alternatives against the proposed project as well as to one another.

A. Alternative 1 (No Project – Continuation of Existing County Regulations)

The CEQA Guidelines require consideration of a “No Project” alternative. The Guidelines specifically advise that the no project alternative is “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.”

Under the No Project Alternative, future OWTS on currently undeveloped lots would be designed, installed, and operated under existing County regulations using conventional OWTS. The additional rural residential lots that could be developed if the proposed Ordinance were approved would remain vacant since they could not be developed using alternative OWTS as allowed under the Ordinance. The No Project Alternative would eliminate all direct and indirect impacts that would result from the construction of additional development enabled because of the Ordinance and OWTS.

The proposed Ordinance includes many new requirements that would apply to conventional OWTS, mostly related to the design and permitting of new installations. These changes include: updated technical requirements affecting dispersal system sizing and construction; more restrictive slope limitations for gravity dispersal fields; elimination of lot size limitations (existing parcels) in the Lexington Basin; new code requirements for completion of a basic operational inspection at the time of septic tank pumping; qualifications and training requirements for on-site system maintenance providers; elimination of code inconsistencies; and simplification of the regulations. Under the No Project Alternative, these changes would not be made.

Though the No Project Alternative eliminates all direct and indirect adverse impacts associated with the proposed project, impacts to hydrology, soil disturbance, water quality, public health, and biological resources could be greater, since this alternative lacks the alternate design options and other regulatory measures included in the proposed project that would specifically improve the overall flexibility and effectiveness for ongoing operation, maintenance, repair, and environmental protection for the many thousands of existing and new conventional OWTS.

B. Alternative 2 (Limited Use of Alternative OWTS)

Alternative 2 (Limited Use of Alternative OWTS) describes the environmental effects of revising the proposed Ordinance to limit the use of alternative OWTS to repairs of existing failing systems and for new development only in cases where a conventional OWTS could be installed (i.e., the owner opts to install an alternative OWTS rather than
a conventional system). The portions of the proposed Ordinance related to changes in regulations and guidelines for conventional OWTS would remain part of this project alternative.

By not allowing the potential development of undeveloped lots using alternative OWTS, the alternative would eliminate indirect impacts that would result from construction of improvements in those lots, including the off-site impacts of increased traffic, noise, and air pollution resulting from that development. However, under the proposed project, these impacts have been found to be less than significant.

C. Alternative 3 - (Maintain Lexington Basin 1-acre Minimum Lot Size Restriction)

Alternative 3 describes the environmental effects of maintaining the existing building restriction on lots less than an acre in size in the Lexington Basin watershed. This would eliminate development of as many as 46 potentially developable vacant lots in this watershed.

By maintaining the existing ban on development of lots 1 acre or smaller in this watershed, this alternative would slightly reduce the potential for additional lot development that could be induced by the proposed Ordinance, thereby reducing potential vehicle trips from additional development of smaller vacant lots in the Lexington Basin. As is described subsequently in Section 4.2, Hydrology and Water Quality that ban was adopted by the County due to potential impacts of development of small lots on water quality, and the proposed Ordinance includes techniques and systems that would reduce that impact to a less-than-significant level.

Although this alternative would reduce potential vehicle trips from additional development in the Lexington Basin, it should be noted that traffic impacts in that watershed would already be less than significant under the proposed project. In addition, given the uncertainties in forecasting future development at a program level of analysis, the reduction in impacts achieved by eliminating development of 46 units would not be substantial. The alternative would have similar impacts as the proposed project and would not be environmentally superior. This alternative would be inconsistent with project objectives aimed eliminating internal inconsistencies regarding the use of alternative OWTS.

D. Environmentally Superior Alternative

The CEQA Guidelines require that the EIR identify the environmentally superior alternative. Based on the summary provided above and the more detailed analysis of alternatives contained in Section 5.4 of this EIR, the environmentally superior alternative would be Alternative 2.

1.4 AREAS OF CONTROVERSY

A. Areas of Controversy

The proposed project raises issues and some areas of controversy that will be considered by County decision-makers. Controversial issues are known through
expressions of public opinion that are documented in the record or obtained through public meetings. Prior to circulating the Draft EIR, the County circulated a Notice of Preparation (NOP) to agencies and interested parties. Comments received on the NOP are included in Appendix A of this EIR.

Some areas of controversy are not within the purview of CEQA because that statute focuses on evaluation of significant effects to the physical environment. Those areas of controversy that relate to a physical impact issue are noted in the list below.

New on-site wastewater treatment and disposal systems (OWTS) that are not properly designed, constructed, and/or maintained could adversely affect groundwater supplies. Correspondence submitted from the Santa Clara Valley Water District has stated its principal concerns relate to pathogens, nitrates, emerging contaminants (such as pharmaceuticals and personal care products), and other contaminants that could be discharged from these systems.

Lots that may not have the size, soils, or other characteristics to allow development of a conventional OWTS under the existing ordinance may be able to use alternative OWTS to develop under the proposed regulations included in the new Ordinance. Correspondence submitted by the Local Agency Formation Commission of Santa Clara County has stated that induced growth in unincorporated portions of the County could cause adverse effects on biological resources, air quality, water quality, traffic and circulation, and other resources.
2.0 INTRODUCTION CHAPTER

2.1 PURPOSE OF THE EIR

This Draft Program Environmental Impact Report (EIR) addresses the potential impacts of the County of Santa Clara adopting and implementing an ordinance that would update and replace the existing County Ordinance governing on-site wastewater treatment systems (OWTS). In addition, the EIR evaluates the General Plan Amendment needed to make the proposed ordinance consistent with the County’s General Plan as well as an amendment to the County’s Zoning Ordinance to allow the development of secondary dwelling units on smaller lots in San Martin.

This EIR has been prepared in conformance with the provisions of the California Environmental Quality Act (CEQA) Guidelines as amended to date. CEQA requires that public agencies prepare and certify an EIR before carrying out projects that may have significant effects on the environment (Public Resources Code Section 21080). Preparation of an EIR is the responsibility of the “lead agency,” the public agency that has the principal responsibility for carrying out or approving the project (Public Resources Code, Section 21067). Because the County of Santa Clara is the agency that would approve and implement the proposed project, it is the lead agency for the project.

The EIR has been prepared under contract to the County of Santa Clara. This EIR is an informational document that is intended to inform the County (the Lead Agency), other public agency decisionmakers, and the public of the significant environmental effects of the proposed project, potential mitigation measures that address these impacts, and alternatives to the proposed project. The County will consider the information in this EIR along with other information presented during the decision-making process when determining whether to adopt or modify the proposed project or an alternative. The information contained in this EIR does not control the County's ultimate decision on the project. However, if the County decides to approve the project, then the County must respond to each significant effect identified in the EIR by making findings under Section 15091 of the CEQA Guidelines and, if necessary, adopting a Statement of Overriding Consideration under Section 15093.

2.2 SCOPE OF THE EIR

This 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 proposed Ordinance. This analysis does not examine the effects of site-specific projects that may occur within the overall umbrella of the Ordinance in the future. The CEQA Guidelines Section 15146 states:

*The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.*
(a) An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy.

(b) An EIR on a project such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption or amendment, but the EIR need not be as detailed as an EIR on the specific construction projects that might follow.

2.3 CONTENTS OF THE EIR

This EIR has been prepared by the County of Santa Clara as Lead Agency in conformance with the California Environmental Quality Act (CEQA). As such, it provides objective information addressing the environmental consequences of the proposed project and possible ways to reduce or avoid these impacts.

This EIR addresses all the areas of potentially significant impact as well as other potential impact areas that CEQA requires an EIR to investigate. The environmental effects of the project are analyzed for each topic. The CEQA Guidelines define the effects of a project as changes from the environmental setting (i.e., existing conditions) that are attributable to the project. Particularly pertinent sections of the CEQA Guidelines are listed below.

1. Section 15121(a) (Information Document) states that "an EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts."

2. Section 15151 (Standards for Adequacy of an EIR) states that an EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information that enables them to make an informed decision taking into account the environmental consequences of the project. The evaluation of the environmental effects does not need to be exhaustive. Disagreement among experts does not make an EIR inadequate, though the EIR will summarize the main points of disagreement among the experts.

3. Section 15003(I and j) (Policies) states that technical perfection is not necessary, but adequacy, completeness, and a good-faith effort at full disclosure are required. "CEQA requires that decisions be informed and balanced. It must not be subverted into an instrument for the oppression and delay of social, economic, or recreational development or advancement."

4. Section 15143 (Emphasis) states that the EIR shall focus on the significant effects on the environment. The significant effects will be discussed with emphasis in proportion to their severity and probability of occurrence.
Discussion of each major topic includes criteria used to evaluate whether an environmental impact is significant or insignificant.

5. **Section 15002(g) (Significance)** states that a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project. The significance criteria for each topic in this EIR have been developed based on guidelines set forth in the *CEQA Guidelines* as modified in some cases by standards established by the County. This EIR lists the thresholds of significance for each area of impact and assesses whether the project's impacts exceed these thresholds. If the impact does not exceed the threshold or if the recommended mitigation measures reduce the impact below the thresholds, then the impact is considered to be less-than-significant.

### 2.4 PUBLIC REVIEW AND COMMENT

#### A. Notice of Preparation

The County issued a Notice of Preparation (NOP) to prepare an EIR on the project on November 7, 2011; the official review period ended on December 6, 2011. The County received four written responses to the NOP. This NOP and the comment letters are included in Appendix A. Comments in those letters that are pertinent to the EIR preparation were summarized previously in Section 1.2 of this EIR.

#### B. Public Scoping Meeting

A public scoping meeting was held in San José on November 17, 2011. It was attended by approximately 5 members of the public in addition to County staff. Three members of the public offered comments on the scope of the EIR and the project. Comments made that are pertinent to the EIR preparation were summarized previously in Section 1.2 of this EIR.

#### C. Distribution of the Draft EIR

A public review period of 50 days is provided for this Draft EIR. This review period begins on the publication date of the Notice of Completion of the Draft EIR. During the public review period, the Santa Clara County Planning Commission will hold one public hearing on the Draft EIR. In addition, public agencies and interested individuals may submit comments in writing to David Rader, Planner, Santa Clara County Planning Office, 70 W. Hedding Street, East Wing, 7th Floor, San José, CA 95110-1705 (e-mail: david.rader@pln.sccgov.org).

The information contained in this report is considered to be accurate, but it is subject to review and comment by responsible agencies. The public is also invited to review the document and comment on its accuracy and completeness.
D. Certification of the Final EIR

Once the public review period is closed, a Final EIR will be prepared. The Final EIR will incorporate this Draft EIR by reference, and it will contain all comments on this Draft EIR (including those made at the public hearing), responses to those comments, and any revisions to the text of this Draft EIR. The Final EIR will be considered by two appointed bodies prior to consideration by the Santa Clara County Board of Supervisors: the Planning Commission and the Housing, Land Use, Environment, and Transportation Committee (HLUET).

The Planning Commission will consider whether the EIR adequately evaluates the potential environmental impacts of the General Plan Amendment and Zoning Ordinance Amendment related to the proposed OWTS ordinance. The Commission will consider if the EIR is complete and accurate and will consider the merits of these elements of the proposed project and make a recommendation to the Board of Supervisors (“the Board”) on whether to approve or deny.

HLUET, a subcommittee of the Board, will consider if the EIR is complete and accurate, and will make a recommendation to the Board of Supervisors regarding certification of the document. It will also consider the merits of the proposed project and make a recommendation to the Board on whether to approve or deny. The Board will then consider the EIR and certify the document if they conclude it meets CEQA requirements. The Final EIR must be certified and CEQA findings adopted before any action on the proposed project (i.e., adoption of the Ordinance, General Plan Amendment, and Zoning Ordinance Amendment) can occur. After the Board has certified the EIR and adopted findings, it will consider the merits of the project and determine whether to approve the project or a project alternative or deny the project. If it approves the project or a project alternative, a Notice of Determination will be filed with the State Office of Planning and Research and the Santa Clara County Clerk.

Before the project is approved, the Board would be required to find (per CEQA Guidelines Section 15091) for each significant impact of the project; that changes in the project would reduce the impact to a level that is less than significant; that such changes are within the jurisdiction of a public agency other than the County; or that mitigation measures and alternatives are infeasible. For impacts that the County determines cannot be mitigated to a less than significant level, it would be necessary for the Board to adopt a Statement of Overriding Considerations (per CEQA Guidelines Section 15093) that describes how benefits of the project outweigh those impacts before approving the project.

2.5 INTENDED USES OF THE EIR

A. Lead Agency

The Lead Agency under CEQA for the project is the County of Santa Clara. As noted above, the Santa Clara County Board of Supervisors (the Board) will be responsible for adopting the Ordinance. The Board would vote to certify the EIR prior to considering the merits of the Ordinance and making a decision to approve or deny the Ordinance or a project alternative (if the Board votes not to certify the EIR, then it cannot approve the project). The County will follow its normal notification and hearing processes for Board
action as well as for the preceding Planning Commission hearing. The Board will hold a hearing on the EIR and the project merits. The Board will ultimately certify the EIR and make the final decision as to whether to approve, conditionally approve, or deny the project.

If adopted, the County Department of Environmental Health would implement the Ordinance when reviewing applications for new on-site wastewater systems. The Planning Office would be responsible for implementing the General Plan Amendment and changes to the Zoning Ordinance.

B. Responsible Agencies

The project will increase County compliance with applicable standards, laws, and guidelines as adopted, and/or modified by the State of California, Water Resources Control Board, the San Francisco Bay Regional Water Quality Control Board, and the Central Coast Regional Water Quality Control Board. The California Water Code requires that all dischargers of waste, including sanitary wastewater from homes, file a report of waste discharge. The Regional Boards have traditionally waived this requirement for counties that have a program for on-site wastewater systems that is adequately protective of water quality. The Regional Boards have established appropriate procedures for handling on-site wastewater in their Basin Plans. The requirements of the proposed Ordinance are intended to comply with these Guidelines and constitute a program for on-site wastewater systems that is adequately protective of water quality. The Regional Boards will review the final Ordinance, and the accompanying Onsite Systems Manual, to ensure its consistency with their requirements.

No other agencies would need to approve the project nor issue a permit as part of the County adopting the proposed Ordinance, General Plan Amendment, and Zoning Ordinance Amendment.

2.6 EIR ORGANIZATION

The Draft EIR is organized as follows:

- **Chapter 1.0 – Executive Summary**, identifies areas of controversy, highlights the important effects of implementing the project, and identifies the measures available to mitigate significant adverse impacts.

- **Chapter 2.0 – Introduction**, provides background on the CEQA requirements and review process.

- **Chapter 3.0 – Project Description**, describes the location affected by the Ordinance and all aspects of the project as proposed.

- **Chapter 4.0 – Environmental Impact Analysis**, describes existing environmental conditions in the area affected by the proposed Ordinance, identifies probable direct and indirect impacts from implementing the project, and describes mitigation measures required to substantially reduce or eliminate potentially significant adverse impacts.
• **Chapter 5.0 – Other Required CEQA Sections**, discusses growth-inducing impacts, cumulative impacts and irreversible environmental changes. It assesses the difference in outcome between the project and three alternatives. This chapter also identifies an environmentally superior alternative among the alternatives.

• **Chapter 6.0 – Report Preparation**, includes the report preparers, the people and organizations consulted, and the bibliography.

• **Chapter 7.0 - Appendix** - includes technical background material supporting the Draft EIR text. For print copies, the Appendix is on a CD at the back of the EIR.
3.0 PROJECT DESCRIPTION CHAPTER

3.1 PROJECT OVERVIEW

Development on most unincorporated lots in Santa Clara County (“County”) is served by private on-site wastewater treatment and dispersal systems (on-site systems or OWTS). Regulations governing the installation and maintenance of these OWTS were originally developed in the 1950s and 1960s. Although the County has updated these regulations over the years, the regulations do not fully reflect current industry practices and advances in the knowledge, understanding, and use of on-site systems. In addition, the current regulations contain inconsistencies and do not provide a comprehensive approach covering administrative, design, materials, construction, operation, maintenance and monitoring matters for OWTS.

The County proposes to adopt a new ordinance (“Ordinance”) that would update and replace these existing County regulations governing individual on-site wastewater treatment and dispersal within the unincorporated County. The new Ordinance requirements would also apply to properties utilizing OWTS located within incorporated areas where the municipality formally defers to the County for regulation of OWTS according to County codes (Chapter 4, Article 2 of the County Code). The proposed Ordinance includes reference to an accompanying On-site Systems Manual that provides the policy and the procedural and technical details for implementation of the Ordinance. The On-site Systems Manual, currently available in draft form at the DEH offices, will be maintained by the Department of Environmental Health, and is subject to the approval of the Director of Environmental Health and the California Regional Water Quality Control Board(s). The following provides details about the scope and nature of the proposed project.

The Santa Clara County General Plan and Zoning Ordinance contain policies intended to protect groundwater quality from improper disposal of wastewater, including discharges from OWTS. These policies also discourage high-intensity development in areas where an OWTS is required, and directs that type of development to areas within Urban Service Areas where existing municipal wastewater treatment systems are available. Because the new ordinance would change siting requirements for OWTS as well as increase flexibility for the types of OWTS that could be used, the proposed project includes changes to the General Plan and Zoning Ordinance to ensure consistency among these County regulations.

3.2 PROJECT LOCATION

Santa Clara County is located at the southern end of the San Francisco Bay Area and shares boundaries with Alameda County to the north, Stanislaus and Merced Counties to the east, San Benito County to the south, and Santa Cruz and San Mateo Counties to the west (see Figure 3.2-1). The County encompasses over 1,300 square miles of territory, or approximately 832,000 acres. The County seat and largest city is San José.

Santa Clara County is bordered on the west by the Santa Cruz Mountains and on the east by the Diablo Range. The Santa Cruz Mountains include rolling grasslands and wooded foothills adjacent to the valley with some steep slopes and dense forest lands. The Diablo Range includes about half of the County's land area. Most of the land is
Figure 3.2-1
Regional Location
Santa Clara County and Adjacent Counties
composed of grasslands and brush, with a significant proportion either in public
ownership or under conservation easements. Both the Diablo and Santa Cruz ranges
include active earthquake faults and areas of slope instability. Between these two ranges
lies the Santa Clara Valley.

At the northern tip of the County is the San Francisco Baylands. These bay wetlands are
primarily used for wildlife conservation, salt extraction, and low intensity recreational
uses. The National Wildlife Refuge on the southern shores of San Francisco Bay is in
the Pacific Flyway. Within the Santa Clara Valley, the density of development is
influenced by the corridors formed by Highways 85, 101, 17/880, 280 and 680. Radiating
out from these major highways are the most intense areas of development within the
County. Thirteen of the 15 cities in the County are clustered around these corridors in
the northern portion of the valley, including the largest of the cities, San José (see Figure
3.2-2 that shows the cities’ Urban Services Area and their Spheres of Influence). The
southern portion of the valley includes the cities of Morgan Hill, Gilroy and the
unincorporated area of San Martin. The growth of these urban areas is also influenced
by access to Highway 101. The south county contains large and medium scale
agricultural lands, ranchlands and some rural residential areas. To the west of the valley
are the foothills of the Santa Cruz mountains. These are primarily designated as hillside
areas and public lands. Much of this area is heavily wooded. Along the County's eastern
border are large parcels designated as ranchlands and some largely inaccessible public
lands. Principal land uses found in the Santa Cruz mountains and the Diablo Range
include undeveloped open space in public and private ownership, forest and timber
lands, grazing and ranching, mineral extraction, other resource-based land uses, and
low density single family residential development.

3.3 PROJECT CHARACTERISTICS

A. Background

The County of Santa Clara (County) Department of Environmental Health (DEH) is
responsible for regulating on-site wastewater treatment and dispersal systems (on-site
systems, or OWTS) throughout the unincorporated areas of the County. On-site
systems are used almost exclusively for properties located outside of municipal sewer
service boundaries (see Figure 3.2-2), which includes large areas in the southern
portions of the County, as well as in the eastern and western foothills and mountain
regions. Countywide there are currently estimated to be approximately 12,500 on-site
systems.

The County operates its on-site wastewater program under the authority granted to it by
two California Regional Water Quality Control Boards: (1) the Central Coast Region for
those areas that drain south to Monterey Bay; and (2) the San Francisco Bay Region for
those areas that drain to San Francisco Bay. These two watersheds are divided in the
vicinity of Cochrane Road in Morgan Hill. Figure 3.3-1 is a map of Santa Clara County,
showing the unincorporated areas, the heaviest concentration of on-site systems, major
watersheds, and the Regional Water Quality Control Board boundaries.

In recent years, DEH staff and County Planning and Development staff have received
feedback from property owners, on-site system practitioners, and land development
professionals that existing provisions of the County’s On-site Sewage Disposal

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Ordinance (Division B11, Chapter IV, County Code) and related General Plan policies severely restrict the types of on-site wastewater treatment and dispersal systems allowed in the County. The DEH staff has independently observed these limitations and recognized many of the difficult soil and site constraints in the County could be addressed more effectively with alternative on-site system technologies in common usage in neighboring Bay Area counties, other parts of California and throughout most of the U.S. County DEH staff has also become aware of inconsistencies in the existing Ordinance requirements, both internally and with respect to current industry practices and advances in the knowledge, understanding and use of on-site systems. For example, existing County design standards require drainfield sizes significantly larger than are necessary according to published literature and requirements in other jurisdictions. Also, the existing Ordinance includes on-site system siting and design requirements that differ for properties located in the Lexington Basin area as compared with the rest of the County. The unique requirements for the Lexington Basin were adopted based on a study done in the early 1980s, which current review shows to be flawed in some key respects related to the assessment of water quality and hydraulic loading impacts of OWTS (see discussion under Section 4.2 Hydrology and Water Quality). These special restrictions are no longer necessary given the flaws in the 1980 study along with the advances in on-site wastewater system practices that have taken place over the past 30+ years as summarized in the report by Questa Engineering “Onsite Wastewater System Practices, Alternatives, and Recommendations, Santa Clara County” (Appendix B).

In response to the above feedback and concerns, in late 2010 the County authorized a study to comprehensively review and evaluate the County’s current on-site system regulations and management program. The study is contained in Appendix B of this EIR. The study was conducted under contract with Questa Engineering Corporation to evaluate and make recommendations regarding the following main issues:

- assessment of the adequacy and appropriateness of the existing County Ordinance, including policies and procedures, with respect to the current state of knowledge and industry practices regarding conventional septic tank and drainfield siting criteria and evaluation methods, design standards, and construction requirements;

- incorporation of provisions in a new or revised ordinance allowing certain types of alternative on-site wastewater treatment and dispersal systems, including their applicability to local conditions, along with appropriate criteria and requirements for their use, design, construction, and ongoing management;

- improvements to the County’s regulatory oversight program for septic tank pumping, transport, and disposal of septage;

- applicability of different types of on-site systems and policies for subdivisions, existing lots of record, building additions/remodels, and repair situations;

- requirements and design approaches applicable to on-site systems serving commercial properties, large flow systems, and small community-type systems, including alternative strategies for areas characterized by
poor soil suitability and/or high rates of on-site system failures;

- estimates of existing and potential long-term usage and distribution of on-site systems in the County, along with projections of associated cumulative wastewater loading to groundwater basins and watersheds; and

- reassessment of restrictions within the existing OWTS and Zoning Ordinances regarding the use of OWTS in the Lexington Basin area and minimum lot sizes for secondary dwelling units in the San Martin area.

The results of the study by Questa Engineering were presented and reviewed at monthly meetings and other workshops held throughout 2011 and early 2012 with County DEH and County Planning and Development staff, Regional Water Board representatives, and members of a Wastewater Advisory Group (stakeholders) assembled for the study. The outcome of this study effort has been a series of recommended changes and additions to the existing Ordinance along with supporting technical and procedural requirements pertaining to the use and management of on-site systems in Santa Clara County. Questa Engineering Corporation has prepared a background report that provides an overview of on-site wastewater system design and construction practices, including conventional OWTS and the various alternative systems that are being considered for use in Santa Clara County.1

B. Overview of the Proposed OWTS Ordinance

The County of Santa Clara proposes to adopt a new ordinance that would update and replace existing County regulations governing individual on-site wastewater treatment and dispersal systems. On-site system regulations in Santa Clara County are currently codified in Division B11 of the Santa Clara County Code (“Ordinance”), most recently revised on April 15, 2003. The regulations are administered by the Department of Environmental Health (DEH). The DEH has developed a supplemental document, Bulletin A, which is a compendium of Ordinance provisions and various implementing policies intended to explain and provide technical guidance to homeowners, designers and installers of on-site systems. Along with revisions to the existing Ordinance, the County proposes to replace Bulletin A with a more comprehensive document (referred to as the “On-site Systems Manual” or “Manual”) that includes relevant technical and procedural requirements for various aspects of OWTS permitting, design, construction and operation. For purposes of this EIR, the proposed project includes both the Ordinance and Manual.

In replacing these existing regulations, the new Ordinance and Manual would:

1. allow the use of a broader range of treatment and dispersal designs (referred to as “Alternative Systems”) and associated requirements to overcome limiting soil and groundwater conditions;

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1 Draft Report – Onsite Wastewater System Practices and Alternatives, Santa Clara County, Questa Engineering Corporation, June 2012; can be viewed at the DEH offices.
2. incorporate new requirements pertaining to the vertical separation between the bottom of dispersal systems and groundwater or restrictive soil layers, related to the type of OWTS design;

3. incorporate changes to ground slope requirements for OWTS to provide greater technical and procedural consistency throughout the County;

4. incorporate updates in dispersal system design requirements for consistency with published technical literature, resulting generally in reduced dispersal field lengths and land area requirements;

5. incorporate new requirements addressing erosion control measures for OWTS dispersal fields according to system type, size and slope conditions;

6. eliminate the current requirement that mandates an entirely separate OWTS for ancillary buildings, such as detached living units;

7. delete the sections of the ordinance code which currently specify different OWTS requirements for the Lexington Basin area, including the elimination of minimum lot size requirements for legal lots applicable to the Lexington Basin;

8. institute a program requiring basic inspection and reporting of on-site system conditions at the time any existing septic tank is serviced (i.e., pumped);

9. institute an operating permit program to assure ongoing inspection, monitoring and maintenance of certain types of systems, in particular alternative systems;

10. include a new provision for referral to the Office of the County Hearing Officer for appeals of DEH decisions under the Ordinance;

11. provide a comprehensive On-site Systems Manual containing procedural and technical details for implementation of the Ordinance, covering administrative, design, materials, construction, operation, maintenance and monitoring matters, and user information; and

12. include an expanded list of definitions covering key terms used in the Ordinance and Manual.

The proposed Ordinance would address use of OWTS for legally created lots for which sanitary sewer services are not available and where the volume of waste produced would not exceed 10,000 gallons per day (gpd). Any OWTS with a wastewater flow between 2,500 and 10,000 gpd would be referred to the appropriate RWQCB for technical review. Any OWTS with a wastewater flow greater than 10,000 would be regulated by the appropriate RWQCB. OWTS governed by the proposed Ordinance could not be used where a proposed residence, place of business, or other building is located within an urban service area and abuts a street or alley in which an approved sanitary sewer exists or where the property line is within 300 feet of an approved available sanitary sewer. Under the proposed Ordinance, OWTS, including alternative systems could not be used to support multiple lots as a shared wastewater treatment system. The proposed Ordinance would not affect minimum lot size regulations for
subdivisions as required under the Santa Clara County Zoning Ordinance or other requirements under this code.

The proposed change in the Ordinance to increase the County’s regulatory authority to encompass OWTS with maximum wastewater flows up to 10,000 gpd (currently limited to 2,500 gpd), was arrived at through consultation with staff of the San Francisco Bay and Central Coast Regional Water Quality Control Boards who recommended the change. This change would primarily affect commercial uses served by OWTS.

C. Proposed Changes to the General Plan and Zoning Ordinance

Currently, the Santa Clara County General Plan prohibits use of alternative wastewater treatment and disposal systems (such as systems not based on traditional gravity-flow designs) for individual residential development unless it is feasible to also install a traditional system (Policy R-HS 45). The proposed new ordinance would allow use of alternative systems even when traditional systems also would not be feasible. Therefore, the proposed project includes the following revision to Policy R-HS 45 in the General Plan to ensure consistency between the General Plan and the new ordinance (the one revision is shown as strike-through text).

Policy R-HS 45

Alternative waste water treatment and disposal systems may be allowed for individual residential development only if:

a. a traditional septic system adequate to serve the proposed development could be constructed, if needed;

b. it can be shown that the alternative system will function more effectively than a septic tank system and be beneficial to the environment;

c. the density of the proposed residential development is consistent with the density normally allowed within that property’s General Plan land use designation;

d. the proposed system has a track record of safe and effective long term operation under conditions similar to those in Santa Clara County;

e. the proposed system is in compliance with all other pertinent County policies and regulations;

f. the system is appropriate to the site for which it is proposed;

g. the proposed system includes adequate measures to prevent environmental damage in the event of system failure, such as discharge of inadequately treated effluent to the land (e.g., surface, lakes, streams, etc.);

h. the proposed system will operate in full compliance with Regional Water Quality Control Board waste water discharge requirements; and

i. the County has approved a program which ensures that the system’s long term maintenance, operating, monitoring and liability costs are provided for by the owner of the facility. Such a program may include, but is not limited to, recorded contractual obligations, permit fees or insurance policies; special permit conditions; and, performance bonds for system replacement, monitoring and liability costs.
Related to this policy change and to ensure additional General Plan consistency, the proposed project would also include changes to descriptive text in the General Plan (Book B, Part 3, pages P-30 through P-41) that discusses wastewater disposal, including use of alternative technologies. The potential impacts of allowing increased use of alternative systems are evaluated throughout this Draft EIR. General Plan consistency is evaluated in Section 4.11, Land Use, Agriculture, and Plan Consistency.

In addition, this Draft EIR has evaluated projected wastewater loading contributions in the unincorporated areas and determined what density of OWTS can be supported without degrading water quality through excessive nitrogen loading (see Section 4.2, Hydrology and Water Quality). This analysis indicates that allowing secondary dwelling units in the San Martin Planning Area on lots smaller than the 5-acre minimum (Zoning Code Section 4.10.340(D)(2)(e)) would not significantly contribute to nitrogen loading in that groundwater basin. Therefore, the project proposes to eliminate that section of the Zoning Ordinance. In addition, this Draft EIR has evaluated the impacts of eliminating the restriction on development of lots under one acre in the Lexington Basin. The Zoning Code limits new development in that basin to lots exceeding one acre, and the proposed project proposes to eliminate that section of the Zoning Code (Zoning Code Section 2.20.070(B)).

D. Project Objectives

The proposed project has the following objectives:

1. **Update Technical Requirements.** Update technical requirements to be consistent with current industry standards and knowledge regarding OWTS, while also maintaining compliance with applicable Regional Water Board requirements and water quality and public health objectives. This would be achieved by the proposed project through the addition of a broader range of design options (Item B1 listed above), incorporation of revised vertical separation distances below the dispersal system related to the type of OWTS design (Item B2 above), and changes in sizing criteria for dispersal systems (Items B4 through B6 above).

2. **Increase Flexibility to Address Problematic Site and Soil Conditions.** Increase the flexibility and available options to address soil and other site constraints affecting the use and performance of OWTS, especially to assist in the repair or replacement of failing systems using the most effective and applicable methods. This would be achieved by the proposed project through the addition of a broader range of alternative OWTS technologies and design options compatible with the variety of conditions found in Santa Clara County (Item B1 above).

3. **Improve Sanitation Options for Agricultural Operations.** Expand the range of OWTS options available to agricultural operations to allow the provision of better and more economical sanitation facilities for workers and employee housing. Reducing the current reliance on holding tanks and portable toilets is an important aspect of this objective. This is achieved by the proposed project through: the addition of a broader range of design options and associated siting criteria to overcome shallow groundwater and other soil constraints commonly encountered in agricultural areas (Items B1 and B2 above); changes in design criteria that eliminate unnecessary over-sizing of dispersal fields (Item B4 above); and
increased latitude in designing economical OWTS for employee living units (Item B5 above).

4. **Improve OWTS Operation, Maintenance, and User Awareness.** Improve the standard of care and level of attention given to ongoing operation, maintenance and use of OWTS to minimize operational problems as well as help identify and address system failures for protection of water quality and public health. This would be achieved by the proposed project through the implementation of new code requirements for completion of a basic operational inspection at the time of septic tank pumping, qualifications and training requirements for on-site system maintenance providers, issuance of operating permits including ongoing inspection and reporting requirements for alternative systems, and consolidation of OWTS technical, operational and user information in a comprehensive On-site Systems Manual (Items B8, 9 and 11 above).

5. **Upgrade OWTS Practices for Environmental Protection.** Implement procedural and technical requirements to improve the level of protection to the environment associated with construction and use of OWTS. This would be achieved through the incorporation of: alternative technologies that provide more effective wastewater treatment than conventional septic tanks; improved dispersal methods that enhance soil absorption/treatment processes, especially in steeper terrain; reduced sizing of dispersal fields and associated land disturbance; explicit requirements for erosion control in connection with OWTS installations; and requirements for operational inspection/reporting requirements in connection for all alternative systems as well as routine septic tank servicing (Items B1, 5, 6, 8 and 9 above).

6. **Maintain Local Jurisdiction for Management of On-site Systems.** Implement as needed adjustments to current program consistent with pending OWTS policy of the State Water Resources Control Board (SWRCB) developed over the past 10+ years pursuant to requirements of State law known as “AB 885”. The objective is to ensure the County can continue to administer OWTS regulations under an approved Local Agency Management Program (LAMP) as prescribed in the SWRCB policy. This would be achieved by the proposed project through the comprehensive revision and updating of the County on-site systems Ordinance and Manual, including elements from most all of the 11 items listed above under 3.3-B.

7. **Eliminate Internal Inconsistencies.** Eliminate inconsistencies within the existing Ordinance concerning the way OWTS are designed and regulated in different parts of the County and for conformance with other applicable County policies and codes. This would be achieved by the proposed project through: elimination of the code section dictating unique OWTS requirements for properties located within the Lexington Basin (Item B7 above); providing consistent design and procedural requirements for OWTS in steeper slope areas applicable in both Regional Water Board jurisdictions (B3 above); revising the appeals process regarding OWTS decisions to be consistent with current County code (B10 above); and providing clarity on the meaning and interpretation of key terms and requirements applicable to OWTS (Item B12 above).

8. **Simplify the Ordinance.** Simplify the Ordinance and supporting technical and procedural requirements to facilitate current application and updating in the future.
This would be achieved by the proposed project through the transfer of technical details from the Ordinance to a comprehensive “On-site Systems Manual” (Item B11 above).

E. Summary of Proposed OWTS Ordinance

A section-by-section synopsis of the County’s existing On-site Sewage Disposal Ordinance (Chapter 4, Article 2 of the County Code), along with a brief summary of the changes that are proposed, are provided in Appendix B, Table B-1. The existing ordinance is available for review at the DEH offices of Santa Clara County and may also be viewed or downloaded electronically at the following: http://library.municode.com/index.aspx?clientId=13790.

The draft text of the proposed Ordinance may also be viewed at the DEH offices.

In addition to various revisions to existing Ordinance language and requirements, proposed changes include the addition of two major new sections as summarized below.

1. Use of Alternative Systems

Amendments to County Ordinance Code, Division B11, Chapter IV, Article IV are proposed that would permit the use of various alternative on-site wastewater treatment and dispersal technologies suited to the conditions and constraints in Santa Clara County. “Alternative System” means an OWTS that utilizes either a method of wastewater treatment other than a standard septic tank and/or a method of wastewater dispersal other than a standard drainfield.

**Conventional Systems.** Conventional (also “standard”) on-site wastewater treatment systems consist of two major components: (1) a septic tank for collection, settling and digestion of sewage wastes from the building; and (2) a disposal system for dispersal and absorption of septic tank effluent into the soil or geologic strata. The septic tank (normally of concrete construction) provides primary treatment of wastewater by allowing sufficient detention time for gravity separation of solids. Heavier solids settle, forming a sludge layer at the bottom of the tank, while fats, oils, grease, lighter solids, and decomposing organic material float to the surface to form a scum layer. The conventional type of dispersal system approved for use in Santa Clara County is a leaching trench system, consisting of a 2-foot wide by 3- to 8-foot deep trench, filled with gravel filter material (drain rock) and perforated distribution pipe, and ranging in total length from about 400 feet to more than a thousand feet, depending on soil percolation rates. Figure 3.3-2 is a diagram of a typical conventional OWTS.

**Alternative Systems.** Alternative systems include supplemental treatment systems and various types of dispersal methods used in place of or as a variation of a conventional gravity leaching trench. The most common types of supplemental treatment are intermittent and recirculating sand filters and various types of proprietary systems, including media filters and aerobic treatment units. Alternative dispersal methods include shallow pressure distribution trenches, mound systems, at-grade systems, raised sand beds, and subsurface drip dispersal. Alternative systems are not currently recognized under Santa Clara County on-site wastewater regulations. Compared with conventional on-site systems, alternative systems generally have

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additional mechanical and electrical equipment (such as pumps, blowers, timers, alarms, etc.), that increase the need for inspection and maintenance. Some, but not all, alternative systems can provide a means of reducing the total footprint of an on-site wastewater treatment system where suitable land area is a significant constraint. Figure 3.3-3 (a mound system) and Figure 3.3-4 (sand filter with pressure distribution leachfield) illustrate two of the more commonly used alternative systems that would be permitted under the proposed Ordinance. See the Draft Report — Onsite Wastewater System Practices and Alternatives, Santa Clara County for further description of the different types of alternative systems and their key features.

The proposed use of alternative systems would be guided by the following principles and general requirements:

- Alternative systems may be permitted by the Director of Environmental Health for the repair or upgrading of any existing on-site system and for new construction on any legally created parcel where: (a) it is determined that sewage cannot be disposed of in a sanitary manner by a conventional septic tank–disposal field system; or (b) the Director determines that an alternative system would provide equal or greater protection to public health and the environment than a conventional septic tank-disposal field system.

- Types of alternative systems permitted would be limited to those identified in the On-site Systems Manual for which siting and design standards have been adopted.

- All alternative systems could only be installed by a contractor duly licensed by the Contractors State License Board of the State of California to install OWTS.

- Final approval of alternative system proposals would be at the discretion of the Director.

The proposed amendments address alternative systems also include requirements addressing the following:

- **Construction Permitting and Review Requirements.** This covers general requirements related to site evaluations, engineering plans, designer qualifications, construction inspection, engineering review, and permit duration.

- **Operating Permits.** This introduces a new County requirement for the issuance of renewable annual operating permits that would apply to all alternative systems. This is in addition to the construction permit issued for system installation. Operating permits are intended to serve as the basis for verifying the adequacy of alternative system performance and ensuring ongoing maintenance. They would include requirements for system inspection, monitoring and reporting of results to the DEH, along with the requirement for permit renewal, typically on an annual basis. This section of the code also provides that operating permits may be utilized for circumstances other than alternative systems, such as for larger flow OWTS (>2,500 gpd), in connection with holding tank exemptions or where, in the opinion of the director, the type, size, location or other aspects of a particular OWTS installation warrant the additional level of oversight provided by an operating permit.
• **Performance Monitoring and Reporting.** This section outlines the general parameters for alternative systems monitoring and reporting of results. It defers to the On-site Systems Manual for procedural details and specific requirements for different types of alternative systems.

• **Types of Alternative Systems.** The following types of alternative treatment and dispersal systems are identified in the Ordinance:

  Alternative Treatment Systems:
  - Intermittent and recirculating sand filters
  - Proprietary treatment units that provide secondary or better effluent quality

  Alternative Dispersal Systems:
  - Shallow pressure distribution trench
  - Mound
  - At-grade
  - Pressure-dosed sand trench
  - Raised sand filter bed
  - Subsurface drip dispersal

The proposed Ordinance also allows for future inclusion of other types of alternative treatment and dispersal systems, subject to the systems being reviewed and approved by the Environmental Health Director and both Regional Water Quality Control Boards.

• **Siting and Design Criteria.** This section sets forth specific siting criteria for different types of alternative treatment and dispersal systems (and combinations of the two), addressing:

  - *Horizontal setbacks* – these criteria are the same as those that apply to conventional septic tank-leachfield systems;

  - *Ground slope* – this criterion identifies slope limits ranging from 20 percent to 50 percent for different types of dispersal technologies;

  - *Depth to groundwater* – this criterion identifies minimum vertical separation distances from the dispersal field to seasonal high groundwater level, ranging from 2 feet to 8 feet, depending on the enhanced degree of effluent treatment provided by the particular type of alternative system; and

  - *Soil depth* - this identifies minimum depth of soil below the dispersal field to an impermeable layer, ranging from 2 feet to 3 feet, depending on the particular type of alternative system.

2. **Septic Tank Inspection and Reporting Program**

This proposed Ordinance would implement a new program requiring that septic tank pumpers complete a basic on-site system inspection at the time any septic tank is serviced in the County, and that the inspection report be submitted to DEH as part of the
MOUND SYSTEM SCHEMATIC

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FIGURE 3.3-3
INTERMITTENT SAND FILTER WITH PRESSURE DISTRIBUTION DISPERAL

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APPROVED: NH

FIGURE 3.3-4
monthly reporting of septic tank pump-outs. The inspection work would be in accordance with guidelines provided in the On-site Systems Manual, and reported using a standard County-supplied form. The DEH would be responsible for maintaining and reviewing the data, and for oversight and permitting of any follow-up repair work that might result from the findings of the OWTS inspection. Because of the increased responsibilities for observation and reporting of OWTS operating conditions, the proposed Ordinance section requires that individuals conducting this work meet minimum qualifications, including demonstrated training and experience with on-site systems and participation in annual training updates conducted by DEH. The aim of the proposed program is to help identify and proactively address OWTS maintenance issues before they develop into more severe operational/failure problems requiring more extensive and costly corrective work. The proposed program is modeled after a successful program that has been in place for over 12 years in Santa Barbara County.

F. On-site Systems Manual Summary

The proposed On-site Systems Manual would provide the policy, procedural and technical details for implementation of the Ordinance. It is intended to replace and incorporate information included in the existing Bulletin A, along with the inclusion of design details and guidelines related to both conventional and alternative systems, operation and monitoring requirements and related procedural matters. It is expected that the On-site Systems Manual would be reviewed and updated from time-to-time, typically annually, to keep pace with new issues, policies, procedures, and technologies affecting the use and management of on-site systems. The On-site Manual will be developed and maintained by the DEH. The initial document and any substantive changes would require approval by the Director and the two Regional Water Boards having jurisdiction in Santa Clara County. A draft of the On-site Systems Manual can be reviewed at the Department of Environmental Health website: http://www.sccgov.org/sites/deh/Pages/DEH.aspx. The On-site Systems Manual is divided into five main sections as follows

Part 1: Policies and Administrative Procedures. This covers DEH policies developed for explanation and/or clarification of various Ordinance provisions along with administrative procedures, such as:

- General requirements and applicability for subdivisions, new construction on existing lots, remodeling projects, and system repairs;
- Construction permit process, including: application, fees, site plan information, design review process, installation and inspection, and final approval;
- Operating permit requirements and procedures for alternative treatment and dispersal systems;
- Application forms and fees; and
- Policy and procedures for amendments to On-site Systems Manual.
Part 2: Technical Methods and Review. This presents the procedures and requirements covering such items as:

- Site evaluation methods, including: general evaluation process, soil profiles; groundwater determinations, and percolation testing;
- Special study requirements pertaining to geotechnical reports, slope stability analysis and cumulative impact assessment; and
- System inspection and performance evaluation procedures

Part 3: General and Conventional OWTS Requirements. This section presents general requirements and technical specifications applicable to all OWTS and specific design and construction requirements for conventional OWTS. This includes, for example:

- General requirements, including: OWTS location and setbacks, determination of sewage design flow, and installation requirements;
- Requirements for conventional OWTS, including: septic tanks, standard gravity trenches, deep trench systems and cover-fill systems;
- Additional requirements for OWTS serving commercial facilities, restaurants and other non-residential occupancies; and
- Requirements and specifications for various materials and components of on-site wastewater systems including building sewers, septic tanks, fittings, distribution boxes, diversion valves, dosing/pump tanks, pump controls and alarms, pipe, drain rock, silt barrier material, sand filter media, containment for sand filters, and observation port design.

Part 4: Guidelines for Alternative Systems. This presents requirements and guidelines for design and construction of alternative treatment and dispersal systems permitted under the Ordinance, including:

- System overview, with general description, constraints addressed, and schematic diagram and detail drawings;
- Siting, design and performance criteria;
- Engineering plans and construction requirements; and
- Management requirements, including inspections, monitoring, maintenance and reporting.

Part 5: Operation, Monitoring, and Maintenance (OM&M). This presents the administrative, procedural and technical requirements for system operation, monitoring and maintenance covering the following:

- Applicability of the requirements to new and OWTS repairs, per the provisions of the Ordinance;
• Administration of the OM&M program, including roles and responsibilities of the DEH, system owner, system designer, contractor, qualified service provider, and proprietary system authorized agent;

• Program elements, including: homeowner/user education; OM&M Manual; operating permit requirements, notice on property deed, system-specific requirements, minimum inspection requirements for different system components and system types, supplemental treatment effluent monitoring requirements, and OM&M data management; and

• Corrective action, including provisions for notifications, hearings, extended field testing for compliance, and use restrictions or prohibitions.

It is anticipated that the On-site Systems Manual will become an integral part of the County’s local agency management program for OWTS, and will be subject to review and approval by the San Francisco Bay and Central Coast Regional Water Boards in accordance with requirements contained in the recently adopted State Policy for On-site Systems (AB 885).
4.0 ENVIRONMENTAL IMPACT ANALYSIS CHAPTER

1. INTRODUCTION

The following subsections provide background information on the EIR approach, the project being assessed, and existing County project review procedures.

A. Program Level of Analysis in the EIR

This 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 effects of the proposed Ordinance, Onsite Systems Manual, and General Plan and Zoning Amendments. This analysis does not examine the effects of future site-specific projects that may be enabled through implementation of the proposed Ordinance. The CEQA Guidelines Section 15146 states:

The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.

(a) An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy.

(b) An EIR on a project such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption or amendment, but the EIR need not be as detailed as an EIR on the specific construction projects that might follow.

The impacts of individual projects accommodated by the proposed Ordinance cannot be evaluated at this stage because it is not known where such specific projects might occur until they are proposed nor where on a specific property the OWTS and related development would be proposed. However, this Program EIR describes and assesses the types of site-specific impacts that could reasonably be expected to occur from the installation of additional types of OWTS under the proposed Ordinance and the indirect impacts from any associated new residential development enabled through implementation of the ordinance.

Because this EIR assesses impacts only to the level they can be reasonably foreseen at this program stage, the EIR will be used as a “first tier” EIR. As described under CEQA Guidelines Section 15152, tiering is recommended for program EIRs on projects such as plans and ordinances. The level of analysis included in the EIR will allow the County to focus on key issues when conducting future site-specific CEQA reviews for new residential development applications.
B. Projected County Development by 2035

1. Worst-Case Scenario – Estimate Based Only on Proposed OWTS Changes

As described in Chapter 3, the proposed project would revise certain existing regulations governing conventional OWTS and allow for the use of alternative types of OWTS where conventional systems are not feasible. These proposed revisions would remove existing OWTS constraints on some properties in the unincorporated areas, thereby accommodating possible future development of those properties. To provide an estimate of the potential new development that could be accommodated if the proposed Ordinance were adopted, Questa Engineering Company conducted an extensive analysis of all vacant parcels in the County, how many could be developed with a conventional OWTS under existing County regulations, and how many additional lots could be developed if alternative OWTS were approved for use. This analysis is summarized in “Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes,” which is included in Appendix B of this EIR.

That report states that there are currently 12,543 developed parcels in the County using an OWTS. There are 5,082 vacant parcels of which an estimated 2,613 (approximately half) could support a conventional OWTS under the current County regulations. The other half of these lots could not be developed with conventional OWTS due to factors such as unfavorable soil conditions, high groundwater, or steep slopes. Of these remaining 2,469 vacant parcels, the study estimates that up to an additional 1,091 lots could accommodate an OWTS using alternative technologies (see Chapter 3, D.1.). The use of alternative OWTS could also allow the development of up to an additional 158 secondary dwelling units. Figure 4.0-1 shows by watershed, the potential maximum number of lots where the proposed Ordinance could support OWTS development that would not currently be approved by DEH. The watersheds with the highest potential for increased concentrated residential development resulting from the use of alternative OWTS under the proposed Ordinance are: 1) portions of the Lexington Basin (183 units); 2) the four Llagas Creek subwatersheds in the Gilroy-San Martin-Morgan Hill area (323 units); and 3) portions of the Uvas Creek watershed (171 units). The remaining watersheds would have smaller increases in the number of additional OWTS approved, and the lots that would potentially benefit are scattered over a larger geographic area.

2. Development Constraints

The Questa analysis of potential future rural residential development only examined the constraints of OWTS regulations on the potential for lot development. This inventory did not include other site constraints that could prohibit residential development or make it economically infeasible. Other site development constraints include access to roads, extreme slopes, proximity to sensitive biological resources, geologic and flood hazards, and access to a groundwater supply. If these other constraints were also considered, the number of lots that could be potentially developed would be substantially reduced. In addition, many of the vacant parcels evaluated, especially in the eastern part of the County, are part of large ranches or other land holdings. Based on past rural land management and development patterns (i.e., a history of 1-2 building permits per year) and because many of these large holdings are under conservation easements, it is unlikely that the individual parcels that make up all these large holdings would be subject to residential development.
3. Development History and ABAG Projections

As described in more detail in the subsequent Section 4.11, Land Use, Agriculture, and Plan Consistency, the Association of Bay Area Governments (ABAG) projects a population increase in the unincorporated portion of the County of approximately 19,000 people by 2035. However, this projection includes the population added from the development of vacant lots located in urban service areas of cities where sanitary sewer service is available. For the rural areas that would be affected by the proposed Ordinance, the projected population increase would be approximately 4,000 people, which correlates to approximately 1,700 new residential units. Since 1991, the County has issued approximately 2,500 building permits for new residential units; this is an average of about 115 new residences per year. All new residential development has occurred on parcels within County-approved subdivisions or on existing legal lots that meet the criteria in Section C12-310(a) of the ordinance code.

For residential development on existing legal lots that were not created through subdivision (i.e., what the County identifies as “legal non-conforming lots”), in the past 30 years, the County has approved approximately 900 new residences (including secondary dwellings) on vacant lots of this type through the Building Site Approval (BSA) process (see Subsection F below for an explanation of the BSA process). This equals an average of 30 new single-family units (including secondary dwelling units) constructed per year. This historic rate, which fluctuates from year to year, reflects both market demand as well as regulatory and site development constraints.

A review of historic BSA records shows that the watersheds with the most building activity since 1982 are Coyote Creek - 141, Llagas Morgan Hill - 103, Llagas San Martin – 104, and Uvas Creek – 110 BSA (see Figure 4.0-1 for the location of the watersheds). Lexington Basin has only had 73 approvals during that time, which may in part reflect the lot-size restriction under the current Ordinance. As described in detail in Appendix B of this EIR, many of the watersheds have had virtually no new development, and this pattern would be expected to continue. Examples of watersheds with limited BSAs include: San Francisquito – 6, Adobe – 4, Calabasas – 7, Calaveras Reservoir – 7, Upper Los Gatos Creek – 1, Northeast County – 4, Upper Llagas Creek – 5, Pacheco Creek – 4, and Pescadero Creek - 0.

The Questa Study evaluated how many potential vacant rural lots could be developed using alternative OWTS as allowed under the proposed Ordinance. As shown in Tables 5 and 6 in Appendix B, an estimated 2,613 vacant lots could accommodate conventional OWTS under the current Ordinance, with a net increase of 1,091 lots developed when only factoring in proposed changes to the Ordinance, such as allowing use of alternative OWTS technologies. Based on site development constraints (see Lexington Basin Watershed analysis below), a more likely worst-case scenario would be an additional 600 lots developed through 2035, or 55% of the 1,091 lots projected just based on proposed changes to OWTS regulations. If all of these 600 lots plus additional

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2 County GIS query data provided by David Rader, 7/5/12.
3 In addition to these lots, there are also underlying lots that can potentially become “legalized” by going through the County’s Certificate of Compliance process. These lots were not included in the growth-inducement analysis because it is unknown how many may exist, although the number is considered to be relatively small in relation to all legal vacant lots.
4 Ibid.
5 County GIS query data provided by David Rader, 7/6/12.
secondary units were developed by 2035, an average of approximately 30 additional residential units would be constructed per year, which would be an approximate doubling of the 30 new residences per year that have been developed through the BSA process in the unincorporated part of the County over the past 30 years. This is a worst case assumption since it assumes that the average number of new homes will increase by almost 100 percent solely because of the availability of alternative OWTS, despite the fact that there are numerous vacant parcels that could be developed with conventional OWTS. The EIR assesses the indirect impacts of this worst case scenario to ensure that the full range of indirect impacts are disclosed.

4. Lexington Basin Watershed

The Lexington Basin watershed represents a possible exception to the overall projection discussed above. Here lots under 1 acre have not been able to develop because the ordinance codes do not allow them to use OWTS, and these lots are not served by a sanitary sewer systems. Many of these lots are part of antiquated subdivisions, such as Redwood Estates, where development may not be as constrained by other factors (road access, slope) as in other unincorporated areas of the County. The lack of OWTS may be a more decisive factor, and theoretically, the ultimate build-out of this watershed under the proposed project would be closer to the Questa projection of 183 additional units because the proposed Ordinance would lift the existing 1-acre lot size restriction for use of OWTS (currently in Section B11-94 of the existing ordinance). Very small lots, especially those under ¼ acre, would remain undeveloped since there would not be sufficient area to install any type of OWTS (conventional or alternative) along with a residence. In other words, while it is projected that countywide up to an additional 30 lots would be developed per year, the possibility exists that the Lexington Basin watershed could comprise a disproportionate share of applications because of the fact that OWTS restrictions have been considered a significant inhibitor of lot development.

To further evaluate the assumptions of the Questa study that projected a development potential of 183 additional residential units in the Lexington Basin watershed, the County Planning Office conducted a focused review of development constraints in the watershed in combination with the increased OWTS approval rates that Questa estimated based on the lifting of the 1-acre lot size restriction and the option for property owners to use alternative OWTS technologies. Using data contained in the County’s GIS database and aerial review of the area, it was estimated that only 83 additional units could be developed given the other development constraints, or about 55% fewer units than the number calculated solely by allowing alternative OWTS and removing the 1-acre minimum lot restriction (see Appendix B, Part 2 – “Lexington Basin Parcel Development Analysis).

Although not completed for this EIR, County Planning estimates that similar detailed analysis for other unincorporated areas would show a comparable decrease in the maximum development potential compared to the Questa projection based only on increased OWTS approval rates.

6"Developable" vacant lots in Lexington Basin were determined to be those lots with average slopes of less than 40% with feasible access to roads (not landlocked), and that are not owned by a utility (e.g., water company for watershed protection). See Appendix B, Part 2 – “Lexington Basin Parcel Development Analysis).

7 David Rader, 9/15/12.
5. Other Potential Induced Development

The Questa evaluation of potential growth inducement under the proposed Ordinance focused on residential uses because opportunities for commercial development are limited in the rural areas of the County. San Martin contains Industrial and Commercial Use Permit Areas; however, these areas are largely developed, and little additional non-residential development would be expected as a result of changes in OWTS regulations. Residential development in this area is already included in the growth projections above.

The proposed Ordinance could potentially allow some smaller lots in Hillside, Rural Residential, and Agricultural Ranchland zoning districts to support uses, such as Bed & Breakfast Inns, Camps & Retreats, and Religious Institutions which might not be feasible under current OWTS regulations. Each of these uses requires approval of a Use Permit and must conform with General Plan policies which limit the size, scale and intensity of such uses. Because these General Plan policies apply to all non-residential development, and because there are few areas allowing such development and most are already developed, the potential for any increased development would be relatively small in comparison to induced residential development, this type of development was not factored into the projections discussed above.

C. General Plan and Zoning Consistency

The parcels that could be developed if the proposed Ordinance is adopted would be required to develop consistent with the existing General Plan land use designation and zoning. Even if it were to become feasible to install an OWTS on a particular parcel under the proposed Ordinance, this does not mean that the County would necessarily approve development of a single family or secondary dwelling unit. The proposed development would still need to comply with all other pertinent County building requirements, as discussed in Section E below.

The range of impacts from future development of these undeveloped properties was previously assessed in the EIR certified for the County’s current General Plan. However, the EIR prepared for the General Plan assumed a 15-year planning horizon and assessed the potential impacts of projected buildout to 2010. Because these projections are out of date, this EIR re-assesses the impacts of projected residential development.

The proposed Ordinance would eliminate the existing 5-acre minimum lot size required for approval of secondary dwelling units in the San Martin planning area. As explained in Section 3.2-C of this EIR, the project includes a proposal to remove this lot size restriction from the Zoning Ordinance to ensure project consistency with that ordinance.

D. Subdivision Potential

The new alternative OWTS included in the proposed Ordinance would not affect development potential associated with future subdivisions, for which minimum lot size is established under the General Plan and Zoning Ordinance. The proposed Ordinance does reduce the amount of area needed for a conventional OWTS leachfield, and these revised regulations governing conventional OWTS would apply to any application to subdivide land. However, these revised siting requirements would not affect how the land would be subdivided because any proposal to subdivide a parcel would be
governed by the General Plan designation and zoning districts (base and overlay), which sets minimum lot size.

E. CEQA Review Requirements for Future Residential Development Proposals on Lots Affected by the Proposed Ordinance

Although the proposed Ordinance would provide more flexibility for installing OWTS and potentially allow for the development of vacant lots, all future development on these lots would be required to obtain Building Site Approval as well as other discretionary entitlements, such as grading, which are described below. Therefore, all site-specific development that could be induced by the proposed project would be subject to subsequent CEQA review.

1. Building Site Approval

Proposals for new single family residences that would not be regulated under any land division ordinance (e.g., subdivision map approval) or subject to a use permit or architectural and site approval as well as new secondary units must be reviewed by the County to determine whether the site can be developed without causing significant environmental impacts and the development can be served by adequate access and public services. Development of legal non-conforming lots generally requires building site approval (BSA) prior to development; however, such approval is not required for lots in that portion of the "AR" Agricultural Ranchland zoning district located east of Highway 101, with the exception of land located within the Anderson/Coyote Watershed.8 Applicants in this area may instead apply for building clearance, which is similar to a building permit. However, because of the generally steep terrain, development of single family residences in this area will require a grading permit, which will trigger environmental review by the County even without the requirement for BSA approval.

Because the BSA is a discretionary permit, the County has the authority to conduct CEQA review of the project. In addition to the CEQA review of the application conducted by the County Planning Office, the application may be reviewed by the Santa Clara Valley Water District, the County Director of Transportation, the County Department of Environmental Health, and the County Fire Marshal for compliance with those agencies’ standards and regulations.9

2. Design Review

The principal purpose of design review is to encourage quality design and to mitigate adverse visual impacts. Design review is required for any development within the “-d” combining zoning district; development within 100 feet of designated scenic roads on lots to which the “-sr” combining district applies as a condition of approval of certain land development applications where necessary and appropriate to address specific design or visual impact issues or to implement certain mitigation measures established by the environmental review process; or when mandated by the zoning ordinance for certain land uses.10 Design review includes consideration of mitigation of adverse visual impacts.

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8 Requirements are set forth in Chapter II (Single Building Sites) of the Santa Clara County Code.
9 The County’s BSA process and requirements (County Ordinance C - Chapter II) can be accessed at: http://library.municode.com/index.aspx?clientId=13790
10 Data on the County’s design review process and requirements can be accessed in Article 5.45 of the Zoning Ordinance, which can be accessed at:
impacts from proposed development; compatibility with the natural environment; conformance with the County’s “Development Guidelines for Design Review;” compatibility with the neighborhood and adjacent development; compliance with zoning district regulations; and conformance with the General Plan or other applicable planning guidelines.

Areas within the “-d” combining zoning district include all areas of the primary Santa Clara Valley viewshed, which is the area most immediately visible within approximately 1-2 miles of the valley floor (up to and including the first ridge). This is the Santa Clara Valley Viewshed (d1) District. Policies to regulate development on ridgelines and hilltops were added to minimize the visual effects of building in these locations. Design review is also required for the Milpitas Hillside (d2) District.

3. Architectural and Site Approval

The County’s Architectural and Site Approval (ASA) process is a procedure established by the County of Santa Clara Zoning Ordinance to review the quality of site and architectural design associated with proposed projects. ASA frequently results in conditions of approval being established that change and improve development design. ASA is required in all industrial, commercial, professional office, historic and scenic zoning districts. It is also required in certain multiple residential zoning districts and other designated zoning districts. In addition to the specific requirements of individual zoning districts, the requirements for ASA may arise as a condition of a variance, special permit, or a use permit. Through this process the County assesses architecture, site design, energy use, landscaping, parking and driveway design, and signs.

4. Grading Ordinance

The County’s Grading Ordinance requires projects that would involve grading (cuts or fills) exceeding 150 cubic yards to obtain a grading permit, which is a discretionary permit issued by the County.11 The County Planning Office conducts CEQA review of the proposed grading plan as part of the application review for the permit. Permits or other approvals may also be required from other public agencies, such as the Santa Clara Valley Water District, the California Department of Fish and Wildlife, the San Francisco Bay Conservation and Development Commission, the Army Corps of Engineers, and the Regional Water Quality Control Board.

The County Planning Director and the building official may impose conditions on a project to comply with pertinent land development and land use requirements and other County ordinances, and for the health, safety and welfare of the public. Approval by the Planning Director shall not be granted unless the proposed grading is related to a use presently permitted by law on the property; the grading is necessary for establishment or maintenance of the use; and the design, scope and location of the grading is appropriate for the use and causes minimum disturbance to the terrain and natural features of the land.

http://www.sccgov.org/sites/planning/Permits - Development/Zoning Ordinance/Pages/Zoning-Ordinance.aspx

11 There are other exemptions to the Grading Ordinance. Exemptions and Grading Ordinance requirements can be accessed at: http://www.sccgov.org/sites/planning/Permits - Development/Permits/Pages/Grading-Permit.aspx
Installation of septic tanks and leachfields is exempt from the Grading Ordinance. Grading for the residential development of the lot where a new OWTS is proposed would undergo CEQA review (if the grading exceeds the ordinance threshold).

5. **Building Application Review Requirements for the Agricultural Ranchlands (AR) Zoning District East of U. S. 101**

The BSA review described in subsection E1 above does not apply to residential development proposals on properties zoned AR in the area east of U.S. 101 (except for lands within the Anderson/Coyote watershed, as mapped). However, as noted above, because of the generally steep terrain, development of single family residences in this area will require a grading permit, which will trigger environmental review by the County even without the requirement for BSA approval.

6. **Review of Commercial Applications**

The proposed Ordinance also regulates OWTS for commercial development. As noted earlier, the proposed Ordinance increases the size of OWTS that can be permitted by the County (and not the RWQCB). This ordinance change would primarily affect commercial uses served by OWTS. This modification is mainly a procedural change and would not result in any significant environmental issues warranting evaluation in this EIR for the following reasons: (1) the DEH sees very few applications for larger flow commercial projects (less than one per year); (2) all commercial projects would require a Use Permit and undergo CEQA review and discretionary approval; (3) while the DEH would have primary permitting authority for OWTS up to 10,000 gpd, the proposed Ordinance requires that projects exceeding 2,500 gpd would automatically be referred to the appropriate RWQCB for their additional review; (4) any OWTS with flows between 2,500 gpd and 10,000 gpd would require the issuance of an operating permit by the County, which is roughly equivalent to the waste discharge permits currently issued by the Regional Water Quality Control Boards for OWTS of this size; (5) the proposed Ordinance has been modified to make cumulative impact assessments a mandatory requirement for any OWTS over 2,500 gpd wastewater flow; and (6) as discussed previously, there is little vacant commercially-zoned land.

Where pertinent, this EIR assess the hydrologic and health impacts resulting from large flow systems (up to 10,000 gpd) such as could be used for some commercial development. Without attempting to calculate how many additional commercial systems could be installed under the Ordinance (because it would be speculative), the impact analyses includes assessment of the impacts of the more numerous new residential OWTS and some small, unknown number of new commercial OWTS at a program level.

7. **Summary of County Building Application Review Responsibilities**

Construction of a new residence within the rural unincorporated areas usually requires a discretionary Planning permit. Most future development through the use of alternative OWTS under the Ordinance would be subject to site specific CEQA analysis by the County Planning Office.

This area where current County regulations do not require discretionary approval for a new residence includes three of the County watersheds and part of a fourth (see Figure 4.0-1). They are the Northeast County, Calaveras Reservoir, and Pacheco Creek watersheds and the eastern portion of the Coyote Creek watershed.
2. Format of the Resource Analyses in Chapter 4

This chapter of the EIR addresses in detail the interaction of the proposed project with its natural environment. Each area or topic of environmental concern is discussed using the following format.

A. Setting

This section includes a description of the existing physical and environmental conditions as regards the particular environmental factor under consideration (per CEQA Guidelines Section 15125).

B. Potential Impacts

This section begins with a list of the criteria that are used to determine impact significance. The criteria are based on the list of impacts typically considered significant as listed in the CEQA Guidelines. The County of Santa Clara has added several additions or revisions to the criteria, and they are included in this EIR.

This section includes a description of any environmental constraints that could affect project implementation and an analysis of all potentially significant direct and indirect impacts that would or could occur if the proposed Ordinance is approved (per CEQA Guidelines Section 15126.2a and b). Where warranted, subsequent impact discussions may include additional analysis of potential impacts in known areas of sensitive resources; areas with constrained road access; and the three watershed areas where more substantial growth is projected (portions of the Lexington Basin; the four Llagas Creek subwatersheds; and portions of the Uvas Creek watershed.

As mentioned previously, the impact discussion include the effects of the small number of new commercial projects that could benefit from the proposed Ordinance. The analysis focuses on the residential development that could be accommodated by the proposed Ordinance since there are thousands of vacant residential parcels and few undeveloped commercial parcels.

1. Direct Impacts

CEQA Guidelines Section 15064(d)(1) requires the EIR to examine the direct physical changes caused by and immediately related to the project, which are the environmental changes resulting from the installation and operation of the new types of OWTS (alternative OWTS) as well as environmental changes in the environment that might result from revising the requirements regulating conventional OWTS. As noted above, because site-specific information is not available, these direct impacts are evaluated at a program level.

2. Indirect Impacts

CEQA Guidelines Section 15064(d)(2) requires the EIR to assess the physical changes in the environment which are not immediately related to the project, but which are caused indirectly by the project. Similarly, Section 15126.2(a) requires the EIR to assess indirect impacts caused by bringing development and people into an area.
A central aspect underlying the EIR analysis is recognition the project would allow installation of an alternative OWTS on existing lots where a conventional OWTS (as allowed under current County regulations) would be prohibited. The ability to install a permitted OWTS would allow the property owner to apply to the County for approval to construct a residence and ancillary improvements on the property consistent with County zoning of the property.

At a program level, the EIR assesses the indirect impacts resulting from construction and occupancy of new residences and ancillary improvements. Because site-specific information regarding the location of these future residences is not available, these indirect impacts are evaluated at a program level. Based on the conclusions of the Questa study and additional analysis by County Planning Staff, the subsequent analysis of most indirect impacts is based on projected buildout of approximately 30 additional units per year to 2035. Traffic and air quality modeling was done and impacts were assessed for an extreme worst case that includes possible development of all lots that could be developed using an alternative OWTS without taking into account other site constraints.

C. Mitigation Measures

Because at the program level of analysis all impacts of the proposed project were found to be less than significant, no mitigation is necessary at this program level. In approving new residential development that could occur if the proposed Ordinance is adopted, the County would maintain environmental quality and consistency with CEQA requirements by enforcing General Plan policies and other pertinent environmental regulations when conditioning BSA, design review, ASA, and/or grading permit approvals for this new development. The EIR discussion of mitigation for most impacts will describe how the subsequent County review process would operate to provide site-specific mitigations for the range of impacts identified in the EIR.
4.1 GEOLOGY AND SOILS

This section of the EIR was prepared with the technical assistance of Questa Engineering (Questa). The information presented below was drawn from review of the following:

1. Proposed Santa Clara County On-site Wastewater Ordinance and On-site Systems Manual;
4. Santa Clara County General Plan Update – Hazards and Safety Element; and

A. Setting

1. Regional Geologic and Seismic Setting

Santa Clara County includes the Santa Clara Valley, the eastern slopes of the Santa Cruz Mountains in the western portion of the County, and the western slopes of the Hamilton-Diablo Mountain Range in the eastern portion of the County. The Santa Clara Valley and surrounding mountain ranges are located within the coast range geomorphic province of California. This area is characterized by northwest trending mountain ranges and valleys oriented sub-parallel to faults of the San Andreas Fault System. In the San Francisco Bay Area, tertiary strata commonly rest in angular unconformity on rocks of the Franciscan Complex, which is composed of weakly to strongly metamorphosed greywacke (sandstone), argillite, limestone, basalt, serpentinite, and chert. The rocks of the Franciscan Complex are ancient Jurassic oceanic crust and deep marine (pelagic) deposits added onto the edge of the North American Continent and metamorphosed as a result of tectonic processes. Late Jurassic to Late Cretaceous sedimentary and volcanic deposits overlay these deposits. Deposits of these sedimentary and volcanic rocks may be found outcropping in the Santa Cruz Mountains in the western portion of the County and deposits of sedimentary, metamorphic, and volcanic rocks can be found along the slopes of Mount Hamilton in the eastern portion of the County. Little metamorphosed, high-pressure, low temperature metamorphic minerals are common in the Franciscan complex, but there are also high grade metamorphic blocks in sheared, but relatively un-metamorphosed, argillite matrix which reflect the complicated history of the Franciscan.
2. Regional Seismicity

California is a seismically active region. Seismic activity in the state is concentrated in tectonically active regions that include areas such as the Pacific Coast, the Sierra Nevada Range, and the Cascades Range. The active tectonism in these regions is due to plate tectonics and movements of the earth’s tectonic plates, and resulting active volcanism. There are thousands of mapped faults in the Coast Ranges, including dozens in Santa Clara County.

The California Geological Survey classifies faults on the basis of surface fault rupture hazard. Faults that have shown movement within the past 200 years are Historic faults, faults with movement in the past 11,000 years are Holocene faults, and faults that have shown movement within the past 1.6 million years are Late Quaternary faults. In accordance with the Alquist-Priolo Earthquake Fault Zoning (A-P EVZ) Act of 1972, only faults with evidence of Historic or Holocene surface fault rupture are considered active earthquake faults and are zoned on the A-P EFZ maps. Faults with evidence of surface fault rupture within the past 1.6 million years are considered potentially or conditionally active. Other faults are considered inactive.

The Alquist-Priolo Earthquake Fault Zones Maps show faults considered active by the California Geological Survey. Faults in Santa Clara County considered active and subject to the Alquist-Priolo Earthquake Fault Zoning Act are the San Andreas Fault, the Calaveras Fault, the Greenville Fault, the Crosley Fault, the Sargent Fault, the Monte Vista Fault and the Hayward Fault – Southeast Extension. In addition, Santa Clara County has identified additional faults that it considers active and subject to potential surface displacement. These include the Piercy and Barrocal Faults. Faults in the County considered potentially active include the Animas, Arroyo Aguague, Clayton, Coyote Creek, Evergreen, Shannon, and Silver Creek Faults.

3. Area Topography

The topography of Santa Clara County is quite varied, ranging from flat valley areas to steep mountainous terrain. The northwestern and central portions of the County lie within the Santa Clara Valley. Topography in this portion of the County is relatively level, with elevations ranging from approximately mean sea level (msl) at the edge of San Francisco Bay to approximately 200 feet above msl at the edges of the hill portions of the County. The southwestern edge of the County consists of steeply sloping hills of the Santa Cruz Mountains, which reach a peak elevation of approximately 3,800 feet (msl). The eastern portion of the County consists of steeply sloping hills and valleys of the Hamilton-Diablo Range with a peak elevation of about 4,370 feet (msl).

4. Area Soils

Due to the highly varied geology and topography there are a wide variety of soil series mapped by the United States Department of Agriculture Natural Resources Conservation Service, NRCS (formerly Soil Conservation Service), within Santa Clara County. These soil types have highly variable suitability for the use of on-site wastewater treatment and dispersal systems. In general, soils found on alluvial fans at the edges of the valley and the lower foothill soils are the most suitable. Basin deposits found in the northern portion of the County near the southern end of the San Francisco Bay are generally the least suitable. The range of soil conditions and suitability for on-
site systems tends to be greatest in the mountain regions, due to steeper ground slopes, rock outcrops and variable soil depth. See Figure 4.2-3 in the following section on Hydrology for a general soil map of the County.

5. Groundwater

The principal groundwater aquifer in the County is in the Santa Clara Valley. This groundwater basin is described in more detail in Section 4.2, Hydrology and Water Quality. Groundwater is generally unconfined in the valley; however, a confined zone is created in the northern portion of the sub-basin where it is overlain by a low permeability clay layer. “Unconfined” groundwater is defined as groundwater that is hydrologically connected to the surface through high permeability sediments. “Confined” groundwater is defined as groundwater separated from the surface by a layer of very low permeability material such as clay.

Groundwater levels vary throughout the County and by season. Portions of the County near the margins of the San Francisco Bay tend to have the shallowest groundwater, sometimes only a few feet below the ground surface. Groundwater level is an important factor affecting soil suitability and the overall performance of OWTS. High groundwater reduces the available depth and effectiveness of the unsaturated soil treatment zone, providing a potential conduit for groundwater contamination. High groundwater can also contribute to hydraulic failure (i.e., saturation) of a dispersal field, causing the effluent to back-up in the system and potentially rise to the ground surface.

6. Slope Stability

As mentioned previously, the topography of Santa Clara County is varied, with elevations ranging from approximately sea level adjacent to the San Francisco Bay, to approximately 4,370 feet above mean sea level at Mount Hamilton. The valley region of the County is very flat, thus slope instability is rare. Slopes in the Santa Cruz Mountains and Hamilton-Diablo Range are as steep as 100 percent or greater in some areas. Slope instabilities in Santa Clara County generally occur on slopes steeper than 20 percent. Slope instability is of concern for on-site wastewater treatment and dispersal systems due to the potential for causing physical damage to system components and creating avenues for down-slope seepage or breakout of effluent.

7. Primary Seismic Hazards - Surface Fault Rupture

The San Andreas, Calaveras, Marsh Creek, Crosley, Sargent, and Greenville Faults are zoned as active and subject to the Alquist-Priolo Earthquake Fault Zoning Act (1972) in the County. Santa Clara County has also identified two additional faults that it considers active and subject to potential surface rupture, the Piercy and Barrocal Faults. All of these faults run in a roughly northwest to southeast orientation. The San Andreas Fault runs along the southwestern edge of the County. The Crosley Fault is the southeast extension of the Hayward Fault and is located in the northern portion of the County, approximately following the base of the hills of the Hamilton-Diablo Range, along the eastern edges of the cities of Milpitas and San José. The Calaveras Fault runs through the middle section of the Hamilton-Diablo Range, and the southern tip of the Greenville Fault is located in the northeast corner of the County. The Monte Vista, Berrocal, and Sargent Faults are parts of the San Andreas Fault system, located in the southwest portion of the County. Fault rupture in the area of an on-site wastewater system could
result in damage to the system and potentially seepage or breakout of effluent. Santa Clara County has denoted earthquake fault hazard zones along the alignments of the active faults. These zones, as well as slope stability and liquefaction hazard zones are shown in Figure 4.1-1.

8. Secondary Seismic Hazards

**Ground Shaking**

As previously mentioned, seismically induced ground shaking is a hazard in Santa Clara County. The severity of ground shaking depends on several variables such as earthquake magnitude, epicenter distance, local geology, thickness and seismic wave-propagation properties of unconsolidated materials, groundwater conditions, and topographic setting. The California Geological Survey has developed a Probabilistic Seismic Hazards Assessment Program wherein probabilities for estimated peak ground acceleration due to an earthquake are given for any location within the state. This program estimates the peak ground acceleration within Santa Clara County to range from approximately 40 percent to approximately 90 percent of the acceleration due to gravity, with a 10-percent chance of being exceeded in 50 years. Shaking intensities at particular locations within the County would depend upon distance from the epicenter of a particular seismic event as well as the properties of the underlying material. The Modified Mercalli Earthquake Intensity Scale is a subjective ground shaking intensity scale based on structural damage and subjective human experiences. According to a regression formula relating peak ground acceleration to the Modified Mercalli Earthquake Intensity (MMI) scale, this correlates with a Modified Mercalli Intensity of VII to X: strong to violent. This scale is presented as Table 4.1-1.

**Seismically Induced Liquefaction**

Liquefaction is a process in which uniform, clean, loose, fine sandy and silty sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. Liquefaction is restricted to certain geologic and hydrologic environments, primarily recently deposited sand and silt in areas with high groundwater levels. The process of liquefaction involves seismic waves passing through saturated granular layers, distorting the granular structure, and causing the particles to collapse. This causes the granular layer to behave temporarily as a viscous liquid rather than a solid due to a loss of pore pressure.

Liquefaction can cause the soil beneath a structure to lose strength, which may result in the loss of foundation bearing capacity. This loss of strength commonly causes the structure to settle or tip. Loss of bearing strength can also cause light buildings with basements, buried tanks (such as septic tanks and pump vaults), and foundation piles to rise buoyantly through the liquefied soil. Areas of liquefiable soil can be found on the
Table 4.1-1
Modified Mercalli Earthquake Intensity Scale

<table>
<thead>
<tr>
<th>Scale</th>
<th>Intensity</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
<td>Not felt.</td>
</tr>
<tr>
<td>II</td>
<td></td>
<td>Felt by persons at rest, on upper floors, or favorably placed.</td>
</tr>
<tr>
<td>VI</td>
<td>Moderate</td>
<td>Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Objects fall off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and poorly constructed or weak masonry cracked. Trees, bushes shaken (visibly, or heard to rustle).</td>
</tr>
<tr>
<td>VIII</td>
<td>Very Strong</td>
<td>Steering of motorcars affected. Damage to average masonry and partial collapse. Some damage to reinforced masonry, but not to that specially designed for seismic loading. Fall of stucco and some masonry walls. Collapse of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.</td>
</tr>
<tr>
<td>IX</td>
<td>Violent</td>
<td>General panic. Poorly built or weak masonry destroyed; average unreinforced masonry heavily damaged, sometimes with complete collapse; reinforced masonry seriously damaged. (General damage to foundations.) Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.</td>
</tr>
<tr>
<td>X</td>
<td>Very Violent</td>
<td>Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.</td>
</tr>
<tr>
<td>XII</td>
<td>Very Violent</td>
<td>Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.</td>
</tr>
</tbody>
</table>

valley floor, especially in areas built on fill placed over bay mud near the San Francisco Bay and local drainages (including those that are no longer active). Limited areas of liquefiable soil can be found in the foothill and mountain regions, but are generally limited to drainages where sandy and silty sediments have accumulated. Portions of the County are considered seismic hazard zones under the California Seismic Hazard Zonation Program and require special investigation. Much of the floor of the Santa Clara Valley is denoted as liquefaction hazard zones, and these areas are shown in Figure 4.1-1.

**Seismically Induced Slope Failure**
Seismically induced slope failure is another secondary seismic hazard. During earthquake-induced ground shaking, unstable slopes can fail, causing landslides and debris flows. As stated in the slope stability section above, there are many steep slopes in the foothill and mountain regions that could be susceptible to failure. Moderate to strong ground shaking resulting from an earthquake would increase the probability of landsliding, which could cause damage to on-site wastewater treatment systems located in or adjacent to affected areas. Portions of the County are considered seismic hazard zones under the Seismic Hazards Zonation Program and require special investigation prior to construction. Much of the floor of the Santa Clara Valley is denoted as liquefaction hazard zones as shown on Figure 4.1-1.

9. **Regulatory Setting**

**Alquist-Priolo Earthquake Fault Zoning Act**
The California Legislature passed the Alquist-Priolo Earthquake Fault Zoning Act in 1972 to mitigate the hazard of surface faulting to structures. The act’s main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. Local agencies must regulate most development in fault zones established by the State Geologist.

**California Seismic Hazards Mapping Act**
The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code Sections 2690-2699.6) addresses seismic hazards other than surface rupture, such as liquefaction and seismically induced landslides. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

**California Building Standards Code**
Title 24 of the California Code of Regulations, also known as the California Building Standards Code, sets minimum requirements for building design and construction. The 2010 version of the California Building Standards Code are effective as of January 3, 2011. The California Building Standards Code is a compilation of three types of building standards from three different origins:

1. Building standards that have been adopted by state agencies without change from building standards contained in national model codes;
2. Building standards that have been adopted and adapted from the national model code standards to meet California conditions; and

3. Building standards, authorized by the California legislature, that constitute extensive additions not covered by the model codes that have been adopted to address particular California concerns.

In the context of earthquake hazards, the California Building Standards Code’s design standards have a primary objective of assuring public safety and a secondary goal of minimizing property damage and maintaining function during and following seismic events. The 2007 and 2010 versions of the California Building Standards Code differ significantly from the previous versions of the code. The 2010 code assigns a seismic design category (SDC) to each structure. The SDC is assigned as a means of capturing both the seismic hazard, in terms of mapped acceleration parameters (spectral values), site class (defining the soil profile), and the occupancy category (based on its importance or hazardous material contents). The SDC affects design and detailing requirements as well as the structural system that may be used and its height. The previous versions of the code captured these requirements simply based on the location’s seismic zone.

**National Pollutant Discharge Elimination System Permit**

Construction activities involving the disturbance of one acre or more are regulated by the RWQCB and are subject to the requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The SWRCB established the General Construction Permit for the purpose of reducing impacts to surface waters that may occur due to construction activities. The project sponsor is required to apply for the General Construction Permit that requires the preparation and implementation of a stormwater pollution prevention plan (SWPPP). The SWPPP is prepared before project construction begins and includes specifications for best management practices (BMPs) that would be implemented during construction. BMPs are measures undertaken to control degradation of surface water by preventing soil erosion or the discharge of pollutants from the construction area. Additionally, the SWPPP describes measures to prevent or control runoff after construction is complete and identifies procedures for inspecting and maintaining facilities or other project elements. Required elements of a SWPPP include:

- Site description addressing the elements and characteristics specific to the site;
- Descriptions of BMPs for erosion and sediment controls;
- BMPs for construction waste handling and disposal;
- Implementation of approved local plans;
- Proposed post-construction controls; and
- Non-stormwater management.

The RWQCB has identified BMPs in the California Storm Water Best Management Practice Handbook (2004) to effectively reduce degradation of surface waters to an acceptable level.
**County of Santa Clara General Plan**
The General Plan Health and Safety Element includes a section on Geological and Seismic Hazards. This section identifies geotechnical and geologic impacts to the general County of Santa Clara area.

**County of Santa Clara Grading Ordinance**
Santa Clara County has codified requirements for grading within the County in its municipal code, Title C, Division C12, Chapter III. The ordinance is enacted to establish minimum requirements for all grading and drainage alteration work; to establish procedures by which these requirements may be enforced; and to protect surface water quality, neighboring properties, and the environment by prevention of soil erosion and the transport of soil sediments resulting from improper grading and drainage alteration operations. Grading permits must be obtained from Santa Clara County for work with cut or fills over 150 cubic yards. By definition, the excavation associated with the installation of septic tanks, dispersal trenches and similar underground utilities is not categorized as “cut and fill” under the County grading ordinance.

**County of Santa Clara Building Site Approval**
Santa Clara County has codified requirements for construction of single buildings within portions of the County in its municipal code, Title C, Division C12, Chapter II. The ordinance is enacted to establish requirements for construction of single buildings in the County. The ordinance requires a preliminary soils report prior to approval and further investigation if the preliminary soils report indicates problems that could affect the stability of a structure. The ordinance also requires special building site approval for residential construction on slopes greater than 30 percent. See the introduction to Chapter 4.0 above for further discussion of the single building review process.

**B. Potential Impacts and Mitigation Measures**

1. **Criteria Used For Determining Impact Significance**

   Based on the *CEQA Guidelines*, the project would have a significant impact on geology or soils if it:

   1. Exposes people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving any of the following:

      a. 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.

      b. Strong seismic shaking.

      c. Seismic-related ground failure, including liquefaction.

      d. Landslides.
2. Is located in 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.

3. Is located on expansive soil, as defined in the report, Soils of Santa Clara County (US Department of Agriculture), creating substantial risks to life or property.

4. Results in substantial soil erosion or the loss of topsoil.

5. Has 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.

6. Cause substantial compaction or over-covering of soil either on-site or off-site.

7. Cause substantial change in topography or unstable soil conditions from excavation, grading, or fill.

2. Project Impacts

Seismic Impacts

Impact 4.1-A Seismic activity could cause damage to or failure of new alternative OWTS allowed by the proposed Ordinance.

As described in the Setting section, Santa Clara County includes six faults zoned as active by the California Geological Survey (and an additional two faults the County considers active and potentially subject to surface rupture.

The County has experienced strong seismic ground shaking in the past. According to the CGS, Santa Clara County is expected to experience peak ground accelerations of between 50 and 90 percent of that due to the Earth’s gravity. This peak ground acceleration has a 10 percent chance of being exceeded in the next 50 years. Strong ground shaking, including seismically-induced landsliding could cause damage to OWTS, potentially resulting in sewage backups or surface failure, and posing a risk to human health.

Under the proposed Ordinance as well as under existing regulations, on-site wastewater systems could be sited in areas with soils subject to potential liquefaction, lurch cracking or densification. Liquefaction causes soil to lose its strength and could cause light underground structures, such as septic tanks and pump vaults, to shift or rise buoyantly, possibly causing system failure. Lurch cracking is the development of fissures or cracks on slopes overlain by weak soils during seismic shaking; these cracks could cause damage to an OWTS located where these cracks develop. Differential settlement could also occur, which could lead to rupture of subsurface piping connections.

OWTS could experience physical damage from earth movement and ground shaking. These potential problems would be of most concern for OWTS that employ electrical and mechanical equipment, such as pumps, pressurized lines, filters and aeration units (i.e.,
alternative/engineered designs and supplemental treatment systems). These systems could be disabled by earth movement, resulting in system malfunctions, sewage backups and surfacing effluent, thereby posing a risk to human health.

Designing OWTS to completely eliminate impacts from fault rupture and ground shaking is not practical. The most common approach is to develop and implement an appropriate post-seismic response plan. At a minimum, this typically includes provisions for inspection, evaluation, and, as needed, corrective work following significant seismic events for OWTS located in high-risk areas. The proposed project includes provisions of this nature. Specifically, the proposed Ordinance requires that all operating permits issued for alternative OWTS located within a Santa Clara County-delineated Fault Rupture Hazard Zone (per Figure 4.1-1) shall include a condition requiring post-seismic system inspection and evaluation in the event of an earthquake causing significant ground shaking occurs in the area. Determination of when “appreciable fault rupture displacement” has occurred would be made by the Environmental Health Director in consultation with the County Geologist, the CGS, the U.S. Geological Survey, and other agency officials, as appropriate. The Director would be responsible for issuing a notice to the affected OWTS owners and maintenance contractors of this determination, triggering the inspection requirement. Any damage to or deficiencies in the OWTS noted during this inspection would be addressed promptly; and documentation of the post-seismic inspection would be reported to the DEH within 30 days following the inspection. The implementation of these provisions for mandatory post-seismic inspection of alternative OWTS located in high-risk areas would allow timely discovery of and response to any serious operational problems, thus minimizing the potential for sewage spills and hazards to public health or water quality. Given provisions in the Ordinance regarding system reviews after seismic events, the proposed project would avoid the creation of public health hazards related to seismic events through timely inspection and site-specific corrective work where needed; therefore, at a program level this impact would be a less-than-significant impact, and no mitigation is required.

**Slope Stability Impacts**

**Impact 4.1-B**   Landsliding and soil creep on unstable slopes and constrained soils and topography could cause damage to or failure of new alternative OWTS allowed by the proposed Ordinance.

Slope instabilities, including landslides and soil creep, in Santa Clara County generally occur on slopes steeper than 20 percent. Slope instability is of concern for OWTS due to the potential for causing physical damage to system components and creating avenues for down-slope seepage or breakout of effluent. Both the existing and the proposed Ordinance include provisions to address slope considerations in the use of on-site systems, which are summarized and compared in Table 4.1-2 below.
Table 4.1-2
Comparison of Ground Slope Requirements

<table>
<thead>
<tr>
<th>Ground Slope In Dispersal Area</th>
<th>Existing Ordinance</th>
<th>Proposed Ordinance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 20 percent</td>
<td>OWTS permitted with no special slope limitations.</td>
<td>OWTS permitted with no special slope limitations.</td>
</tr>
<tr>
<td>20 to 50 percent</td>
<td>Requires variance from Director based on completion of slope stability study performed by registered civil engineer, certified engineering geologist or registered environmental health specialist.</td>
<td>Requires variance from Director based on completion of slope stability study performed by registered civil engineer or certified engineering geologist.</td>
</tr>
<tr>
<td>30 to 50 percent</td>
<td>North County – No additional requirements.*</td>
<td>&gt;30 to 40 percent – requires pressure distribution or subsurface drip dispersal method.</td>
</tr>
<tr>
<td></td>
<td>South County – Requires variance from Central Coast RWQCB.</td>
<td>&gt;40 to 50 percent – requires subsurface drip dispersal method.</td>
</tr>
<tr>
<td>&gt;50 percent</td>
<td>OWTS not permitted.</td>
<td>OWTS not permitted.</td>
</tr>
</tbody>
</table>

Source: Questa Engineering Corporation

*Note: Certain locations within Lexington Basin have slope limitations ranging from 30 to 50 percent, specified and measured as the “average slope of the lot”.

As indicated in Table 4.1-2, under the current Ordinance, all on-site wastewater dispersal sites with a ground slope steeper than 20 percent are required to be analyzed for slope stability by a registered civil engineer, certified engineering geologist or registered environmental health specialist prior to permit approval. The analysis is additionally reviewed by the County Geologist. This provides an effective process for identifying any site-specific slope stability concerns, and addressing them through appropriate design or other mitigation measures.

The proposed Ordinance strengthens the current approach to dealing with steep slope issues in two ways. First, it includes the addition of the requirement that pressure distribution or subsurface drip dispersal methods be utilized for slopes over 30 percent and that subsurface drip dispersal be used for slopes over 40 percent. These methods for wastewater distribution are intended to provide uniform, broad distribution of wastewater over the entire dispersal field area, rather than sequentially filling individual sections of trench. This reduces the potential for localized saturation of trenches and adjacent soils that occurs with conventional gravity-flow systems on hilly terrain. Second, the proposed Ordinance also includes a change that removes registered environmental health specialists (REHSs) from the list of qualified professionals for
conducting the required slope stability analysis, since the required expertise does not fall within the training and professional scope of practice for REHSs.

For consistency, the proposed Ordinance deletes the current requirement mandating a Regional Water Board variance process for dispersal systems located on slopes over 30 percent on properties in the south County area - the Central Coast RWQCB jurisdiction. This change is made to provide procedures that are consistent countywide and that are also in line with the provisions contained in the recently adopted Statewide AB 885 Policy. Additionally, the proposed requirements dictating the use of pressure distribution and drip dispersal methods for slopes over 30 percent, along with the required level of professional analysis and review, would ensure adequate consideration, avoidance and/or mitigation of slope stability issues that could impact the functioning or impacts of on-site wastewater systems on steeper slopes. The impact of damage to or failure of new alternative OWTS caused by unstable slopes and soils would be a less-than-significant impact, and no mitigation is required.

**Soil Constraints**

**Impact 4.1-C** Expansive soils could cause failure of new alternative OWTS allowed by the proposed Ordinance.

Expansive soils are present in areas of Santa Clara County and present difficulties for proper functioning of OWTS. Expansive, high shrink-swell soils may exhibit suitable soil percolation rates during the dry season due to shrinkage cracks in the soil; but, when they become wet, the same soils may swell to the point of providing little or no percolation, resulting in potential sewage backups and/or surface failures. This problem can be averted through careful soil evaluation and provisions to require that percolation testing be conducted during the wet season in areas of expansive soils. The existing County Ordinance and Bulletin A contain specific soil evaluation requirements for new OWTS installations. These requirements generally help to identify and avoid expansive soil conditions or design systems to address these constraints. However, the existing County practices do not contain explicit requirements for wet weather percolation testing. The proposed Ordinance includes modifications to the existing percolation testing procedures, including the added requirement that percolation testing be conducted during the wet season for soils exhibiting high shrink-swell characteristics, related to clay content, plasticity and structure. The additional requirement for selective wet weather percolation testing would improve the ability to recognize, avoid and/or properly design OWTS for expansive soil conditions. The impact of potential sewage backups and/or surface failures caused by expansive soils would be less-than-significant, and no mitigation is required.

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12 AB 885 is a policy to implement state-wide regulations governing OWTS. It can be reviewed at: [http://www.waterboards.ca.gov/water_issues/programs/owts/board_adopted_policy.shtml](http://www.waterboards.ca.gov/water_issues/programs/owts/board_adopted_policy.shtml)
**Soil Suitability for Onsite Wastewater Disposal**

**Impact 4.1-D** The proposed Ordinance could result in the installation of new OWTS in areas having unsuitable soil conditions for wastewater dispersal.

The proposed Ordinance and Manual will update and revise current County regulations for on-site wastewater systems to be more consistent with current literature, industry practices and Regional Water Quality Control Board Basin Plan requirements. The changes include revisions to conventional system sizing requirements, provision of additional “alternative” design options for certain soil and site constraints, and relaxation of the current one-acre minimum lot-size limitation for on-site wastewater systems in the Lexington Basin. In all cases where on-site systems are proposed the proposed Ordinance maintains, and in some respects improves the existing County requirements pertaining to evaluation of soils and other site characteristics to verify the suitability for on-site wastewater system siting and design. This includes required inspections to determine compliance with adopted criteria for soil depth, percolation characteristics, groundwater separation, and setbacks. Implementation of the provisions in the proposed Ordinance and Manual would improve the practices for siting and design of OWTS in Santa Clara County, offer more options for dealing with system upgrades and repairs, and would reduce the potential for system failures and associated impacts to public health and the environment. Because each site would be inspected to ensure that a new alternative OWTS is suitable, this would be a less-than-significant impact, and no mitigation is required.

**Compaction or Over-Covering of Soil**

**Impact 4.1-E** Installation of new alternative OWTS allowed by the proposed Ordinance could result in substantial compaction or over-covering of soil.

The proposed Ordinance would allow further construction of OWTS in unincorporated areas of Santa Clara County, which involves grading, trenching and excavation for system installation. Operation of heavy construction equipment in connection with this type of work has the potential to cause unnecessary soil compaction. OWTS are specifically designed to utilize and preserve natural soil percolation and drainage characteristics, and to avoid or minimize compaction or over-covering of soil. For instance, installation of dispersal fields is limited to the dry season to avoid soil smearing and compaction effects which occur from operation of equipment and trenching when soils are wet. Also, paving over wastewater dispersal fields would not be permitted under either the existing or proposed Ordinance. Consequently, the proposed Ordinance would not result in substantial compaction or over-covering of soils. This potential for soil compaction would be a less-than-significant impact, and no mitigation is required.
Change in Topography

Impact 4.1-F Installation of new alternative OWTS allowed by the proposed Ordinance could result in substantial changes in topography.

With limited exceptions, OWTS are specifically designed to conform to the natural topography, with system components (e.g., tanks, pipes and dispersal trenches) installed entirely below grade. Neither the existing or proposed Ordinance allow alteration of the site topography (e.g., through grading) to accommodate conventional OWTS. The only situations where localized changes in topography would occur are for certain types of engineered and alternative systems, such as cover fill, mounds, at-grade and raised beds, that include above ground sand and/or soil fill material as part of the system design. In these cases, the depth of fill typically ranges from 1 to 3 feet, covering an area of about 1,000 to 2,000 square feet. The topographic impact is localized and similar to that associated with raised planter beds or backyard landscaped areas. It would not amount to a substantial change to the topography in Santa Clara County. This impact to topography would be a less-than-significant impact, and no mitigation is required.

Soil Erosion

Impact 4.1-G Installation of new alternative OWTS allowed by the proposed Ordinance could result in substantial soil erosion.

Depending upon site conditions and system design, construction of any OWTS, under the existing regulations and the proposed Ordinance, may pose a threat of soil erosion and impacts on downstream receiving waters from excavations for tanks, trenching for pipelines and dispersal trenches, and associated clearing and grading activities. Downstream impacts of soil erosion include sedimentation and degradation of water quality, such as increased turbidity and suspended sediment concentrations. Eroded soil contains nitrogen, phosphorous and other nutrients. When carried into water bodies, these nutrients can trigger algal blooms that reduce water clarity, deplete oxygen, and create odors. Deposition of eroded sediments in streams and lakes may blanket fauna. The increased turbidity from suspended sediments may also reduce photosynthesis that produces food supply and natural aquatic habitats. Eroded soil could also be deposited in local drainage ways, possibly interfering with the natural flow of storm waters, causing or exacerbating flooding, or accelerating channel erosion.

The amount of soil disturbance and potential erosion impacts would vary according to the type and size of OWTS being installed as well as certain site conditions, especially the steepness of the terrain. Trenching and incidental grading associated with the installation of septic tank drainfields is exempt from requirements of the County grading ordinance, as long as backfill is completed within 45 days and brought back to the original contours of the site. Consequently, there is currently no formal process requiring erosion control measures in connection with on-site system installations.

Implementation of erosion control measures for OWTS is currently inconsistent, depending largely on the care exercised by the system designer, contractor, and/or owner. This can be problematic due to the unusually large drainfield sizes required.
under current County design standards, which typically involve grading and disturbance of anywhere from 5,000 to 25,000 square feet or more for typical residential systems. DEH staff have expressed concern about the observed need for better attention to erosion control, especially for larger OWTS and those installed on steeper terrain.

Under the proposed Ordinance changes in soil erosion impacts could occur, both positively and negatively, as discussed below.

- **Reduced Size of Conventional Dispersal Systems.** Proposed changes in system sizing requirements and design criteria would reduce the amount of trenching and soil disturbance for installation of conventional dispersal trench systems, and the associated potential for soil erosion. The typical OWTS land area for residential systems would be reduced by approximately 60 percent, from the present 5,000 to 25,000 square feet down to approximately 2,000 to 10,000 square feet for a typical 3-bedroom residence.

- **Use of Alternative OWTS Designs.** Alternative system designs permitted under the proposed Ordinance would be of a similar size as conventional OWTS (e.g., requiring typically 2,000 to 10,000 square feet land area). However, the provision for approval of alternative systems would lead to an increase in construction of certain types of above-grade on-site wastewater systems, such as mound systems, at-grades, and cover fill that would involve clearing of surface vegetation, exposing soils that could be eroded, and placement of above-grade fill material. This would increase the potential for soil erosion compared with conventional below-ground trench designs.

- **Potential Increase in Development and OWTS Installations.** In a worst case scenario, the proposed Ordinance changes are anticipated to increase the development potential for up to an estimated 1,259 new residences and second units, increasing the number of locations where excavation and grading for OWTS might occur. A full buildout scenario would represent an approximate 48 percent increase over projected development under the existing ordinance. However, based on the approximate 60-percent reduction in land area disturbance for individual OWTS construction under the proposed Ordinance, a net decrease in overall amount of soil disturbance would occur under the proposed Ordinance despite the larger number of OWTS installed.

Based on the above factors, the proposed Ordinance requires that erosion control measures be implemented in connection with the installation of OWTS under certain circumstances, based on the type and size of the system and the prevailing ground slope conditions. The proposed Ordinance requires that the recommended erosion control measures be developed consistent with guidelines and requirements contained in the County grading ordinance, that the recommended measures be included as a part of the engineering plans for the OWTS, and that final approval of the OWTS installation be contingent upon confirmation that the specified erosion control measures have been implemented. Table 4.1-3 summarizes the circumstances that require a formal erosion control plan to be included as part of the OWTS design and approval process. Notwithstanding the requirement to prepare and implement an erosion control plan as outlined in Table 4.1-3, the proposed Ordinance also includes the caveat that for any OWTS installation, the DEH Director
may require implementation of erosion control measures where, in his/her judgment there is found to be a significant threat of sediment discharge to a drainageway or watercourse as a result of the manner in which the OWTS was installed. Additionally, the fact that OWTS must maintain minimum setbacks of 50 to 100 feet from drainageways and watercourses provides a built-in buffer to protect against soil erosion impacts to surface waters.

Table 4.1-3
Proposed Erosion Control Plan Requirements for OWTS

<table>
<thead>
<tr>
<th>OWTS Type &amp; Slope</th>
<th>Proposed Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Systems</td>
<td></td>
</tr>
<tr>
<td>Up to 20% slope</td>
<td>Not Required</td>
</tr>
<tr>
<td>&gt; 20% slope</td>
<td>Erosion Control Plan Required</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative Systems – Below Grade</td>
<td></td>
</tr>
<tr>
<td>(Trench or Drip Dispersal)</td>
<td></td>
</tr>
<tr>
<td>Up to 20% slope</td>
<td>Not Required</td>
</tr>
<tr>
<td>&gt; 20% slope</td>
<td>Erosion Control Plan Required</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative Systems - Above Grade</td>
<td></td>
</tr>
<tr>
<td>(Mound, At-grade or Cover Fill)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erosion Control Plan Required</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Any OWTS with design flow &gt;1,000 gpd</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erosion Control Plan Required</td>
</tr>
</tbody>
</table>

Source: Questa Engineering Corporation

The inclusion of new requirements concerning the development and implementation of specific erosion control plans for OWTS installations target the circumstances (steeper slopes, larger systems, and above-ground fill) that pose the highest risk of soil erosion. The proposed Ordinance references the guidelines and requirements contained in the County grading ordinance for consistency in the application of erosion control BMPs appropriate to development projects in the County. Based on these provisions in the proposed Ordinance that strengthen (as compared to the current ordinance) the consideration given to erosion control, soil erosion from OWTS would be a less-than-significant impact, and no mitigation is required.

3. Indirect Impacts

As described in the Introduction to Chapter 4, additional rural development could occur on existing legal lots if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan would have less-than-significant impacts on geological resources except for damage to property and risk to life from a major earthquake. The following discussions revisit that analysis and review the indirect geological impacts associated with increased development activities.
that could accompany changes in on-site wastewater system requirements given current regulatory requirements and environmental conditions.

**Construction in Areas Subject to Fault Rupture Hazards**

Impact 4.1-H  Potential new development could be affected by seismic activity that could cause damage to or failure of improvements.

Implementation of the proposed Ordinance could potentially allow construction within fault rupture hazard zones. Development would need to comply with the California Seismic Hazards Mitigation Act and the Santa Clara County Geologic Ordinance, requiring site-specific geologic hazards evaluation, review, and site design to avoid or mitigate impacts associated with construction on or near an active fault trace. This would be a less-than-significant impact, and no mitigation is required.

The potential for strong seismic ground shaking exists throughout Santa Clara County, which poses risks for all buildings and their occupants. Increased development opportunities would increase the number of houses and residents subject to the effects of strong seismic ground shaking. Any new structures permitted under the proposed Ordinance would have to be built in accordance with the California Building Code, which takes into account design for mitigation of seismic hazards. This requirement would ensure that strong seismic ground shaking impacts are properly mitigated. Though the EIR adopted for the County’s General Plan found this impact to be significant and unavoidable, the Building Code requirements adopted since that EIR was certified would reduce the impact at a program level to a less-than-significant impact, and no mitigation is required.

**Construction on Unstable Slopes or Soils**

Impact 4.1-I  Landsliding and soil creep on unstable slopes and constrained soils and topography could cause damage to or failure of potential new development.

New residential construction could be approved in steeply sloping areas potentially subject to slope instability. If structures were to be built in such areas this could result in damage to property and/or injury/death to residents and neighbors if not properly constructed. The California Seismic Hazards Mitigation Act requires site-specific geotechnical investigations and appropriate mitigation measures prior to building approval in landslide hazard zones. In addition, the County ordinance regulating construction of single buildings (BSA) includes special requirements for construction on slopes greater than 30 percent, where slope stability hazards tend to be greater. These requirements would ensure that the slope stability impacts of homes designed and constructed in landslide hazard zones would be properly evaluated and mitigated. BSA does not apply to lots zoned AR in the eastern part of the County. Although there may be some risk regarding development in this area, a review of geologic hazards by the County Geologist in compliance with County and State codes for new development in landslide hazard zones would still apply and would be enforced as part of the Grading Permit required for development in this area. This would be a less-than-significant impact, and no mitigation is required.
It is reasonable to expect that some of the additional development potentially occurring under the proposed Ordinance would be located in areas subject to seismically-induced ground failure, including liquefaction. If structures were to be built in areas subject to liquefaction, it could result in damage to property or injury to inhabitants. The California Seismic Hazards Mitigation Act and Santa Clara County Policies on building in Seismic Hazard Zones require site-specific geotechnical investigations and appropriate mitigation measures prior to building approval in liquefaction hazard zones. Additionally, new houses would have to be built in accordance with the California Building Code, which takes into account liquefaction hazards. These requirements would ensure that seismically-induced ground failure impacts on structures built in liquefaction hazard zones would be appropriately mitigated. This would be a less-than-significant impact, and no mitigation is required.

Expansive soils are present in areas of Santa Clara County and may cause problems for foundations built on expansive soils. Although the design requirements for on-site wastewater systems would generally avoid or limit their placement in areas of expansive soils, the accompanying building served by the on-site system could be located where soils are expansive. The BSA process requires completion of a soils report prior to building approval to ensure hazards such as expansive soils are identified and avoided or mitigated in foundation design. This would be a less-than-significant impact, and no mitigation is required.

Substantial compaction or over-covering of soils could potentially occur as a result of new development served by on-site wastewater systems in the rural areas of the County. This would include, for instance, construction of buildings, driveways, patios, tennis courts, and other impermeable surfaces. Site development and building plans for new residential development in the majority of the County is subject to discretionary review (e.g., BSA, Grading Permit, or Design Review) as described in the introduction to Chapter 4. This site specific project review for most lots that could be developed under the proposed Ordinance includes consideration of plans and factors affecting site drainage, such as soil compaction and over-covering from impervious surfaces. This provides a mechanism to identify, avoid and/or mitigate any substantial compaction or over-covering of soil that might be proposed. For the portions of the County not subject to discretionary building site and design review, a grading permit would still be required for projects that involve significant grading (cuts or fills) of more than 150 cubic yards. Since substantial soil compaction and/or over-covering of soil from residential development would also likely be associated with projects involving substantial grading (i.e., more than 150 cubic yards), the grading permit (a discretionary process) would ensure that any substantial compaction or over-covering of soils are identified, avoided and/or properly mitigated. This is a less-than-significant impact, and no mitigation is required.

The increased rural residential development anticipated under the proposed Ordinance would typically involve grading, trenching, and excavation, for new buildings, driveways, landscaping, etc. In many cases grading and topographic changes to a site would be relatively minor, especially in the flat and gently sloping areas of the County. In steeper terrain site development could involve more significant grading and possibly modifications in topography. In these cases it is reasonable to expect that any substantial changes in topography would likely require a significant amount of grading, which would trigger grading permit approval and compliance with the provisions of the
County grading ordinance. Through the grading permit (a discretionary process), any substantial changes in topography would be identified, avoided and/or properly mitigated. At a program level, this would be a less-than-significant impact, and no mitigation is required.

In summary, impacts associated with unstable slopes and soil constraints would be reduced to a less-than-significant level by complying with existing State and County regulations governing building and grading. No mitigation is required.

Soil Erosion Due to New Construction

Impact 4.1-I Potential new development could result in substantial soil erosion.

Soil erosion is a potential concern for virtually all development in Santa Clara County, including residential development in rural areas. Residential building construction activities typically include removal of vegetation, which exposes soils to the erosive forces of wind and water, as well as excavating, trenching and other grading activities that physically disturb the soil. The additional development that could occur under the proposed Ordinance would include increased potential for soil disturbance. However, site development and building plans for new residential development is subject to discretionary review (e.g., BSA, Grading Permit, or Design Review). This site specific project review includes consideration of plans for grading, drainage and erosion control. This provides a mechanism to ensure that site specific erosion control measures are properly incorporated in project plans. For the portions of the County not subject to discretionary building site and design review, a grading permit would still be required for projects that involve significant grading (combined cuts and fills) of more than 150 cubic yards; this process would include review and approval of appropriate erosion control plans. Therefore, the only projects that would not receive discretionary review of erosion control measures would be low-impact (“minor”) site development projects of less than 150 cubic yards of grading work. Since substantial soil erosion from residential development would also likely be associated with projects involving significant grading (i.e., more than 150 cubic yards), the grading permit (a discretionary process) would ensure that any substantial soil erosion hazards are identified, avoided and/or properly mitigated. At a program level, this would be a less-than-significant impact, and no mitigation is required.
4.2 HYDROLOGY AND WATER QUALITY

This section of the EIR was prepared with the technical assistance of Questa Engineering (Questa). Background and technical information was obtained from the following primary sources and other references as noted in the text:

1. Water Quality Control Plan for the San Francisco Bay Region (Basin Plan, last amended Dec 2011);
2. Water Quality Control Plan for the Central Coast Region (last amended June 2011);
3. Santa Clara County Ordinance, On-site Sewage Systems, Revised April 15, 2003;
4. Santa Clara County Sewage Disposal System Requirements, “Bulletin A” (last updated March 2010);
5. Project Report for the Lexington Basin of Santa Clara County (James M. Montgomery Consulting Engineers, 1981);
6. On-site Wastewater Treatment System Policy - Substitute Environmental Document (State Water Board, June 2012);
7. Final Draft Water Quality Control Policy for Siting, Design, Operation and Maintenance of On-site Wastewater Treatment Systems (State Water Board, June 20, 2102);
8. Review of Technologies for the On-site Treatment of Wastewater in California (Leverenz et al, U.C. Davis, August 2002); and
9. Small Decentralized Wastewater Management Systems (Crites & Tchobanoglous, 1998);
11. San Martin Area Water Quality Study – Phase 1 Report (Brown and Caldwell & Geotechnical Consultants, Inc, January 1981); and

A. Setting

The following is a description of those aspects of the physical environment pertinent to understanding and evaluating hydrology and water quality impacts of on-site wastewater treatment systems in Santa Clara County.

1. Surface Water Hydrology

The surface water hydrology of Santa Clara County is influenced mainly by climate, topographical and land form conditions, and water resources management activities.

The climate of the region is a Mediterranean type climate, generally temperate throughout the year, with warm dry summers and cool wet winters. Precipitation, mostly occurring as rainfall, is mainly concentrated in the winter months from November through April. Mean annual precipitation varies widely from as little as 13 inches in the valley areas to about 45 inches in the higher elevations of the Santa Cruz Mountains.

Santa Clara County is characterized generally by northwest-southeast trending mountain ranges with intervening valleys. The dominant feature of the County is the Santa Clara Valley, a flat alluvial plain situated between the Santa Cruz Mountains to the west and...
the southern Diablo Range to the east. The majority of the County drains in a northerly direction through various streams into San Francisco Bay; the southern portions drain into the Pajaro River, which ultimately discharges to the Pacific Ocean at Monterey Bay.

For the purposes of their water resources management activities, the Santa Clara Valley Water District (SCVWD) has defined five principal watershed management areas in the County. From north to south, these include: (a) Lower Peninsula; (b) West Valley; (c) Guadalupe; (d) Coyote; and (e) Uvas-Llagas. All but the Uvas-Llagas watershed area drain into San Francisco Bay. The SCVWD watershed designations do not cover certain areas that drain into neighboring counties and where there are not SCVWD water management facilities. These include: (1) a large area in the northeastern portions of the County, which drain north into Alameda County; (2) the southeastern area which drains to San Benito County and the Pajaro River; and (3) a small area in the southwestern tip of the County which drains into Santa Cruz County.

For the present study of on-site wastewater treatment and dispersal systems, Questa Engineering developed a more detailed breakdown of watershed sub-basins within the County, as shown in Figure 4.2-1. The figure also shows the north-south drainage

<table>
<thead>
<tr>
<th>SCVWD Watershed Management Area (WMA)</th>
<th>Watershed Sub-basins</th>
<th>Total Watershed Area¹ (square miles)</th>
<th>Area Served by OWTS² (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Peninsula</td>
<td>San Francisquito</td>
<td>4.9</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Adobe Creek</td>
<td>28.3</td>
<td>3,909</td>
</tr>
<tr>
<td></td>
<td>Permanente Creek</td>
<td>46.5</td>
<td>13,948</td>
</tr>
<tr>
<td>West Valley</td>
<td>Calabasas Creek</td>
<td>20.8</td>
<td>855</td>
</tr>
<tr>
<td></td>
<td>San Tomas Creek</td>
<td>44.5</td>
<td>6,985</td>
</tr>
<tr>
<td>Guadalupe</td>
<td>Guadalupe River</td>
<td>92.3</td>
<td>10,649</td>
</tr>
<tr>
<td></td>
<td>Lexington Basin</td>
<td>27.0</td>
<td>16,333</td>
</tr>
<tr>
<td></td>
<td>Upper Los Gatos</td>
<td>10.2</td>
<td>6,549</td>
</tr>
<tr>
<td></td>
<td>Alamitos Creek</td>
<td>38.1</td>
<td>16,202</td>
</tr>
<tr>
<td>Coyote</td>
<td>Coyote Creek</td>
<td>334.3</td>
<td>145,642</td>
</tr>
<tr>
<td>N/A</td>
<td>Calaveras Reservoir</td>
<td>116.9</td>
<td>73,040</td>
</tr>
<tr>
<td>N/A</td>
<td>Northeast County</td>
<td>127.1</td>
<td>81,343</td>
</tr>
<tr>
<td><strong>South County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uvas-Llagas</td>
<td>Llagas Creek</td>
<td>123.2</td>
<td>59,667</td>
</tr>
<tr>
<td></td>
<td>Uvas Creek</td>
<td>77.9</td>
<td>47,522</td>
</tr>
<tr>
<td>N/A</td>
<td>Pacheco Creek</td>
<td>153.6</td>
<td>97,454</td>
</tr>
<tr>
<td>N/A</td>
<td>Pescadero Creek</td>
<td>14.2</td>
<td>6,049</td>
</tr>
</tbody>
</table>

¹Within Santa Clara County
²Area not served by sanitary sewers, including unincorporated lands plus portions of San José and Town of Los Altos Hills served by OWTS.

Source: Questa Engineering, derived from Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes, June 2012 (Appendix B).
divide, which coincides with the boundary between the San Francisco Bay and Central Coast Regional Water Quality Control Boards. Table 4.2-1 lists the sub-basins, the corresponding SCVWD watershed management areas, and respective watershed areas. The listed acreages include: (1) the total watershed area of each sub-basin; and (2) estimates of the total “developable” unincorporated lands, which are potentially available to be developed using OWTS; this excludes sanitary sewer areas, public parcels and open space easement areas.

An important feature of Santa Clara County’s surface water resources are the series of 10 reservoirs developed and managed by the SCVWD primarily for water supply and flood control purposes. The reservoirs have a total storage capacity of approximately 170,000 acre-feet and were constructed in the 1930s and 1950s for water conservation to catch storm runoff that otherwise would flow into San Francisco Bay. The reservoirs also provide incidental flood protection by containing runoff early in the rainfall season, serve recreational needs, and benefit the environment by storing water to maintain flow in the creeks. An additional note is that the northwestern portions of the County drain to non-SCVWD water supply reservoirs located partially or entirely in Alameda County. These include: (a) Calaveras and San Antonio Reservoirs, owned and operated by City and County of San Francisco; and (b) Del Valle Reservoirs, owned and operated by the Alameda County Flood Control and Water Conservation District, Zone 7.

2. Groundwater

The Santa Clara Valley Water District’s Groundwater Management Plan divides Santa Clara County into two interconnected groundwater main sub-basins the Santa Clara Sub-basin and the Llagas Sub-basin (Figure 4.2-2). The Santa Clara Sub-basin is further divided into the Santa Clara Plain and Coyote Valley inventory units. The Santa Clara Plain groundwater unit is bounded by the Diablo Range and Santa Cruz mountains on the east and west, and runs north-south from the County’s northern border to the Coyote Narrows at Metcalf Road. The Coyote Valley groundwater unit continues south between the two mountain ranges from the Coyote Narrows to Cochran Road where it joins the Llagas Sub-basin at a groundwater divide. The Llagas Sub-basin continues south past the southern border of the County to the Pajaro River.

The aquifers comprising these groundwater basins consist principally of gravel, sand, and silty sand alluvial deposits, extending to depths of more than 1,000 feet in the Santa Clara Plain and Llagas Sub-basins, and to approximately 500 feet in the Coyote Valley area. The sub-basins contain recharge areas as well as confined zones, where lower permeability clay and silt deposits restrict the downward flow of groundwater and separate shallow and deep aquifer zones. The low permeability deposits restrict the movement of contaminants, providing a degree of natural protection to deeper aquifers.

The County’s groundwater basins have a vast storage capacity and combine to transmit and filter water through the gravelly deposits, providing nearly half of the County’s annual water supply needs (approximately 150,000 acre-feet) for domestic, municipal, industrial and agricultural uses. However, natural sources and rates of groundwater recharge are insufficient to meet the annual pumping demands. The Santa Clara Valley Water District (formed in 1929) is responsible for managing the groundwater resources in the County, including the development of recharge programs to counterbalance the
land subsidence effects of over-pumping and maintain a sustainable supply of groundwater. Currently, along with other water conservation and water resources management programs, the SCVWD utilizes local runoff and imported surface water in combination with more than 90 miles of local creeks and more than 300 acres of percolation ponds to replenish groundwater resources.

In the mountainous areas of the County groundwater conditions vary locally, depending on specific geologic conditions. The occurrence of groundwater is dependent on the presence of porous, permeable rock stratum capable of storing and transmitting water. In hard and fine-grained rock formations, as occur in the Santa Cruz Mountains and Diablo Range, water available to wells is commonly from the secondary permeability and porosity, which results from deep weathering, shearing and fracturing of the rock. Groundwater of sufficient quantity to supply individual domestic wells and springs can also occur locally in deep colluvial and landslide deposits in the mountainous regions of the County.

3. Soils

Table 4.2-2 describes the soil types shown on Figure 4.2-3, which presents a General Soils Map of Santa Clara County compiled from information contained in several soil surveys and mapping published by the U.S. Department of Agriculture, which include: (1) Soil Survey of the Gilroy Area, California, 1927; (2) Soil Survey Santa Clara Area, California, 1958; (3) Soil Survey of Eastern Santa Clara Area, California, 1974; and (4) Online soils data base maintained by the Natural Resources Conservation Service (NRCS).

The General Soils Map contained in the 1974 Soil Survey of Eastern Santa Clara County provided the baseline groupings of general soil associations, which was extended to cover the other (western) portions of the County, as shown in Figure 4.2-3. The general mapping of soil conditions takes into account location and landform conditions, depth to bedrock, slope, subsurface texture, and drainage conditions of the soils, which are all key factors that can affect the suitability of the soils for on-site wastewater treatment. Table 4.2-2 summarizes the soil characteristics of the general soil associations mapped in Figure 4.2-3, along with an indication of management concerns related to the use of on-site wastewater systems in each area. Following is a general overview of soil conditions in the different regions of the County.

**Alluvial Plains, Fans and Stream Benches.** In general, the soils found in the northern portions of the Santa Clara Valley (Santa Clara Plain region) are deep, well drained, fertile soils derived from sedimentary parent material and formed in alluvial plains, fans and stream benches. The deep, well drained clay loam soils in these areas are well suited for conventional on-site wastewater systems, although a large percentage of this area happens to be occupied by the urban lands of San José and surrounding cities, which are served almost entirely by municipal sewer systems.

Deep alluvial soils continue throughout the southern portions of the Santa Clara Valley. In the San Martin area, soils are typified by well drained gravelly loams and clay loams that are generally suitable for on-site wastewater systems, although limited in some locations by excessively drained (rapidly permeable) gravelly soils combined with shallow groundwater levels. Some areas of poorly drained clays in agricultural areas
generally south of Gilroy are characterized by perching layers, slow percolation and, and poor drainage that pose constraints for on-site wastewater systems.

**Old Fans and Terraces.** The foothill soils of Santa Clara County are generally shallower, located on old fans and terraces that lie between the more recent alluvial soils on the valley floor and the soils of the uplands. They are widely cultivated with orchards, vineyards, hay, or pasture or used for livestock grazing, as well as for rural residential development. Soils range from clays and clay loams to loam derived from the alluvium of sedimentary and various other parent rock landforms. Limited soil depth over bedrock and shallow depth to groundwater are the main siting issues that occasionally arise, and are judged to pose a moderate level of constraint for on-site wastewater systems in the foothill regions.

**Uplands.** The mountain soils of the Diablo Range to the east and the Santa Cruz Mountains to the west are typically shallow, well drained to excessively well drained clay, silt or gravelly loams derived from hard sandstone or shale. In these areas, the shallow soil depths over bedrock and steep slopes up to 75 percent combine with drainage features to pose moderate to severe constraints for on-site wastewater systems. In the experience of County DEH staff, slope and soil constraints tend to be more significant in the Diablo Range than in the Santa Cruz Mountains, generally due to shallower soil depths.

Some upland areas near southern San José have soils derived from serpentine and basalt bedrock that similarly are severely constrained for on-site wastewater systems by shallow soil depth over bedrock and steep slopes of up to 75 percent. Rock outcrops and eroded areas are common.

Some of the best upland soil conditions for on-site wastewater systems occur in the County’s northwest mountainous regions of Palo Alto, Los Altos Hills, Saratoga, Los Gatos and portions of the Lexington Basin. These areas are typified by deeper sand, clay or gravelly loams derived from residuum, although they may be limited on specific sites by steep slopes, soil depth or slow permeability.

It is important to recognize that the USDA soil survey and mapping data and ratings presented here are generalized and only suitable for planning-level evaluations. They do not always reflect the soil conditions on a given parcel of land, which should be determined through site-specific exploration and testing.

**4. On-site Wastewater System Suitability.**

The far right-hand column in Table 4.2-2 highlights the key constraints and overall suitability designation for OWTS for each general soil association. The designations were developed based on the USDA soils information combined with input from County DEH staff. This is provided as a general assessment tool and is not a substitute for site-specific investigation of and planning for on-site wastewater treatment systems. It provides a general indication of the management and design issues likely to be encountered in each area. It does not take into account local constraints such as steep slopes, stream setbacks, or other anomalous conditions that may be found on a particular site. Also, it does not address density and waste loading issues, which is
<table>
<thead>
<tr>
<th>Type</th>
<th>Map Unit</th>
<th>Soil Name</th>
<th>Parent Material Landform</th>
<th>Slope</th>
<th>Soil Depth</th>
<th>Soil Texture</th>
<th>Drainage</th>
<th>OWTS Suitability and Constraints Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Millsholm-Los Osos-Los Gatos-Lodo</td>
<td>Fine-grained sandstone, shale and metamorphosed shale</td>
<td>15-75%</td>
<td>24-48&quot;</td>
<td>Gravelly clay loam</td>
<td>Well drained</td>
<td>Moderately to Severely Constrained, limited by shallow soil depths over bedrock and steep slopes</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Yolo Association</td>
<td>Alluvium from sedimentary rock</td>
<td>0-9%</td>
<td>60+&quot;</td>
<td>Loams and silty clay loams</td>
<td>Well drained</td>
<td>Generally to Highly Suitable for conventional OWTS</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Arbuckle-Pleasanton</td>
<td>Alluvium from sedimentary rock</td>
<td>0-15%</td>
<td>60+&quot;</td>
<td>Gravelly loams and loams</td>
<td>Well drained</td>
<td>Generally Suitable, limited locally by areas of rapidly permeable soils</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cropley-Rincon</td>
<td>Calcareous alluvium from mixed sources</td>
<td>0-9%</td>
<td>60+&quot;</td>
<td>Clays and clay loams</td>
<td>Well drained</td>
<td>Moderately to Severely Constrained, limited by slowly permeable soils</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Clear Lake-Pacheco-Sunnyvale</td>
<td>Alluvium from sedimentary rock</td>
<td>&lt;2%</td>
<td>60+&quot;</td>
<td>16-26&quot; to mottled layer</td>
<td>Poorly drained</td>
<td>Moderately to Severely Constrained, limited by shallow restrictive (perching) layer, variable permeability, high groundwater and flooding</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Clear Lake</td>
<td>Alluvium from sedimentary rock</td>
<td>&lt;2%</td>
<td>60+&quot;</td>
<td>26&quot; to mottled layer</td>
<td>Poorly drained</td>
<td>Moderately to Severely Constrained, limited by shallow restrictive (perching) layer, high groundwater and flooding</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Novato-Reyes</td>
<td>Tidal flats alluvium from various rock and hydrophytic plant material</td>
<td>&lt;2%</td>
<td>60+&quot;</td>
<td>Clays</td>
<td>Poorly drained</td>
<td>Unsuitable for OWTS due to flooding and slowly permeable soils</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Botella-Urban land</td>
<td>Alluvium from various rock</td>
<td>0-5%</td>
<td>60+&quot;</td>
<td>Clay loam</td>
<td>Well drained</td>
<td>Generally to Highly Suitable for conventional OWTS, but mostly occupied by urban land uses</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Map Unit</td>
<td>Soil Name</td>
<td>Parent Material Landform</td>
<td>Slope</td>
<td>Soil Depth</td>
<td>Soil Texture</td>
<td>Drainage</td>
<td>OWTS Suitability and Constraints Summary</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------</td>
<td>-----------</td>
<td>-------------------------------------------</td>
<td>-------</td>
<td>------------</td>
<td>--------------</td>
<td>----------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Old Fans and Terraces</td>
<td>8</td>
<td>Hillgate-San Ysidro</td>
<td>Alluvium from sedimentary rock</td>
<td>0-50%</td>
<td>60+” to limiting layer</td>
<td>Clays and clay loams</td>
<td>Well drained</td>
<td>Moderately Constrained, limited locally by soil permeability and groundwater separation</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Francisquito-Urban land</td>
<td>Old alluvium from various rock</td>
<td>5-15%</td>
<td>60+” to limiting layer</td>
<td>Loam to clay loam and clay</td>
<td>Well drained</td>
<td>Moderately Constrained, limited locally by soil permeability and groundwater separation</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Azule-Altamont</td>
<td>Soft sediments</td>
<td>9-75%</td>
<td>44-60+” to limiting layer</td>
<td>Clays and clay loams</td>
<td>Well drained</td>
<td>Moderately to Severely Constrained, limited by shallow soil depths over bedrock and steep slopes</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Los Osos-San Benito</td>
<td>Sandstone and shale</td>
<td>15-75%</td>
<td>20-48” to limiting layer</td>
<td>Clay loams</td>
<td>Well drained</td>
<td>Moderately to Severely Constrained, limited by shallow soil depths over bedrock and steep slopes</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Los Gatos-Gaviota-Vallecitos</td>
<td>Hard sandstone and shales</td>
<td>5-75%</td>
<td>6-50” Gravelly loams and loams</td>
<td>Well drained and somewhat excessively drained</td>
<td></td>
<td>Moderately to Severely Constrained, limited by shallow soil depths over bedrock and steep slopes</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Gaviota</td>
<td>Hard sandstone and shales</td>
<td>30-75%</td>
<td>6-19” Eroded gravelly loams</td>
<td>Somewhat excessively drained</td>
<td></td>
<td>Moderately to Severely Constrained, limited by shallow soil depths over bedrock and steep slopes</td>
</tr>
</tbody>
</table>
Table 4.2-2
Santa Clara County General Soil Associations

<table>
<thead>
<tr>
<th>Type</th>
<th>Map</th>
<th>Unit</th>
<th>Soil Name</th>
<th>Parent Material</th>
<th>Landform</th>
<th>Slope</th>
<th>Soil Depth</th>
<th>Soil Texture</th>
<th>Drainage</th>
<th>OWTS Suitability and Constraints Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14</td>
<td>Felton-Maymen Sandstone and shale</td>
<td>15-75%</td>
<td>11-59&quot;</td>
<td>Silt loams and fine sandy loams</td>
<td>Well drained and somewhat excessively drained</td>
<td>Moderately to Severely Constrained, limited by shallow soil depths over bedrock and steep slopes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Montara-Inks-Henneke Serpentine and metamorphosed basalt bedrock</td>
<td>15-75%</td>
<td>10-19</td>
<td>Clay loams and gravelly loams</td>
<td>Somewhat excessively drained</td>
<td>Severely Constrained, limited by soil depth, bedrock and steep slopes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Accelerator-Fagan-Urban land Residuum derived from sandstone, shale and siltstone</td>
<td>5-15%</td>
<td>40-60&quot;</td>
<td>Loam to clay loam and gravelly loam</td>
<td>Well drained</td>
<td>Generally Suitable, limited locally by areas of slowly permeable soils</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Ben Lomond-Felton-Lompico Residuum derived from sandstone, shale, siltstone and granitic rock</td>
<td>5-75%</td>
<td>37-60+&quot;</td>
<td>Loams and sandy loams</td>
<td>Well drained</td>
<td>Generally Suitable, limited locally by steep slopes and soil depth</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Questa Engineering, *Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes*, June 2012 (Appendix B).

primarily a function of the type and intensity of use that is proposed for a given site or area.

5. Regulatory Framework

*Clean Water Act*

The Clean Water Act (CWA) was enacted by Congress in 1972, and amended several times since inception. It is the primary federal law regulating water quality in the United States, and forms the basis for several state and local laws throughout the country. Its objective is to reduce or eliminate water pollution in the nation’s rivers, streams, lakes, and coastal waters. The CWA prescribes the basic federal laws for regulating discharges of pollutants as well as set minimum water quality standards for all waters of the United States. Several mechanisms are employed to control domestic, industrial, and agricultural pollution under the CWA. At the federal level, the U.S. Environmental Protection Agency (EPA) administers the CWA. In California, the CWA is administered and enforced by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs). The State of California has developed a number of water quality laws, rules, and regulations, in part to assist in the
implementation of the CWA and related federally mandated water quality requirements. In many cases, the laws, rules, and regulations adopted by the SWRCB and RWQCBs are more protective of the environment than the federal requirements.

**Porter-Cologne Water Quality Control Act**
The Porter-Cologne Water Quality Control Act establishes the SWRCB and the RWQCBs as the principal State agencies having primary responsibility for coordinating and controlling water quality in California. The Porter-Cologne Act establishes the responsibility of the RWQCBs for adopting, implementing, and enforcing water quality control plans (Basin Plans), which set forth the State’s water quality standards (i.e., beneficial uses of surface waters and groundwater) and the objectives or criteria necessary to protect those beneficial uses.

**Basin Plans**
Per the Porter-Cologne Act, each RWQCB is responsible for the development, adoption, and implementation of a Water Quality Control Plan (Basin Plan) for their respective region. Santa Clara County is addressed in the Basin Plans of the San Francisco Bay and Central Coast RWQCBs. The Basin Plan is the master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in each region. The Basin Plan identifies beneficial uses of surface waters and groundwater within the region and specifies water quality objectives to maintain the continued beneficial uses of these waters. The Basin Plans for the San Francisco Bay and Central Coast Regions both include policies and guidelines pertaining to the use of on-site wastewater treatment systems, discussed further below.

**Wastewater Treatment Facilities**
The RWQCB regulates discharges from wastewater treatment facilities through the adoption of National Pollution Discharge Elimination System (NPDES) permits and Waste Discharge Requirements (WDRs) pursuant to policies set forth in their Basin Plan. NPDES permits apply to discharges to surface waters; WDRs apply to discharges to land, which may include on-site wastewater treatment and dispersal systems, typically serving larger commercial or community-type uses. NPDES permits and WDRs specify conditions under which wastewater treatment facilities are allowed to discharge treated wastewater. They set forth prohibitions, water quality requirements, and monitoring and reporting requirements for discharging facilities based upon wastewater treatment methods and the ultimate location for disposal.

**Overview of OWTS Regulations**
In California, all wastewater treatment and disposal systems, including individual OWTS, fall under the overall regulatory authority of the State Water Resources Control Board and the nine California Regional Water Quality Control Boards. The RWQCBs are charged with the responsibility of protecting beneficial uses of state waters (ground and surface) from a variety of waste discharges including on-site wastewater treatment systems (OWTS or, more commonly, septic systems). The RWQCBs involvement in regulation of OWTS most often involves the formation and implementation of basic water protection policies. These are reflected in the individual RWQCB’s Basin Plan, generally in the form of guidelines, criteria and/or prohibitions related to the siting, design, construction and maintenance of on-site systems.
The RWQCBs may waive or delegate regulatory authority for OWTS to counties, cities or special districts. This is not mandatory; however, it is normally done and has proven to be administratively efficient. This is normally accomplished through a formal Waiver or Memorandum of Understanding (MOU), whereby the local agency commits to enforcing the Basin Plan requirements or other comparable standards that are considered equally or more protective of public health and water quality. The RWQCBs generally elect to retain permitting authority over large and/or commercial or industrial OWTS, depending on the volume and character of the wastewater.

Counties typically regulate OWTS via their environmental health and/or building or planning departments. Local OWTS ordinances often incorporate portions of the Uniform Plumbing Code and other specific requirements deemed appropriate for local circumstances. Most counties focus their local ordinances on new system Installations and typically do not have specific repair standards or requirements for ongoing system maintenance. However, a growing number of local jurisdictions in California have become very involved in OWTS management, including implementation of programs related to on-going inspections, maintenance and monitoring of individual systems and/or the receiving environment.

As shown in Figure 4.2-1, Santa Clara County falls within the jurisdiction of two RWQCBs: (a) San Francisco Bay Region 2 (RWQCB 2), encompassing the northern part of the County that drains to San Francisco Bay; and (b) Central Coast Region 3 (RWQCB 3), encompassing the southern part of the County that drains to the Pajaro River and eventually Monterey Bay. The drainage divide is approximately at Cochrane Road on Highway 101 (see Figure 4.2-1 for RWQCB boundary line). Under agreements with each of the RWQCBs, the County of Santa Clara administers individual on-site wastewater system regulations that are structured to be consistent with the two Basin Plans.

San Francisco Bay Regional Water Quality Control Board (Region 2). Requirements for OWTS in the San Francisco Bay RWQCB Basin Plan are addressed through: (a) “Policy on Discrete Sewerage Facilities”, which was adopted in 1978 and sets forth general principles regarding the use of OWTS; and (b) “Minimum Guidelines for the Control of Individual Wastewater Treatment and Disposal Systems” (“Minimum Guidelines”), which provide information on system design and construction, site evaluation, operation and maintenance, and the cumulative impact issues. The requirements specified in the document are oriented primarily toward individual septic tank/dispersal trench systems, but they also include some provisions that relate specifically to alternative OWTS technologies. The topics covered in the Minimum Guidelines include: (a) design standards for septic tanks and dispersal fields; (b) construction guidelines; (c) siting criteria and field methods related to setbacks, percolation testing, groundwater determinations, soil evaluations and slope limitations; (d) operation and maintenance, maintenance and corrective actions; (e) cumulative impact assessments; and (f) provisions for use of alternative systems.

Central Coast Regional Water Quality Control Board (Region 3). The Central Coast RWQCB has adopted policies and requirements pertaining to on-site systems that are contained within the Water Quality Control Plan for the Central Coast Basin, in Chapter 4 – Implementation Plan. The Basin Plan sets forth various objectives,
guidelines, general principles, recommendations, requirements and prohibitions regarding the use of OWTS. The requirements cover the following main topic areas: (1) corrective actions; (2) local governing jurisdiction actions; and (3) criteria for new systems. Criteria for new systems address siting and design requirements including specific requirements related to such things as soil conditions, percolation rates, separation distances to groundwater, slope limitations, setbacks to water features, and leachfield replacement area. The Region 3 requirements are similar, but not identical, to those contained in the Region 2 Minimum Guidelines.

**State Regulations for On-site Wastewater Treatment Systems (AB 885).** The State Water Board’s role with respect to on-site wastewater systems has historically been one of providing overall policy direction, organizational and technical assistance, and a communications link to the State legislature. However, in 2000 the State legislature passed Assembly Bill 885 (AB 885) directing the State Water Board to develop statewide regulations for on-site wastewater treatment systems. The process to develop the required regulations has been ongoing for a number of years and, at the time of the writing of this DEIR, appears to be nearing its conclusion. Based on the latest information available from the State Water Board, the new statewide requirements are anticipated to take effect in the spring of 2013. The AB 885 requirements are structured as a Policy, which establishes a statewide, risk-based tiered approach for the management, installation and performance of OWTS. The Policy is intended to apply to all OWTS having design flows of 10,000 gpd or less, and is to be incorporated into all RWQCB Basin Plans. Briefly, the regulatory framework in the new State Policy defines the following five tiers:

1. Tier Zero: Existing OWTS that are functioning properly and are not adjacent to specific septic polluted surface waters;
2. Tier One: New or replaced OWTS that meet low-risk siting and design criteria;
3. Tier Two: New or replaced OWTS covered by a Local Agency Management Program;
4. Tier Three: New and existing OWTS associated with specific impaired water bodies and septic polluted surface waters; and
5. Tier Four: Existing OWTS requiring corrective action.

With respect to how this Policy might affect Santa Clara County, it is expected that: (a) most all existing OWTS in Santa Clara County would fall under Tier Zero; (b) the provisions of the existing Ordinance are similar to Tier One requirements; (c) the proposed new Ordinance would likely meet the requirements for a Local Agency Management Program under Tier Two; (d) currently there are no OWTS impaired surface waters in the County that would warrant Tier Three requirements for any OWTS; and (e) the County’s procedures and practices for OWTS corrective actions, under both the existing and proposed Ordinance, are consistent with the Tier Four requirements. An additional aspect of the State Policy that would apply to counties administering a Tier Two program would be new requirements for submission of annual reports to the respective RWQCB(s) regarding OWTS status and assessment of water quality impacts every five years.

**Santa Clara County Regulations and Policies.** On-site wastewater systems regulations in Santa Clara County are codified in Division B11 of the Santa Clara County Code ("Ordinance"), most recently revised April 15, 2003. The regulations are
administered by the DEH. The DEH has developed a supplemental document, Bulletin A, which is a compendium of Ordinance provisions and various implementing policies intended to explain and provide technical guidance to homeowners, designers and installers of on-site systems.

On-site wastewater systems located within the incorporated areas in the County are regulated by the County under agreements with these cities. With the exception of the Town of Los Altos Hills, County Ordinance requirements are implemented in all cities. In the Town of Los Altos Hills, the County implements standards for OWTS adopted by the City that differ slightly from the County Ordinance. The County is required to conduct their local regulatory programs in accordance with the RWQCB Basin Plan Guidelines and related requirements identified by specific written agreements. For large on-site systems (>2,500 gpd) and community systems, the RWQCB has direct oversight and permitting responsibility, unless it chooses to waive that authority, which can be done on a case-by-case basis.

6. On-site Wastewater System Practices

a. Siting Requirements for On-site Sewage Disposal Systems

Key factors that affect the siting and functioning of on-site sewage disposal systems are summarized below. Figure 4.2-4 illustrates typical siting factors.

Soils. Soil suitability is the single most critical aspect of on-site wastewater treatment and dispersal. It provides the medium for the dispersal and treatment of wastewater discharged through subsurface disposal systems. This is accomplished mainly through a combination of physical filtering, biological and chemical processes, and dilution.

- **Geology.** The geology of an area is important to the suitability and performance of on-site wastewater systems due to its influence on topography and landforms, the type and characteristics of soils that develop at the surface, the occurrence and movement of sub-surface water, and slope stability.

- **Percolation.** The percolation test is a commonly used method of evaluating hydraulic conductivity in soils and determining the suitability and proper sizing for an on-site wastewater system. A soil evaluation, if done thoroughly by properly qualified and experienced professionals, can be a valid substitute for percolation testing.

- **Groundwater.** Proximity to groundwater influences the effectiveness of the soil treatment zone, inadequate separation can lead to groundwater or surface water contamination, and can also contribute to hydraulic failure of a disposal field, causing the effluent to backup and potentially rise to the surface.

- **Slope.** Slope stability, erosion hazards and the potential for downslope seepage or breakout of effluent pose limitations on the steepness of the slope where on-site systems can be located.

- **Setbacks.** Minimum horizontal setback distances between on-site wastewater system components and various water and landscape features are established
TYPICAL SITING CONSIDERATION
FOR ON-SITE SEWAGE DISPOSAL SYSTEMS
SANTA CLARA COUNTY

*BASED ON PERCOLATION RATE

Date: 05 / 18 / 2012
Drawn: M.F.
Appr'd: N.H.
Proj. No: 1000064

FIGURE 4.2-4

100'
SEPTEC
TANK

100'
SETBACK DISTANCE;
200' TO RESERVOIR

GROUND
WATER TABLE

WATER
WELL

SATURATED SOIL

BED ROCK

DISPERAL FIELD
(TYP.)

> 20% REQUIRES
GEOTECH STUDY;
50% MAX.

NORMAL HIGH
WATER MARK

WATER
COURSE

5' TO 20'

10'

10'
to provide suitable buffer area around the wastewater system. The existing setback standards for OWTS contained in Santa Clara County code are listed in Table 4.2-3.

- **Density Considerations and Cumulative Impacts.** High-density development using on-site systems can contribute to elevated nitrogen concentrations in the groundwater and/or a general rise or mounding of the water table, both of which are undesirable. Such problems are generally avoided by planning for sufficiently large lots sizes where on-site systems are used.

<table>
<thead>
<tr>
<th>Water or Landscape Feature</th>
<th>Dispersal Field</th>
<th>Septic Tank</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Wells and Springs</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Watercourses (top of bank)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Reservoirs (high water mark)</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Cuts or Steep Embankments (top of cut)</td>
<td>4 x h*</td>
<td>10</td>
</tr>
<tr>
<td>Steep slopes (break of slope)</td>
<td>4 x h*</td>
<td>10</td>
</tr>
<tr>
<td>Drainageway/Drainage Swale</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Foundation</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Property Line</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>6</td>
<td>N/A</td>
</tr>
<tr>
<td>Swimming Pool</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Road easement, pavement, or driveway</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

* h=height of cut

Source: Questa Engineering, derived from Santa Clara County Code Chapter B11-67.

**Conventional Systems.** Conventional (also “standard”) on-site wastewater treatment systems consist of two major components: (1) a septic tank for collection, settling and digestion of sewage wastes from the building; and (2) a dispersal system for infiltration and absorption of septic tank effluent into the soil or geologic strata. Figure 3.3-2 shows a schematic of a typical conventional system. The septic tank (normally of concrete construction) provides primary treatment of wastewater by allowing sufficient detention time for gravity separation of solids. Heavier solids settle, forming a sludge layer at the bottom of the tank, while fats, oils, grease, lighter solids, and decomposing organic material float to the surface to form a scum layer. The conventional type of dispersal system approved for use in Santa Clara County is a leaching trench system, consisting of a 2-foot wide by 3 to 8-foot deep trench, filled with gravel filter material and perforated distribution pipe, and ranging in total length from about 400 feet to a more than a thousand feet, depending on soil percolation rates.

**Alternative Systems.** Alternative systems include supplemental treatment systems and various types of dispersal methods used in place of or as a variation of a conventional gravity leaching trench. Alternative systems have been developed to
overcome certain types of site constraints that either prevent or present problems for the
use of conventional OWTS, including shallow soil depth, high groundwater conditions,
steep slopes, and limited land area. The most common types of supplemental treatment
are intermittent and recirculating sand filters and various types of proprietary systems,
including packed bed filters and aerobic treatment units. Alternative dispersal methods
include shallow pressure distribution trenches, mound systems, at-grade systems, raised
sand beds, and subsurface drip dispersal. Figures 3.3-3 and 3.3-4 show schematics of
two types of alternative systems.

Alternative systems are not currently recognized under Santa Clara County on-site
wastewater regulations; however, they have been used selectively in the County for
repair situations. Alternative systems generally have additional mechanical and
electrical equipment as compared with conventional on-site systems, with greater needs
for inspection and maintenance attention. Some, but not all, alternative systems can
provide a means of reducing the total footprint of an on-site wastewater treatment
system where suitable land area is a significant constraint.

b. Operation and Maintenance (O&M) Requirements

**Conventional OWTS.** Septic tanks require periodic inspection to check the tank
conditions and clean the effluent filter on the outlet end of the tank, and occasionally to
pump out the solids and scum that accumulate over time. Although highly dependent on
use, the commonly recommended pump-out frequency for septic tanks is about every
three to five years. Dispersal fields should be checked annually for water levels in
trenches and for any visual signs of surface wetness, seepage, erosion or other unusual
conditions. For dual (200 percent) systems, the dispersal field diversion valve should be
rotated periodically (typically annually or semi-annually) to switch the flow from the active
to the resting field.

**Alternative Systems.** Supplemental treatment and alternative dispersal methods
generally include technologies and components that lack the operational simplicity and
passive treatment advantages of conventional gravity systems. Ongoing operation and
maintenance (O&M) is key to ensuring the long-term viability of these systems. The type
and level of operation and maintenance varies according to the technology used. In
addition to the above needs for conventional systems, alternative OWTS O&M may
include activities such as: (a) inspection, testing and servicing of pumps and
control/alarm systems, at least once or twice a year; (b) “exercising of valves”; (c)
flushing of solids buildup in pressure distribution lines; (d) checking and adjusting
pressure distribution levels, as needed; (e) water level measurements and water quality
sampling at monitoring wells; and (f) sampling and analysis of effluent from
supplemental treatment units.

**Wastewater Constituents of Concern**
Provided below is a brief overview of wastewater constituents of concern associated with
the use of on-site wastewater treatment systems.

**Pathogens.** Bacteria, viruses, and other pathogens are present in great numbers in
sewage and represent a constant threat to public health. Preventing the transmission of
disease is the foremost concern associated with the treatment and dispersal of sewage
and is the basis for many of the established standards that dictate how, where and when wastewater treatment and dispersal can occur.

**Ammonia-Nitrogen.** Sewage contains high level of ammonia which, in sufficient quantities, can be toxic to aquatic life. Very little ammonia reduction or removal takes place in a septic tank. However, the aerobic soil environment beneath a properly sited and designed OWTS dispersal field is highly effective in removing ammonia; this occurs via natural biochemical processes, including a small amount of volatilization to the atmosphere, adsorption to soil particles, and further conversion to nitrate via oxidation in the soil.

**Nitrate-Nitrogen.** Nitrate-nitrogen loading from OWTS can potentially degrade groundwater quality and contribute to nutrient enrichment of surface waters. Nitrogen occurs in high concentrations in domestic sewage, typically in the range of 50 to 90 mg-N/L.\(^{13}\) It occurs mostly as ammonia and organic forms, and is removed only partially through conventional septic tank treatment. Upon entering the unsaturated soil environment, these forms of nitrogen undergo transformation to nitrate. Nitrate is highly soluble in water and moves readily through the soil and groundwater with limited removal by the soil under most circumstances. High levels of nitrate in water supplies can cause methemoglobinemia (blue baby syndrome) in infants and pregnant women;\(^{14}\) the drinking water standard for nitrate-nitrogen is 10 mg/L (as nitrogen, N), which is equivalent to 45 mg/L as nitrate, NO\(_3\).

**Phosphorous.** Like nitrogen, phosphorous occurs in relatively high concentrations in sewage and represents a possible source of nutrient enrichment to surface waters. Typical concentrations for raw sewage and septic tank effluent are in the range of 10 to 15 mg-P/L; secondary treatment can reduce total phosphorous concentrations by about 30 percent or more.

**BOD and Total Suspended Solids.** Biochemical oxygen demand (BOD) and total suspended solids (TSS) concentrations are common measures of the organic “strength” of sewage effluent. Septic tank effluent normally has a BOD in the range of 150 to 250 mg/L and TSS concentrations of 100 to 150 mg/L.\(^{15}\) Secondary treated effluent typically has BOD and TSS concentrations of 30 mg/L or less. BOD and TSS concentrations are of potential concern for surface waters, since they reflect the organic matter that, through decomposition, would compete with aquatic organisms for the available oxygen in the water body. The disposal of wastewater effluent to leachfield systems completely eliminates BOD and TSS as a water quality concern. Soils generally have an enormous capacity to absorb and breakdown the solids and colloidal matter contained in sewage effluent; this occurs primarily through physical filtration and biological degradation by soil microbes. Consequently, the potential for groundwater or downstream surface waters to be affected by BOD or TSS from properly sited and operated OWTS is considered negligible.

**Dissolved Solids.** With the exception of distilled water, all water contains dissolved solids, which include various salts and other minerals such as calcium, chloride, magnesium, potassium, sodium, etc. Dissolved solids affect the taste and some uses of

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\(^{13}\) Crites and Tchobanoglous, 1998.

\(^{14}\) California DPH, 2000.

\(^{15}\) Crites and Tchobanoglous, 1998.
water, but are not normally injurious at levels found in most freshwater bodies. Seawater, of course, contains very high levels of dissolved solids, roughly 50 to 100 times the levels found in fresh waters. Domestic wastes can increase the concentration of total dissolved solids (TDS) in the wastewater (as compared with the water supply) by as much as 200 to 400 mg/L.\textsuperscript{16} Dissolved solids are not removed to any appreciable degree by passage through the soil. Therefore, this would contribute to an overall increase in the TDS levels in the groundwater beneath and down-slope of OWTS dispersal fields.

**Heavy Metals.** Heavy metals such as cadmium, chromium, copper, lead, zinc, etc., occur to a limited degree in domestic and municipal wastewater. They are generally only of significant concern where the service area includes industrial-manufacturing facilities, which is not the case for the individual OWTS that would be regulated under the proposed Ordinance. Therefore, the wastewater in OWTS is likely to contain low concentrations of heavy metals.

**Trace Organics.** Trace organics include such things as pesticides, solvents and petroleum products that may find their way in trace amounts into septic tanks and municipal sewers. Also included in this category of pollutants are the active ingredients from detergents. Other pollutants include antibiotics and other personal care products, which fall into the category of endocrine disrupting compounds (EDCs), because of their ability to interfere with hormone metabolism.

### B. Potential Impacts and Mitigation Measures

#### 1. Criteria Used For Determining Impact Significance

Based on the *CEQA Guidelines* and other commonly accepted standards, the project would have a significant impact on hydrology or water quality if it would:

1. Violate any water quality standards or waste discharge requirements.

2. 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 that would not support existing land uses or planned uses for which permits have been granted).

3. 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.

4. 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.

\textsuperscript{16} Crites and Tchobanoglous, 1998.
5. Create or contribute increased impervious surfaces and associated runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

6. Otherwise substantially degrade water quality.

7. Place housing within the 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood delineation map.

8. Place within a 100-year flood hazard area structures that would impede or redirect flood flows.

9. Be located in an area known to have high levels of nitrates in well water.

10. Result in a septic field being constructed on soil where a high water table extends close to the natural land surface.

11. Result in a septic field being located within 50 feet of a drainage swale; 100 feet of any well, water course or water body or 200 feet of a reservoir at capacity.

12. Would expose people or structures to significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.


2. Project Impacts

**Less-than-Significant Impacts Not Requiring Further Analysis**

*Criterion 2 - Groundwater Recharge.* The installation of OWTS permitted under the proposed Ordinance include negligible amounts of impervious surfaces and other features that would substantially interfere with groundwater recharge or water table conditions affecting groundwater supplies. This is a less-than-significant impact. The normal functioning of OWTS provides for percolation of a substantial portion of the domestic water consumption, which aids in maintaining the water balance of an area. Potential effects on groundwater recharge and water supply associated with new residential development that would accompany the use of OWTS are discussed under Indirect Impacts later in this section.

*Criterion 5 - Increase in Impervious Surfaces.* The on-site wastewater treatment systems permitted under the proposed Ordinance would not include impervious surfaces of any consequence nor result in changes to site drainage characteristics that would result in substantial increases in runoff amounts or volumes that would: (a) cause downstream flooding; (b) exceed the capacity of storm drainage systems; or (c) or provide substantial additional sources of polluted runoff. Potential drainage effects associated with new housing construction that would accompany the use of OWTS are discussed under Indirect Impacts, later in this section.
The following discussion presents and reviews the proposed Ordinance with respect to various aspects of OWTS siting, design and operational factors that may impact water quality and public health.

**Water Contamination from Pathogens**

**Impact 4.2-A** Construction and operation of new on-site wastewater systems allowed by the proposed Ordinance could result in contamination of groundwater and surface water from pathogens.

Bacteria, viruses, and other pathogens are present in great numbers in sewage and represent an ongoing threat to public health. Preventing the transmission of disease is the foremost concern associated with the treatment and dispersal of sewage and is the basis for many of the established standards that dictate how, where and when wastewater treatment and dispersal can occur. Ground waters and surface waters are afforded protection from OWTS contamination through the establishment of specific criteria pertaining to the soil properties, vertical separation (i.e., the distance from the bottom of the dispersal trench to the seasonal high groundwater below), and horizontal (surface water) setback requirements. The level of wastewater treatment (prior to dispersal) and the design of the dispersal system can also play a role in pathogen removal. The soil is critical, but the factors are complex, and there is no simple rule for proper design and operation. Attenuation and removal of pathogens in the soil is accomplished through such mechanisms as microbial predation, filtration, adsorption, and die-off. Related factors include the depth, texture, and structure of the soil, hydraulic loading rate, and other physicochemical properties such as moisture, temperature, oxygen and pH.

It is well known that soils have a tremendous capacity to remove bacteria from percolating wastewater. The retention and die-off of most, if not all, pathogenic bacteria occur within 2 to 3 feet of the soil infiltrative surface in a properly functioning OWTS. Viruses can also be retained and eliminated within a few feet, depending on the soil conditions; but it is generally accepted that they can persist longer and travel farther in the soil than bacteria. Unlike bacteria, viruses are not always present in individual residential OWTS discharges, since it depends on the health status of the residents. Viruses are more likely to be consistently present at some level in commercial and community wastewater systems, which accept wastes from a broader segment of the population. Once reaching the water table, bacteria and viruses have been found to survive and travel significant distances with the groundwater (potentially hundreds of feet), depending on the rate of groundwater movement. Survival time in soil and groundwater is typically on the order of days to weeks for bacteria, and weeks to months for viruses.

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17 “microbial predation” refers to consumption by other soil microbes; “filtration” refers to physical trapping between soil particles; “adsorption” refers to attachment to the surfaces of soil particles; “die-off” refers to degradation or inactivation due to the inability of the pathogen to sustain itself in the soil environment.


Consistent with current knowledge and practices for preventing pathogen impacts from OWTS, the proposed Ordinance includes a combination of siting and design requirements including: soil depth and percolation characteristics, minimum vertical separation to groundwater, minimum horizontal setbacks to various water/landscape features, dispersal field design/sizing criteria based on percolation rates, and, for some situations, options for use of alternative treatment and dispersal designs. Horizontal setbacks would be the same for all OWTS (conventional and alternative) and would not include any changes from the current code.

The key issue related to potential pathogen impacts from OWTS is the vertical separation below the dispersal trench to the seasonally high groundwater level (i.e., water table). As shown in Table 4.2-4, under the existing Ordinance the required depth to groundwater varies from 5 feet to 20 feet, depending on soil percolation rate. Also shown in Table 4.2-4, for reference are the groundwater separation requirements contained in the respective Basin Plans of the San Francisco Bay and Central Coast RWQCB. These requirements have been developed for and are understood to apply to conventional OWTS.

<table>
<thead>
<tr>
<th>Percolation Rate (min per inch)</th>
<th>Santa Clara County Existing Ordinance</th>
<th>SF Bay RWQCB Basin Plan Guidelines</th>
<th>Central Coast RWQCB Basin Plan Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>6-30</td>
<td>8</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>31-120</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Questa Engineering

Under the proposed Ordinance the depth to groundwater requirements would retain existing criteria for conventional OWTS (per Table 4.2-4) but they would be revised to include reduced groundwater separation distances for different types of alternative treatment and dispersal systems as shown in Table 4.2-5.

The supporting rationale for the reduced vertical separation requirement for the various alternative OWTS designs is derived from research studies done over the past 30 to 40 years, largely funded by the USEPA and referenced in the *On-site Wastewater Treatment Systems Manual*[^20]. These studies have documented how various alternative treatment and dispersal methods can improve the operation and treatment effectiveness of OWTS as compared with conventional septic tank-gravity dispersal trench designs. A major focus of the research efforts has been on finding methods to augment or improve the natural pollutant removal processes in the soil (especially related to pathogens) to help overcome limited soil depth and high groundwater conditions, which are a common constraint virtually everywhere OWTS are used. The following is a review of some of the key findings and principles that have emerged from the research and have supported changes in OWTS siting and design criteria.

[^20]: USEPA, 2002)
Table 4.2-5
Proposed Depth to Groundwater Requirements

<table>
<thead>
<tr>
<th>Type of OWTS</th>
<th>Percolation Rate (MPI)</th>
<th>Min. Depth to Groundwater (feet(^1))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Septic Tank &amp; Dispersal Trench(^2)</td>
<td>1-5, 6-30, 31-120</td>
<td>2 X X</td>
</tr>
<tr>
<td>1. Conventional Trench w/ Supplemental Treatment</td>
<td>1-5, 6-30, 31-120</td>
<td>2 X X</td>
</tr>
<tr>
<td>2. Shallow Pressure Distribution (PD) Trench</td>
<td>1-5, 6-120</td>
<td>2 X X</td>
</tr>
<tr>
<td>3. At-Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Shallow PD w/Supplemental Treatment</td>
<td>1-5, 6-120</td>
<td>X X X</td>
</tr>
<tr>
<td>5. At-Grade w/Supplemental Treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Mound</td>
<td>1-5, 6-120</td>
<td>X X X</td>
</tr>
<tr>
<td>7. Pressure-dosed Sand Trench</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Raised Sand Filter Bed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Drip Dispersal w/Supplemental Treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Raised Sand Filter Bed, w/Supplemental Treatment &amp; Drip Dispersal</td>
<td>1-5, 6-120</td>
<td>X X</td>
</tr>
</tbody>
</table>

\(^1\) Measured from the bottom of the dispersal system
\(^2\) Conventional OWTS requirements would continue to apply for all new subdivisions
Source: Draft Proposed Onsite Wastewater Ordinance

(a) **Pressure Distribution.** There is strong evidence and agreement in the professional literature that pressure distribution improves the performance of any soil absorption system as compared with conventional gravity distribution, and should be the distribution method of choice.\(^{21}\) This is due to two main factors: (1) pressure distribution disperses the wastewater flow uniformly over the entire available soil infiltrative surface, which allows the maximum absorption potential to be realized for any given soil condition; and (2) creation of wetting and draining cycles (via effluent dosing) promotes the maintenance of aerobic soil conditions at the infiltrative surface, which improves biodegradation and reduces the potential for soil clogging caused by the buildup of organic matter. The professional literature also notes that uniform spreading of the effluent discharge to the soil with the use of pressure distribution (or drip dispersal), ideally with timed-dosing, is critical to assure effective pathogen reduction in situations where the vertical separation is reduced.

(b) **Supplemental Treatment.** Pathogen removal efficiencies can vary greatly amongst the different types of supplemental treatment systems that would be permitted and used under the proposed Ordinance. The greatest removal efficiencies are generally attributed to intermittent sand filters. Crites and Tchobanoglous (1998) present data showing fecal coliform removal efficiencies of 97.9 percent to 99.9 percent for intermittent sand filters. Leverenz, et al (2002)
estimate intermittent sand filters as having the ability to produce effluent with fecal coliform concentrations <800 MPN/100 ml. For comparison, the fecal coliform concentration in effluent from a conventional septic tank is similar to that in raw sewage, and typically ranges from about 10,000 to 100,000 MPN/100 ml.\textsuperscript{22} Additionally, however, an important purpose of the supplemental treatment unit in combination with the dispersal system design is to establish and maintain aerobic/unsaturated conditions in the soil absorption field. Maintenance of aerobic soil conditions is conducive to pathogen removal and an improvement over the operational conditions of conventional gravity dispersal fields, which are designed to allow a saturated (anaerobic) soil-infiltrative surface. Research has demonstrated that aerobic effluent: (a) promotes the growth of aerobic soil microflora that can have antagonistic effects on viruses; and (b) reduces the amount of organic compounds that compete for adsorption sites with viruses and bacteria.\textsuperscript{23}

(c) **Pathogen Removal in Soils.** The retention and die-off of most, if not all, pathogenic bacteria occur within 2 to 3 feet of the soil infiltrative surface in a properly functioning OWTS.\textsuperscript{24} Viruses can also be retained and eliminated within a few feet, depending on the soil conditions; but it is generally accepted that they can persist longer and travel farther in the soil than bacteria.\textsuperscript{25} Studies have shown that vertical separation distances to groundwater of 12 to 18 inches are sufficient to achieve good fecal coliform removal where the wastewater receives supplemental treatment prior to soil application along with pressure distribution or drip dispersal methods.\textsuperscript{26} Additionally, in the experience of the EIR authors, most of the research studies of OWTS pathogen removal have focused on sandy soil types; and the results of these studies have formed the basis for the soil depth criteria, such as those contained in the EPA Design Manual (2 to 4 feet unsaturated soil depth). Consequently, the soil depth criteria are already oriented toward the “worst case” conditions (sandy, permeable soils), and there is a built-in safety factor, with respect to pathogen removal, for finer textured soils with higher silt and clay fractions.

As previously noted, while there is no simple rule or absolute formula for OWTS-groundwater separation, the proposed depth to groundwater criteria related to type of OWTS and percolation rates are similar to standards adopted and followed in many other counties in Northern California over the past 10 to 20+ years (for example, Marin, Sonoma, Napa, Contra Costa, Mendocino, Placer, Nevada, among others). In several counties these criteria have been applied to new subdivisions as well as for existing lots of record. The proposed Ordinance for Santa Clara County would only make these changes applicable to existing and future legal lots of record and for repair/replacement of existing OWTS. An important aspect of siting and design of OWTS under these criteria is the process for determining seasonally high groundwater levels in the dispersal field area. The existing requirements in Santa Clara County specify field observation methods for groundwater determination consistent with best industry practices; and

\textsuperscript{22} Crites and Tchobanoglous, 1998; USEPA 2001.
\textsuperscript{24} Anderson et al, 1994; Washington State Department of Health, 1990.
\textsuperscript{26} Converse and Tyler, 1998; Duncan et al., 1994.
these requirements would continue under the proposed Ordinance. Finally, the proposed Ordinance includes the establishment of an operating permit program for all alternative OWTS that would ensure ongoing inspection and monitoring of OWTS for verification of proper performance. Based on the above considerations, the proposed Ordinance changes relative to the depth to groundwater requirements and use of alternative treatment and dispersal methods are consistent with the current state of knowledge and best management practices and would provide suitable protection against pathogen impacts from on-site wastewater treatment systems. This impact would be a less than significant, and no mitigation is required.

Nitrogen Contamination of Groundwater

Impact 4.2-B Construction and operation of new on-site wastewater systems allowed by the proposed Ordinance would increase the discharge of nitrogen to the environment potentially resulting in an increase in groundwater nitrate levels.

Nitrate-nitrogen loading from OWTS can potentially degrade groundwater quality and contribute to nutrient enrichment of surface waters. Nitrogen occurs in high concentrations in domestic sewage, typically in the range of 50 to 90 mg-N/L. It occurs mostly as ammonia and organic forms, and is removed only partially through conventional septic tank treatment. Upon entering the unsaturated soil environment, these forms of nitrogen undergo transformation to nitrate. Nitrate is highly soluble in water and moves readily through the soil and groundwater with limited removal (e.g., 10 percent to 20 percent) by the soil under most circumstances. Some nitrate may be taken up by vegetation; but the primary mechanism for nitrogen removal is via denitrification, which occurs under anaerobic conditions and results in the conversion of nitrate to nitrogen gas.

Although nitrate is a naturally occurring compound and generally found at low levels in natural settings, groundwater is vulnerable to the buildup of elevated nitrate concentrations as a result of leaching from various land use activities, including most notably agricultural operations (e.g., fertilizer use and animal wastes), but also on-site wastewater system discharges. In Santa Clara County high nitrate levels (above the 10 mg-N/L drinking water limit) have been found in groundwater in two principal areas—Coyote Valley and Llagas Subbasin - and also in streams (Llagas Creek) impacted by drainage of shallow groundwater in these areas. The current high groundwater-nitrate levels are mainly attributable to fertilizer use on irrigated croplands; however, on-site wastewater systems are also located in these areas and contribute in some degree to the groundwater-nitrate concentration.

The following aspects of the proposed Ordinance could have an impact on groundwater nitrate levels:

- Watershed Nitrogen Loading. The overall loading of nitrate-nitrogen to ground waters throughout the County would increase as a result of additional

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28 Ibid.
development utilizing OWTS. In general, the loading would be widely dispersed throughout all regions of the County and at relatively low densities. The density of OWTS is a general indicator of the relative magnitude of nitrogen loading to groundwater that can be expected from on-site systems. Table 4.2-6 presents the projected total number of developed lots (i.e., lots with existing OWTS plus projected additional alternative and conventional OWTS) within each watershed area, along with the calculated OWTS density (acres/OWTS) in each area. Included for comparison are projections for buildout under both the existing Ordinance and the proposed Ordinance. Excluded are about 10 isolated parcels located in the northwest corner of the County, adjacent to San Mateo County within the San Francisquito Creek watershed. Additional background and supporting calculations regarding OWTS projections and densities are provided in Appendix B.

As indicated in Table 4.2-6, the projected OWTS densities (including estimated second unit OWTS at existing developed properties) under the proposed Ordinance would range widely, from 3.3 acres/OWTS (Adobe Creek) up to several hundred acres/OWTS in the more remote mountain regions of the County. Overall, densities are projected to be more than 10 acres per OWTS in all but five watershed sub-basins: Adobe Creek, Permanente Creek, Lexington Basin, Llagas Morgan Hill and Llagas San Martin areas. It should be noted that, with respect to Adobe Creek and Permanente Creek, the high densities and projected nitrate impacts are heavily influenced by the existing large number of OWTS in the Town of Los Alamos Hills, an incorporated area where the County provides OWTS permitting services.

Using the projected OWTS densities, calculations have been made to estimate the potential incremental rise in groundwater-nitrate concentrations for the five highest density sub-basins as a result of OWTS discharges. The projected nitrate concentrations increases per this analysis would be in addition to other sources of nitrate that might occur in each sub-basin, such as leaching of agricultural fertilizers, confined animal wastes, municipal wastewater discharges, etc. Supporting calculations and assumptions for nitrate loading estimates are presented in Appendix B. The results are summarized in Table 4.2-7, comparing the projected impacts under both the existing Ordinance and the proposed Ordinance. The projected nitrate concentration impacts in these areas of highest OWTS densities range from about 1.5 to 3.6 mg-N/L, well below the drinking water limit of 10 mg-N/L. The difference between the proposed Ordinance and the existing Ordinance is projected to be an incremental rise of less than 0.2 mg-N/L in all sub-basins, which is within the margin of error in the basic assumptions used in the nitrate loading calculations for this Study (see Appendix B). Also, as discussed in a separate bullet point below, the projected impacts under the Ordinance would be reduced by the use of alternative systems, most of which provide greater nitrogen removal efficiencies than conventional systems. Overall, while some addition to groundwater-nitrate concentrations is probable under the proposed Ordinance, the magnitude would be low.
<table>
<thead>
<tr>
<th>Watershed Sub-basin</th>
<th>Area² (acres)</th>
<th>Existing Ordinance</th>
<th>New Ordinance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of OWTS</td>
<td>Acres/OWTS</td>
<td># of OWTS</td>
</tr>
<tr>
<td><strong>North County Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adobe Creek</td>
<td>3,909</td>
<td>1,140</td>
<td>3.4</td>
</tr>
<tr>
<td>Permanente Creek</td>
<td>13,948</td>
<td>1,905</td>
<td>7.3</td>
</tr>
<tr>
<td>Calabasas Creek</td>
<td>855</td>
<td>13</td>
<td>65.8</td>
</tr>
<tr>
<td>San Tomas Creek</td>
<td>6,985</td>
<td>192</td>
<td>36.4</td>
</tr>
<tr>
<td>Guadalupe River</td>
<td>10,649</td>
<td>563</td>
<td>18.9</td>
</tr>
<tr>
<td>Lexington Basin</td>
<td>16,333</td>
<td>1,517</td>
<td>10.8</td>
</tr>
<tr>
<td>Upper Los Gatos</td>
<td>6,549</td>
<td>57</td>
<td>114.9</td>
</tr>
<tr>
<td>Alamitos Creek</td>
<td>16,202</td>
<td>741</td>
<td>21.9</td>
</tr>
<tr>
<td>Coyote Creek</td>
<td>145,642</td>
<td>1,823</td>
<td>79.9</td>
</tr>
<tr>
<td>Calaveras Res.</td>
<td>73,040</td>
<td>257</td>
<td>284.2</td>
</tr>
<tr>
<td>Northeast County</td>
<td>81,343</td>
<td>341</td>
<td>238.5</td>
</tr>
<tr>
<td><strong>South County Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Llagas</td>
<td>8,840</td>
<td>130</td>
<td>68.0</td>
</tr>
<tr>
<td>Llagas Morgan Hill</td>
<td>9,685</td>
<td>1,250</td>
<td>7.7</td>
</tr>
<tr>
<td>Llagas San Martin</td>
<td>12,842</td>
<td>2,111</td>
<td>6.1</td>
</tr>
<tr>
<td>Llagas East Gilroy</td>
<td>10,108</td>
<td>295</td>
<td>34.3</td>
</tr>
<tr>
<td>Llagas Gilroy</td>
<td>18,192</td>
<td>1,391</td>
<td>13.1</td>
</tr>
<tr>
<td>Uvas Creek</td>
<td>47,522</td>
<td>1,196</td>
<td>39.7</td>
</tr>
<tr>
<td>Pacheco Creek</td>
<td>97,454</td>
<td>216</td>
<td>451.2</td>
</tr>
<tr>
<td>Pescadero Creek</td>
<td>6,049</td>
<td>12</td>
<td>504.1</td>
</tr>
</tbody>
</table>

¹ Note: Table does not include information for 10 isolated parcels located in San Francisquito Creek watershed bordering San Mateo County.

² Area not served by sanitary sewers, including unincorporated lands plus portions of San José and Town of Los Altos Hills served by OWTS.

³ Accounts for estimated additional second units on existing developed parcels, assuming each second unit represents an additional OWTS.

Source: Questa Engineering; derived from information contained in Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes, June 2012 (Appendix B)
Table 4.2-7
Projected Groundwater-Nitrate Loading Effects
For Selected Watersheds

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Existing Ordinance</th>
<th>New Ordinance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Density Acres/OWTS</td>
<td>Resultant NO$_3$-N (mg-N/L)</td>
</tr>
<tr>
<td>Adobe Creek</td>
<td>3.4</td>
<td>3.52</td>
</tr>
<tr>
<td>Permanente Creek</td>
<td>7.3</td>
<td>1.96</td>
</tr>
<tr>
<td>Lexington Basin</td>
<td>10.8</td>
<td>1.50</td>
</tr>
<tr>
<td>Llagas Morgan Hill</td>
<td>7.7</td>
<td>2.32</td>
</tr>
<tr>
<td>Llagas San Martin</td>
<td>6.1</td>
<td>2.80</td>
</tr>
</tbody>
</table>

Source: Questa Engineering; derived from information contained in Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes, June 2012 (Appendix B)

- **Elimination of 5-acre Second Unit Minimum Lot Size for San Martin Area.**

An accompanying action to adoption of the OWTS Ordinance is a proposed modification to the County Zoning Ordinance to eliminate the existing 5-acre minimum lot size required for construction of second dwelling units in the San Martin planning area. The basis for the existing 5 acre minimum lot size limitation comes in part from findings from the 1981 “San Martin Area Water Quality Study” by Brown and Caldwell Engineers and Geotechnical Consultants, Inc. At the request of the Central Coast RWQCB, the study was conducted for Santa Clara County to document groundwater conditions in the San Martin planning area and evaluate potential effects on surface water and groundwater quality from different land use development scenarios, focusing particularly on the nitrate-nitrogen impacts from residential OWTS. The study acknowledged that elevated groundwater nitrate-nitrogen concentrations observed in the San Martin area were largely attributable to historical crop fertilization activities, and that the overall rates of nitrogen loading were in decline as a result of conversion of land uses from irrigated agriculture to rural residential development in the period of 1965-1980.

The study also evaluated the conversion from agricultural to residential uses resulting in an increased density of OWTS that could contribute to a rise in nitrogen loading and associated groundwater quality impacts. The study addressed this concern through an evaluation of potential waste loading and water quality impacts that might occur from full residential buildout of all land (excluding publicly-owned properties) for minimum lot size assumptions of 2.5 acres, 5 acres, and 20 acres. The study concluded that full buildout under the 2.5-acre and 5-acre minimum lot size scenarios would eventually lead to a reversal of the decline in nitrogen loading observed from 1965 to 1980, and estimated that higher development densities would lead to greater potential for interaction between OWTS and water wells on individual parcels. On this basis, the study recommended the adoption of a minimum lot size of 5 acres for new subdivisions. At a later date, the County adopted the requirement in its Zoning Ordinance that second dwelling units on existing parcels could not be approved for any lot size less than 5 acres in the San Martin area.
In connection with this EIR, Questa reviewed the San Martin Area Water Quality Study as a source of background information and to evaluate the continued applicability and relevance of the assumptions, analysis and findings from this 1980 study in regard to the current proposed changes in the County’s OWTS Ordinance and practices. While most of the technical information in the 1980 study regarding groundwater conditions remains relevant and useful, Questa found some of the assumptions and approach in the water balance and nitrogen-loading analysis to be out-dated and generalized. Of most significance was the general assumption in the 1980 study that annual rainfall-recharge in the area is equal to 10% of the annual rainfall volume, or about 2 inches per year based on annual rainfall of 20 inches in the San Martin area. Using a more detailed monthly water balance approach, which accounts for local rainfall, runoff and evapotranspiration for every month of the year, Questa arrived at a much higher rainfall-recharge estimate of approximately 8 inches per year – i.e., four times greater than the general assumption used in the 1980 study. Rainfall-recharge represents the main volume of water (essentially nitrate-free) available for dilution of any nitrate-nitrogen sources in the soil; thus, the higher the rainfall-recharge, the lower the resulting nitrate concentration in groundwater caused by a given nitrogen source (e.g., an OWTS discharge). Because rainfall-recharge is such a significant factor in estimating long-term groundwater quality changes, Questa determined that the low value assumed in the 1980 study resulted in conclusions that over-stated the potential groundwater-nitrate impacts for different lot-size development scenarios. For this reason, along with the fact that the 1980 study was oriented toward subdivision policies and buildout of the entire San Martin area, Questa conducted its own analysis focused more specifically on build-out of existing parcels, including an allowance for development of 2nd dwelling units.

- Questa’s analysis of increases in potential new rural residential development resulting from the proposed Ordinance included assessment of additional second units that might be possible based on proposed changes in the Ordinance, and an elimination of the 5-acre lot size restriction for secondary dwelling units in San Martin, Questa’s study projected up to 158 additional second units countywide, including 74 in the San Martin area, could be developed following adoption of the Ordinance. Nitrate loading calculations by Questa presented in Appendix B show that OWTS discharges from 74 additional second units attributable to the proposed elimination of the 5-acre second unit restriction would represent an approximate 2-percent increase (from 2.93 to 3.01 mg/L) in the overall nitrogen loading impact from OWTS in the San Martin area, as compared the effects under the proposed Ordinance without changing the second unit lot size restriction; this would have a negligible effect on groundwater-nitrate concentrations in the area.

- **Nitrogen Removal by Alternative Treatment and Dispersal Systems.** In general, alternative treatment and dispersal systems provide greater removal of nitrogen than that achieved by conventional septic tank – gravity trench systems. Removal rates of 50 percent or more are not uncommon. Most of the removal occurs in the treatment process (e.g., via aerobic treatment unit or recirculating media filters); but additional nitrogen removal can also occur in the soil
environment as a result of: (a) wide dispersal of effluent to the most biologically active surface soils, e.g. using drip dispersal; and (b) delivering treated water that has already been nitrified (e.g., ammonia converted to nitrate), such that it is more readily and immediately available for plant uptake. Under the proposed Ordinance, alternative OWTS can be utilized for new development, but also be available for more routine application in the repair and replacement of existing conventional systems. This application of alternative systems would have the effect of: (1) reducing the amount of nitrogen discharge associated with new development, as compared with development using conventional OWTS, and (2) reducing the amount of nitrogen currently being discharged from conventional OWTS, where such systems are repaired or replaced with alternatives having improved nitrogen removal capabilities. Consequently, the proposed availability of alternative technologies would further reduce the overall amount of nitrogen impact from new development, potentially resulting in a net reduction compared with projected buildout under the existing Ordinance.

- **Localized Nitrate Impacts from OWTS.** Although groundwater-nitrate impacts from OWTS discharges are not anticipated from an overall watershed perspective, localized groundwater-nitrate impacts could potentially arise as a result of larger flow OWTS (e.g., 1,000 gpd or more) or from a high concentration of individual residential OWTS in a small area. To address situations such as this, both the existing Ordinance (Sec B11-74) and the proposed Ordinance contain provisions for the Environmental Heath Director to require completion of a project-specific “cumulative impact” assessment as part of the wastewater system review and permitting in areas where these nitrate problems are possible. The proposed Ordinance provides for additional details to be included in the On-Site Systems Manual regarding the guidelines and criteria for cumulative impact assessments, covering (a) circumstances requiring cumulative impact assessment; (b) minimum qualifications of individuals performing the work; (c) data needs and assumptions; (d) analytical methods and calculations; (e) evaluation methods/criteria; and (f) provision for additional RWQCB input. This provides a built-in mechanism in the Ordinance to check and ensure that potential localized groundwater-nitrate concerns are considered, evaluated and properly mitigated through the OWTS design and permitting process.

- **Cumulative Impacts from Large Flow OWTS.** The current Ordinance governs OWTS for single family residences and other OWTS with design flows of up to 2,500 gpd. For OWTS with flows above 2,500 gpd, the San Francisco Bay and Central Coast RWQCBs currently have primary permitting authority. With the concurrence and support from the two RWQCBs, the proposed Ordinance will increase the County’s permitting authority to regulate OWTS with flows up to a maximum of 10,000 gpd; along with the provision for technical review by the RWQCB for any OWTS with flows between 2,500 gpd and 10,000 gpd. OWTS with wastewater flows of 2,500 gpd to 10,000 gpd (or more) are commonly referred to a “large flow” OWTS.

Large flow OWTS can produce more concentrated hydraulic and wastewater loading effects than the equivalent flow from several dispersed single family residential OWTS. This can result in localized changes in groundwater conditions (groundwater mounding) and water quality (e.g., due to nitrogen
loading), commonly referred to as “cumulative impacts.” The degree of impact from large flow OWTS is mainly a function of the wastewater flow, site conditions, and system design features and operational controls. Hydraulic overloading of a dispersal field could result in reduced depth of unsaturated soil for effluent treatment, and in the worst case lead to saturation and surfacing of wastewater effluent within or downslope of the dispersal field. Excessive nitrogen loading in a concentrated area, often the most significant concern, could contribute to the occurrence of elevated groundwater nitrate concentrations in nearby wells or nutrient additions to surface waters.

Measures commonly taken to address cumulative impact issues for large flow OWTS include: (a) completion of site-specific assessment of potential groundwater mounding and nitrogen loading effects; (b) incorporation of design measures to mitigate identified concerns, including specific treatment requirements and dispersal system configuration and hydraulic design; and (c) provisions for ongoing maintenance and monitoring to assure and verify appropriate OWTS performance. The existing Ordinance (Section B11-74) includes provisions for the Director to require the completion of cumulative impact studies on a case-by-case basis, which applies only to OWTS of less than 2,500 gpd, per the current permitting authority of the County. Under the proposed Ordinance the completion of cumulative impact analysis would continue to be at the discretion of the Director for OWTS with flows under 2,500; but it would be mandatory for OWTS with flows of 2,500 to 10,000 gpd, i.e., large flow OWTS. Additionally, the proposed Ordinance includes the requirement for the issuance of an operating permit for any OWTS of 2,500 gpd or more, which would provide for ongoing monitoring and reporting of OWTS performance.

Based on consideration of the factors described above, nitrogen discharges to the environment from new conventional and alternative OWTS would be negligible from an overall watershed perspective, and would be subject to further site-specific cumulative impact analysis, review, mitigation and ongoing performance monitoring for any large flow OWTS (greater than 2,500 gpd) or, at the Director’s discretion, for any other instance where concerns arise about potential localized effects on groundwater quality. The proposed project would not cause an increase in groundwater nitrate levels above the drinking water limit of 10 mg-N/L; therefore, this would be a less-than-significant impact, and no mitigation is required.

**Nitrogen Contamination of Surface Waters**

**Impact 4.2-C** Construction and operation of new on-site wastewater systems allowed by the proposed Ordinance would increase the discharge of nitrogen to the environment, which could adversely affect surface water quality and beneficial uses.

Nitrogen occurs in relatively high concentration in OWTS and poses the potential to impact surface water nutrient levels. As discussed under Impact 4.2-B, nitrate-nitrogen loading from OWTS can potentially degrade groundwater quality. Where groundwater eventually reaches the surface and becomes part of the surface water flow, the groundwater nitrate can contribute to nutrient enrichment of surface waters, potentially affecting the health of the aquatic system, recreational uses, and possibly aesthetic
quality and drinkability (e.g., taste and odor) of the water. In the extreme, nitrogen levels could rise to levels that approach or exceed the drinking water limit for nitrate. Favorable conditions for denitrification commonly occur in high groundwater areas with abundant organic matter present, such as marshes and lakeside and stream riparian zones. These areas often act as a sink for removal of nitrate from water transitioning from the groundwater zone to surface water, reducing the potential for groundwater nitrate to reach and impact surface waters.

For OWTS discharges to have a measureable impact on surface water nitrogen concentrations there would have to be a significant mass loading of nitrogen from a relatively high density of OWTS draining to a specific water body. This is due to the very small amount of nitrogen contributed from an individual residential OWTS compared to the large dilution effect provided by surface water flow. An example is the San Lorenzo Valley in Santa Cruz County, where there are approximately 13,000 OWTS in the watershed that have contributed to elevated nutrient levels impacting algal growth in the San Lorenzo River and, in turn, the aesthetic quality of the water supply for the City of Santa Cruz. This is an exceptional case, as the San Lorenzo Valley is known for having the highest density of OWTS for any comparable watershed area in California.

As discussed under Impact 4.2-B, the highest projected concentration of OWTS and associated nitrogen loading is in the south County area, in the Llagas Creek sub-basin areas near Morgan Hill and San Martin. Llagas Creek is tributary to the Pajaro River, and both streams are formally listed as nutrient-impaired water bodies, pursuant to Section 303(d) of the Clean Water Act. Nitrate concentrations exceeding the drinking water limit (10 mg-N/L) have been reported in both Llagas Creek and Pajaro River. Investigation by the Central Coast RWQCB has concluded that the principal source of the high nitrate levels is cropland. OWTS were determined by the RWQCB to not be a contributor to the nitrate impairment, and resulted in the RWQCB decision that no action or additional requirements are needed with respect to OWTS nitrogen discharges. The problem assessment and program for control and correction of the impairment is addressed in the “Final Project Report – Pajaro River and Llagas Creek Total Maximum Daily Load for Nitrate”, November 2005. Given that the existing and projected buildout densities of OWTS in the rest of the County (per Table 4.2-6) are substantially less than in the Llagas Creek sub-basin area, the potential for creation of surface water nitrate impacts from OWTS would be even less for other streams and water bodies in the County.

For the same reasons discussed under Impact 4.2-B regarding the low potential for OWTS to have a significant impact on groundwater-nitrate concentrations, along with the findings of the RWQCB discounting OWTS as a contributor to the high nitrate concentrations in the nutrient-impaired Llagas Creek, surface water nitrate impacts from OWTS that could be permitted under the proposed Ordinance would be negligible. This would be a less-than-significant impact, and no mitigation is required.

Water Contamination from Heavy Metals and Trace Organic Substances

Impact 4.2-D Construction and operation of new on-site wastewater systems allowed by the proposed Ordinance could result in the discharge of heavy metals and trace organic substances to the environment,
which could adversely affect groundwater and/or surface water quality and beneficial uses.

Although on-site wastewater systems are primarily for the treatment and dispersal of household sewage waste, toxic substances (mainly heavy metals and trace organics) can end up in the waste stream. These toxic substances are discussed below.

**Heavy Metals.** Heavy metals such as cadmium, chromium, copper, lead, zinc, etc., occur to a limited degree in domestic wastewater. They are generally only of significant concern where the service area includes industrial-manufacturing facilities, which is not the case for the individual OWTS that would be regulated under the proposed Ordinance. The wastewater in OWTS is likely to contain low concentrations of heavy metals. Once discharged into the soil via the dispersal field, the trace levels of heavy metals would be subject to chemical precipitation and adsorption. The ability of soils to adsorb heavy metals is very high, especially in well-aerated soils with neutral to high pH. Some metals are more soluble and can be released into solution under anaerobic (i.e., saturated) conditions where the pH is low. By design OWTS are located and operated to utilize the unsaturated soil zones for effluent dispersal. Based on the combination of low source concentrations and the generally favorable soil conditions for chemical precipitation and adsorption, the likelihood of OWTS causing any impacts on groundwater quality from heavy metals is none to very small.

**Trace Organics and Endocrine Disrupting Compounds.** Trace organics include such things as pesticides, solvents and petroleum products that may find their way in trace amounts into septic tanks and municipal sewers. Also included in this category of pollutants are the active ingredients from detergents. Other pollutants include antibiotics and other personal care products, which fall into the category of endocrine disrupting compounds (EDCs) because of their ability to interfere with hormone metabolism. Some of these trace organic compounds are removed to a small degree in septic tanks through volatilization and adsorption to sewage solids retained in the tank. But this is mostly incidental, and some trace organics can be expected to be present from time-to-time in the wastewater effluent discharged from some OWTS. In the soil, trace organics are subject to further removal through adsorption and biological breakdown. The soil conditions considered suitable for assimilation of bacteria and viruses are generally believed to also be effective for retention of trace organic substances. Because very little is known about the environmental behavior of EDCs, it is not possible to conclude what the fate and impact of these compounds may be from OWTS discharges. In general, given the small amount of trace organics expected to be present in the domestic wastewater discharges from an OWTS combined with the application of soil evaluation, setbacks and design practices contained in the proposed Ordinance, measurable concentrations in groundwater or downstream surface waters would be unlikely. Additionally, in 2009 the County instituted a year-round Pharmaceutical Drop-Off Program, which offers more than a dozen locations around the County for safe disposal of expired and waste medications and other drugs as an alternative to flushing them down the toilet. Information about this program are included as part of the ongoing DEH public and user education regarding OWTS to further minimize the amount of trace organics and other toxic substances that may be discharged unknowingly into OWTS. This would be a less-than-significant impact, and no mitigation is required.
Water Quality Impacts From OWTS in Lexington Basin

Impact 4.2-E  Proposed changes in siting and design criteria for OWTS located in the Lexington Basin, including elimination of the current 1-acre minimum lot size limitation, could result in an increase in the number of systems approved along with associated wastewater loading impacts that would cause degradation of surface water and groundwater quality.

The current On-site Sewage Disposal Ordinance, under Article 3, includes siting and design criteria for OWTS located in the Lexington Basin area that are unique to that particular geographic area of the County. The requirements were adopted in the 1980s, to implement recommendations contained in the “Project Report for the Lexington Basin” prepared by James M. Montgomery Consulting Engineers, Inc. dated September 1980.

As stated in Sec. B11-90, the Board of Supervisors made the following findings based on the information in the Montgomery report:

a. That the continued use of the present septic systems and regulations in the Lexington Basin would result in significant water quality degradation of the local streams and would imperil public health, safety and welfare.

b. That alternatives to conventional septic systems are necessary in certain areas of the basin in order to protect the public health, safety and welfare.

c. That development of vacant parcels in the basin proceed only according to certain guidelines, including minimum parcel sizes, maximum parcel slopes, and maximum wastewater application rates in order to protect public health, safety and welfare.

d. That further development of existing vacant parcels or new subdivision activity in Lake Canyon shown as subarea “Central Facilities – Collection System and Community Leach Field” on Figure 9-1 (revised October 16, 1980) of the above report would result in significant water quality degradation of local streams and would imperil the public health, safety and welfare.

The proposed Ordinance would revise the OWTS requirements for Lexington Basin to be consistent with the requirements that apply throughout the rest of the County, with limited exceptions. The proposed revisions reflect the following changes and new information that relate to the above findings made by the Board of Supervisors in the 1980s:

- With respect to (a) above, the County regulations and septic system practices in effect at the time of the Montgomery report have been revised and updated several times over the past 30 years and, (1990, 1992, 1999, 2003) to conform to RWQCB guidelines and incorporate other advancements in onsite wastewater system practices; now through the proposed Ordinance, are planned to be updated again to be consistent with the current state of knowledge and applicable State and regional policies and requirements for OWTS.
With respect to (b) above, the proposed new Ordinance includes specific provisions for the use of alternative systems in place of conventional OWTS throughout the County, as needed to overcome particular site constraints.

With respect to (c) above, based on review of the Montgomery report along with many subsequent years of DEH staff experience implementing the Lexington Basin requirements, revisions in specific siting and design criteria are warranted and can be made without endangering water quality or public health (personal communications with DEH staff). As discussed further below, Questa’s review of the Montgomery report found two serious flaws in the assumptions and analysis that were the basis for their findings and recommendations: (1) Montgomery’s 1-acre minimum lot size recommendation for individual OWTS was not supported by any technical rationale and, in fact, is undermined by other information in the report indicating that they determined 1 acre to be sufficient land area for a community leachfield to serve as many as 20 houses in their review of alternatives for various locations in Lexington Basin; and (2) Montgomery’s assessment of water quality impacts relied on a misunderstanding and/or misstatement of the applicable bacteriological criterion for recreational water uses, citing the standard that applies to fecal coliform (median of 200 MPN/100 ml) as being the maximum limit for total coliform, a general class of bacteria for which the standard is 10,000 MPN/100 ml for recreational waters.

With respect to (d) above, in the mid-1990s a community wastewater system for the Lake Canyon area was constructed, replacing all OWTS in the community.

With respect to all of the findings above, water quality conditions in local streams and Lexington Reservoir continue to be satisfactory for the support of all beneficial uses, with no evidence of water quality degradation or impairment associated with the use of OWTS. The SWRCB and RWQCBs review water quality data for California surface waters every two years to determine the status of impairment under requirements of Section 303(d) of the Clean Water Act. Impairment is judged according to compliance with applicable water quality criteria and standards. Los Gatos Creek, the main stream in Lexington Basin, has been identified as impaired for two water quality parameters: (1) diazanon (pesticide); and (2) sediment. Neither of these are related to OWTS discharges. The Lexington Basin has not been found to be impaired in regard to pathogens or nitrogen, which are the two parameters used as indicators of OWTS impacts on surface water quality per the recently SWRCB Policy governing OWTS in California.

Also, the Montgomery report includes substantial water quality monitoring data obtained for various stream sampling stations in the Lexington Basin at the time of their study (1980). Close review of the data does not reveal any significant evidence of water quality impact in regard to pathogens (bacteria) or nitrogen. Of the 18 sampling stations (all sampled three times), 14 stations were in 100% compliance with the applicable fecal coliform standard (all results less than 200 MPN/100 ml), and the other four stations each had only one reading above the standard (no repeat exceedances). As noted

previously, the Montgomery report made the mistake of focusing their water quality analysis on *total* coliform rather than *fecal* coliform, and improperly cited 200 MPN/100 ml as the maximum limit for total coliform instead of being the median value criterion for fecal coliform (see page 5-9 and Table 5-2 of their report). The correct upper limit for total coliform is 10,000 MPN/100 ml (SF Bay RWQCB Basin Plan). Total coliform is a general class of bacteria associated with soil, plant material as well as humans and animals. Fecal coliform is the common bacteriological indicator used for assessment of water quality impacts associated with human waste sources, such as OWTS. This brings into question some of the conclusions and assertions in the Montgomery report regarding the overall impact or threat to water quality from OWTS in the Lexington Basin. Questa’s review of the nitrate data for the 18 stream sampling stations showed an average nitrate-nitrogen concentration of 0.35 mg-N/l, well below the drinking water standard (10 mg/L), essentially at typical background levels for surface waters in the region, with no indication of any noticeable impact from OWTS discharges.

Changes under the proposed Ordinance that represent a substantive difference with the current Lexington Basin OWTS requirements are discussed below regarding potential water quality impacts.

**Minimum Lot Size.** The proposed Ordinance would remove the 1-acre minimum lot size limitation that currently applies to any new development using an OWTS in the Lexington Basin.

Whether or not a particular lot can be approved for use of an OWTS is normally determined based on site characteristics and on compliance with adopted criteria that establish the necessary area for the treatment and dispersal system, reserve area, slopes and setbacks, while still allowing for the buildings and other development features. This is the approach followed throughout Santa Clara County, outside of the Lexington Basin. The land area requirements for an OWTS can range from as little as a few thousand square feet, to as much as ½-acre or more, depending mainly on soil conditions. Having less than a 1-acre lot size does not preclude the feasibility of developing an acceptable OWTS, just as having more than a 1-acre lot does not guarantee suitable and sufficient area for an OWTS.

The 1-acre minimum lot size adopted for Lexington Basin is a recommendation taken from the 1980 Montgomery report. However, the report does not offer supporting calculations or other clear justification for the selection of the 1-acre criterion. In this regard, on page 5-6 of the report, it says only: “A minimum developed area size of one acre is recommended to prevent hydraulic overloading of the soil.” This may be a reasonable goal and recommendation; but the question of whether or not one acre is necessary to prevent hydraulic overloading of the soils in the Lexington Basin was not addressed in the Montgomery report. In fact, the assertion that this amount of land area is necessary to avoid hydraulic overloading of the soil is undermined by contradictory information in Chapter 7 of the Montgomery report (Alternatives Analysis), where estimates are presented for the required amount of land area that would be needed for community leachfield solutions for various neighborhoods in the Lexington study area. The information appears in Table 7-1, and includes, for example, estimates of 1 acre for the Oakmont neighborhood (20 houses), 2 acres for the Vista Grande neighborhood (25 houses), and 3 acres for Lake Canyon (63 houses). As noted previously, the Lake Canyon community leachfield system (on a 3-acre site) was constructed in the mid-
1990s and has been operating effectively (under RWQCB permit) for the past 15 years. Given the above information, along with the widely held understanding that community leachfield systems present much greater potential for hydraulic overloading of the soil than do individual residential OWTS, there is presently substantial evidence to question the validity of the 1-acre minimum lot size for new OWTS adopted based on the 1980 Montgomery report.

For individual residential OWTS, compliance with standard soil depth and groundwater separation criteria, dispersal trench sizing, spacing and setbacks are generally recognized as measures that provide an acceptable design to avoid creation of hydraulic overloading of soils (also referred to as “groundwater mounding”). Groundwater mounding is more commonly a cumulative impact consideration for larger flow systems, for example, for OWTS serving commercial and multi-family uses, and is addressed (countywide) under a specific section of both the existing and proposed new Ordinance. Additionally, there is ample operating experience in Santa Clara County and elsewhere throughout California demonstrating that groundwater mounding is not a normal impact from code compliant residential OWTS. Therefore, removal of the existing 1-acre lot size limitation for Lexington Basin would be consistent with current industry practices and knowledge about OWTS, and would not pose a threat of water quality degradation according to any documentation or analysis in the 1980 Montgomery report.

From an overall watershed perspective, the Montgomery study also presents (in Table 5-3 of that report) a generalized water balance analysis for all of the drainage sub-basins in the Lexington Basin. The product of the water balance is an estimate of the projected total wastewater capacity (i.e., “carrying capacity”) for the Basin, in terms of millions of gallons of wastewater and equivalent number of homes. According to this analysis, the Montgomery report projected a total carrying capacity of 3,715 homes in the Lexington Basin, based on an average wastewater flow of 250 gallons per day (gpd) per residence. This equates to a total daily wastewater flow of approximately 928,750 gpd, basin-wide. For comparison with the Montgomery estimates, Table 4.2-8 presents information for Lexington Basin from the current study of OWTS lot status and development potential by Questa Engineering provided in Appendix B.

Excluding public and open space parcels, GIS data analysis determined there to be a total of 2,183 lots of record in the Lexington Basin, of which an estimated 1,364 are currently developed and assumed to be served by OWTS. Full (100 percent) buildout of all 2,183 existing lots in the Basin would amount to about 59 percent of the wastewater carrying capacity as estimated in the 1980 Montgomery report. According to Questa’s analysis, projected buildout under the proposed Ordinance would result in future development of approximately 336 of the 819 existing vacant lots, including only about 14 percent (71) of the lots smaller than 1 acre in size (and this analysis does not include the likely 55% reduction in buildout potential when other development constraints are considered). This low percentage of building potential for the <1-acre lots is due to the fact that the large percentage of them are less than 0.25 acres, which is insufficient to support a code-compliant OWTS, along with other site development under both the existing and new Ordinance requirements. Therefore, per Questa’s analysis, the total projected buildout is approximately 1,700 lots, or about 46 percent of the wastewater carrying capacity (3,715 homes) as estimated in the Montgomery report. It should be further noted that Questa’s projections are a worst-case analysis, as they did not factor in additional development constraints (e.g., excessively steep slopes, inadequate road
access, utility ownership, etc.) that would likely preclude planning and building approval for many of the existing vacant parcels in the Lexington Basin, regardless of OWTS feasibility. Thus, on a watershed basis the impacts on groundwater quality from lifting the current 1-acre minimum lot size would be insignificant.

**Table 4.2-8**

<table>
<thead>
<tr>
<th>Lot Size</th>
<th>Developed Lots</th>
<th>Vacant Lots</th>
<th>Total Lots</th>
<th>Estimated New Lot Development Under New Ordinance</th>
<th>Estimated Total Developed Lots at Buildout Under New Ordinance</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 acre</td>
<td>777</td>
<td>512</td>
<td>1,289</td>
<td>71</td>
<td>848</td>
</tr>
<tr>
<td>1 acre or more</td>
<td>587</td>
<td>307</td>
<td>894</td>
<td>265</td>
<td>852</td>
</tr>
<tr>
<td>Total</td>
<td>1,364</td>
<td>819</td>
<td>2,183</td>
<td>336</td>
<td>1,700</td>
</tr>
</tbody>
</table>

Source: Questa Engineering; derived from information contained in *Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes, June 2012* (Appendix B).

**Wastewater Application Rates.** The proposed Ordinance would drop the existing Lexington Basin wastewater application rates (used for dispersal system sizing) in lieu of newly adopted criteria that would apply countywide, and that are consistent with standards used in other Bay Area counties, RWQCB policies and guidelines, and published USEPA criteria. A comparison shows that the use of the revised criteria would produce dispersal systems sizes that are generally equal to or greater than the existing Lexington Basin standards as shown by the calculations in Table 4.2-9 below for a 4-bedroom conventional system. There would be no hydrology or water quality impact resulting from this change in design criteria.

**Table 4.2-9**

<table>
<thead>
<tr>
<th>Percolation Rate (minutes per inch)</th>
<th>Current Lexington Basin Requirements (lineal feet of trench)</th>
<th>New Ordinance Requirements (lineal feet of trench)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>150</td>
<td>110</td>
</tr>
<tr>
<td>10</td>
<td>150</td>
<td>164</td>
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<td>30</td>
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<td>45</td>
<td>250</td>
<td>292</td>
</tr>
<tr>
<td>60</td>
<td>350</td>
<td>375</td>
</tr>
<tr>
<td>90</td>
<td>400</td>
<td>656</td>
</tr>
</tbody>
</table>

\(^{11}\)Calculated based on criteria prescribed in the Draft On-Site Systems Manual

Source: Questa Engineering
**Depth to Groundwater Requirements and Alternative Systems.** The proposed Ordinance would implement changes in the depth to groundwater requirements that would: (a) provide some increase and some decrease (based on percolation rate) in the required separation distance for conventional systems in the Lexington Basin to be consistent with the rest of the County; and (b) allow reductions in the depth to groundwater requirements in conjunction with the use of certain types of alternative treatment and dispersal systems. The proposed changes are summarized in Table 4.2-10, comparing the existing Lexington Basin depth to groundwater requirements with the proposed Ordinance requirements and the conventional OWTS requirements of the San Francisco Bay RWQCB. The proposed changes related to the use of alternative systems are consistent with standards used in other Bay Area counties, published literature, and USEPA criteria. If implemented in conjunction with proposed requirements for ongoing inspection, maintenance and reporting, the use of alternative systems in accordance with the proposed requirements would provide water quality and public health protection equal to or better than the current OWTS regulations for Lexington Basin. A benefit of this aspect of the proposed Ordinance would be the availability of alternative treatment and dispersal options for use in the repair or replacement of the many older, non-conforming OWTS serving existing development in the Lexington Basin, of which approximately 280 are estimated to be on properties less than ¼-acre in size.

<table>
<thead>
<tr>
<th>Percolation Rate (min. per inch)</th>
<th>Lexington Basin Requirements</th>
<th>Proposed Ordinance Conventional OWTS</th>
<th>Alternative OWTS*</th>
<th>SF Bay RWQCB Minimum Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>Prohibited</td>
<td>20</td>
<td>3 to 8</td>
<td>1-5</td>
</tr>
<tr>
<td>6-30</td>
<td>5</td>
<td>8</td>
<td>2 to 5</td>
<td>6-30</td>
</tr>
<tr>
<td>31-120</td>
<td>5</td>
<td>5</td>
<td>2 to 5</td>
<td>31-120</td>
</tr>
</tbody>
</table>

*Varies according to type of alternative treatment and dispersal technology used.
Source: Questa Engineering

**Ground Slope Requirements.** The proposed Ordinance would revise the slope requirements for OWTS in Lexington Basin to be consistent with standards applicable to rest of the County, which would result in the following improvements to the existing requirements:

1. The existing Ordinance requires a calculation of slope based on the entire legal lot. This calculation does not account for the slope only within the proposed area used for OWTS. This requirement would change so that the ground slope limitation would apply specifically to the dispersal field area. This would be consistent with standard industry practice for siting and design of OWTS.

2. Alternative dispersal systems would be required for steeper slope conditions, including: the requirement that pressure distribution or subsurface drip dispersal methods be utilized for slopes over 30 percent and 40 percent, respectively. These methods for wastewater distribution are intended to provide uniform,
broad distribution of wastewater over the entire dispersal field area, rather than sequentially filling individual sections of trench. This reduces the potential for localized saturation of trenches and adjacent soils that occurs with conventional gravity-flow systems on hilly terrain.

The replacement of existing siting and design criteria for OWTS located in the Lexington Basin with the proposed new Ordinance requirements, along with elimination of the current 1-acre minimum lot size limitation, would provide water quality and public health protection equal to or better than the current OWTS regulations for this area. This would be a **less-than-significant** impact, and no mitigation is required.

**Health Hazard from Alternative Systems Equipment Malfunctions**

**Impact 4.2-F**  Use of supplemental treatment and pressure distribution/drip dispersal systems as provided in the proposed Ordinance could malfunction and expose people to unsanitary conditions and possible health hazards.

Under the proposed Ordinance it is anticipated there would be significant use of supplemental treatment and pressure distribution/drip dispersal systems to overcome various soil and site constraints. These types of systems are more complex and rely on pumps and other electro-mechanical equipment. As a result, they are vulnerable to power outages and equipment failure. When there are extended power outages or equipment breakdowns, the normal treatment and dispersal operation would be interrupted until the power comes back on and/or the equipment problem is fixed. If the problem goes unattended for any significant length of time, backup in the house plumbing and potentially sewage surfacing could occur, posing unsanitary conditions, health hazards, and possible discharges to local drainages and downstream receiving waters.

The above described problems cannot be totally eliminated, but they are normally addressed and satisfactorily mitigated through a combination of system design, operation, and maintenance practices. The standard design practice for pump systems is to provide a warning alarm and minimum reserve-emergency storage capacity in the pump tank equal to the daily design flow volume. This provides a reasonable amount of time to overcome typical power outages and allow for servicing. In times of power outage there would normally be a corresponding reduction in the use of household appliances (e.g., clothes washers) and overall water use. Since the design flow represents the maximum expected daily sewage flow, during a power outage actual sewage flows can be reduced to a small percentage of the design flow, allowing the available emergency storage capacity to last for several days. The same practice can be followed during a pump or other equipment failure to extend the time available for repairs to be made. This may impose an inconvenience on the occupants, but would avoid the creation of unsanitary conditions. Examples of other design features often used to detect and facilitate the response to system failures include: (a) telemetry systems (web-based) for remote monitoring of alarm conditions; (b) duplex pumps or other components for redundancy; and (c) emergency transfer switch to allow system operation with a portable generator.
A comprehensive operation and maintenance program is also essential to minimize the impacts of power outages and equipment failures for on-site wastewater systems. This includes homeowner/user education, operation and maintenance manuals, requirements for routine system inspections and reporting by qualified operation and maintenance specialists, and minimum qualifications and training for those performing the operation and maintenance functions. The proposed Ordinance includes an operating permit program for all alternative OWTS, to ensure regular inspection and maintenance of mechanical and electrical components, as well as the availability of knowledgeable maintenance providers to assist homeowners in responding to emergencies, as needed.

The proposed Ordinance and Manual include the above-described design and operation and maintenance requirements that are applicable to new and repair/replacement systems. These same measures have been implemented successfully in many other local jurisdictions in California over the past 10 to 20 years to allow safe and effective use of supplemental treatment and pressure distribution/drip dispersal systems. This would be a less-than-significant impact, and no mitigation is required.

**Septage Hauling Hazard**

**Impact 4.2-G** The construction and operation of new on-site wastewater systems, along with regular inspection and maintenance cleaning of septic tanks, will increase the volume of septage removed from septic tanks and transported on public roads, increasing the risk of accidental release of sewage into the environment and hazards to the public health.

The proposed Ordinance would contribute to an increase in the amount of septic tank pump-outs and septage hauling compared with the existing conditions, as a result of two main factors, as follows:

- First, the proposed Ordinance would provide a broader range of treatment and dispersal designs (i.e., alternative OWTS) for the development of existing parcels and repair/replacement of failing OWTS. This is anticipated to increase the number of parcels developed using OWTS, which would result in a corresponding increase in the amount of septage generated and the need for maintenance pumping of septic tanks.

- Second, in cases where alternative OWTS are used, the proposed Ordinance would require the issuance of an operating permit to ensure a regular schedule of inspection and maintenance for these types of systems. As such, this imposed maintenance program would tend to increase the level of attention given to septic tank inspections and might also result in more frequent maintenance cleaning and pump-outs.

Based on these factors, the additional amount of septic pumping under the proposed Ordinance is estimated to be on the order of roughly one truck load per day at projected buildout. Increases in septic tank pump-outs and septage hauling would increase the

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30 CSU Chico, 2002; CSU Chico, 2003; County of Santa Cruz, 2008; Stinson Beach County Water District, 1998)
exposure of people and the environment to hazards associated with these activities. The main hazards from septage hauling are related to: (a) the on-lot pump-out operation; and (b) accidental spills that could result during transit. During the pump-out, spills could occur as a result of improper handling or operation of the equipment, a break or leak in the vacuum hose, or simply sloppy practices by the pumping contractor. During hauling, sewage spills could result from a vehicle accident, an open or leaking cap or valve, failure of the cap latch or flexible vacuum hose, or leaks/splash from the drip-retention trough from rough driving. If any of these occur, it could result in the discharge of partially treated sewage to the ground surface, local drainages, streams, rivers or lakes. Depending on the location, duration and response measures, this could pose a minimal, moderate or severe threat to public health for residents, recreational users, and the general public. Septage hauling accidents are rare, but do occasionally happen.

Septage hauling is unavoidable. The best approach to avoid spills and associated impacts is through preventative measures, including education, training and oversight of pumpers and their equipment. The County currently has a program to license/certify septic tank pumpers, including specifications on pumping equipment, with an emphasis on maintenance, cleanliness, and leak prevention. Certification also requires the pumpers to submit monthly reporting of pumping activities. The proposed Ordinance includes additional requirements for the septic tank pumper to perform (and report results of) a basic OWTS performance operation at the time each septic tank is serviced. It also includes additional requirements for pumping contractors to participate in ongoing education/training updates. The implementation of these new requirements for septic tank pumpers would likely provide a heightened attention to local septic pumping activities and general improvement in the standard of care. This should aid in minimizing the potential for sewage spills and associated hazards from equipment operation or improper practices. This would be a less-than-significant impact, and no mitigation is required.

Flooding Impacts

Impact 4.2-H Construction of on-site wastewater systems allowed by the proposed Ordinance could place systems in areas subject to flooding with attendant risk of failure and release of sewage during flood events, serious damage to system components by flooding, and/or impedance of flood flows.

The proposed Ordinance includes siting requirements for OWTS that require locating treatment and dispersal components specified minimum horizontal distances from the edge of water courses and water bodies. It also specifies that systems be located outside of the 10-year floodplain boundary. This provides effective protection of the OWTS and its performance for normal conditions and most flooding situations. However, the proposed Ordinance does not preclude the placement of on-site treatment systems within areas subject to inundation during 100-year flood conditions. During 100-year storm events, flooding can extend significantly beyond the edge of water courses, with flooding depths ranging from less than one foot to several feet.

The consequences of inundation of OWTS by flood waters would vary depending upon several factors, including: (a) depth of flooding; (b) duration of flooding; and (c) the type and design of OWTS components located in the flooded area. For example, the least
amount of impact would occur for shallow, short-duration (e.g., a few hours) flooding of a conventional gravity dispersal trench area. In this situation the floodwaters would contribute to additional saturation of the soils in the dispersal area, which may result in short-term sluggish performance of the dispersal trench and possibly a backup and water level rise in the septic tank. Deeper flooding depths over a longer duration would increase the interference with normal drainage from the dispersal system, possibly leading to backup into the house plumbing. Surface discharge of sewage would typically not occur from wastewater located within the dispersal trenches or the septic tank, since percolation of flood waters from above the ground surface would create a downward hydraulic force over the affected area. Surfacing of sewage effluent would likely only occur if sewage flows from the residence or building (located at a higher elevation) were to continue during flooding, in which case effluent could be forced upward, possibly working its way through openings in the plumbing and overlying soils, and eventually mixing with flood waters. The more likely scenario is that the sewage would backup into the building, and the occupants would stop their water use activities, or the occupants would know through common sense to curtail use of water during a flood event.

More serious issues could arise for alternative OWTS that include pressure distribution, drip dispersal and/or supplemental treatment systems. In these cases, the flood waters could cause damage to certain system components; and continued operation of these systems under flooding conditions could result in releases of partially treated wastewater into the flood waters. For example, inundation of a sand filter bed could allow silt-laden water to infiltrate and foul the sand media and bring about premature failure. Also, some supplemental treatment units, such as proprietary packed bed filters and aerobic treatment units, utilize fiberglass containment vessels and could be subject to significant movement and damage under the buoyant forces of flood water. In the worst case they could be lifted or torn loose and carried away in the floodwater. Flooding of electro-mechanical components may also cause damage and malfunction to these systems. Discharge of sewage into the flood waters could occur where pumping systems continue to operate during flooding periods, possibly forcing wastewater to the surface and into the floodwaters (e.g., where pressure distribution or drip dispersal methods are used).

In anticipation of these potential flood-related issues, the proposed Ordinance includes provisions for evaluation and incorporation of special design measures for systems located within areas subject to inundation by the 100-year flood. Specifically, the measures would require: (a) protection for OWTS supplemental treatment, pressure distribution and/or drip dispersal components from flood damage, such as structural tie-downs and/or elevating critical components above the 100-year flood level; (b) prevention of discharge of wastewater into flooded dispersal areas from pump systems (e.g., using flood-activated float switches to override/disable pump operation during high water conditions); and (c) additional emergency storage capacity for flood periods. These provisions are consistent with the requirements of the County Floodplain Management Ordinance (Code Chapter VI Division C12), which specifies in Sec C12-817.B that “on-site waste disposal systems shall be located to avoid impairment to them, or contamination from them during flooding.”

With respect to possible physical interference with the flow of flood waters, some alternative treatment and dispersal systems designs that could be permitted under the proposed Ordinance would involve the placement of soil fill or other components above ground surface. The County Floodplain Management Ordinance, under Sec C12-821,
prohibits encroachment within designated floodways by fill, structures or other development, except where certified by a civil engineer that such encroachment would not result in any increase in flood levels during the occurrence of a 100-year event.

Based on the design requirements contained in the proposed Ordinance and accompanying Manual, along with provisions of the existing County Floodplain Management Ordinance, potential impacts associated with the placement and operation of OWTS in flood-prone areas would be properly mitigated. This would be a less-than-significant impact, and no mitigation is required.

**Location of OWTS Near Streams**

**Impact 4.2-I**  
On-site wastewater systems allowed by the proposed Ordinance could be located on properties that abut or are in close proximity to streams, resulting in the possible placement of some OWTS components within established setback distances where system repair or replacement is required.

The proposed Ordinance contains required horizontal setback distances between OWTS components (treatment tanks and dispersal fields) and various water and landscape features that are the same as specified in the existing Ordinance. The setback distances are also consistent with policies and guidelines of the San Francisco Bay and Central Coast Regional Water Quality Control Boards. In particular, the setbacks include 50 feet to drainage swales, 100 feet to springs and water courses (top of bank), 200 feet to water supply reservoirs (high-water mark), and no OWTS placement within the 10-year floodplain. Compliance with these requirements is also specified in the “Water Collaborative Guidelines and Standards for Land Uses Near Streams”, which was adopted by the County in 2007.

Under the proposed (and existing) Ordinance any OWTS proposed to serve a new residence, second dwelling unit, major building remodel/addition, or a new commercial use would have to be located so as to comply with the setback requirements described above. However, in the case of an existing malfunctioning or failing OWTS that requires repair or replacement, the provisions of the Ordinance dictate that the repair/replacement be in conformance with code requirements to the maximum extent practicable, subject to approval by the Director of Environmental Health. The provision for the County to grant exceptions to setback requirements is also recognized in the Water Collaborative Guidelines. Oftentimes a reduction in setback distances to streams and other water features is necessary to accomplish an effective system repair.

The proposed Ordinance includes alternative treatment and dispersal technologies and revised sizing standards for conventional systems that would provide greater flexibility and options for system repairs than provided under the current Ordinance. It is estimated that this would have two positive effects for streamside situations: (1) the use of alternative treatment technologies, producing higher quality effluent, can compensate for reduced amount of soil absorption area where the repair system encroaches within the normal setback buffer; and (2) alternative dispersal methods and revised sizing criteria can reduce the amount of encroachment into the setback area by making more portions of the property (e.g., shallow soil areas) potentially feasible for wastewater dispersal, while also reducing the overall amount of land area needed for the dispersal
Consequently, the proposed Ordinance can be expected to have a positive effect in reducing the impacts of OWTS in streamside situations. This would be a less-than-significant impact, and no mitigation is required.

3. Indirect Impacts

As described in the Introduction to Chapter 4, additional development could occur if the proposed Ordinance is adopted. The certified EIR for the County's General Plan concluded that at a program level of analysis, all impacts from new development allowed under the General Plan would be reduced to a less-than-significant level. The following discussion reviews the indirect hydrology and water quality impacts associated with increased development activities that could accompany changes in on-site wastewater system requirements based on current regulatory requirements and environmental conditions.

Water Quality Impacts Due to New Construction

Impact 4.2-J Potential new development that would be possible if the proposed Ordinance is adopted could result in surface runoff containing pollutants that contribute to degradation of water quality and potential violation of water quality standards.

Housing construction in rural areas served by on-site wastewater systems can degrade surface water quality as a result of: (a) soil erosion; (b) leaks, spills or discharges of chemicals during construction; (c) conversion of vegetated areas to buildings or other impervious surfaces, reducing the natural absorption and filtering characteristics of the site; and (d) introduction of new pollution sources associated with accompanying land use activities, such as automotive fuels, cleaning agents, landscaping chemicals, animal/livestock wastes, and drain water from swimming pools and spas. Water quality impacts related to soil erosion associated with new housing construction are addressed under Geology and Soils, Impact 4.1-F. In general, the impacts to surface water quality in rural development settings, as compared with urban housing development, are substantially mitigated to negligible levels by: (1) the larger lot sizes that provide buffer areas; and (2) observing normal “housekeeping” practices and standards of care, for example, draining pool water to land for soil absorption rather than directly to a stream, proper disposal of waste oil or other household chemicals, etc.

The greatest potential for degrading water quality, possibly to the extent of violating water quality standards, would be situations where rural residential land use activities encroach closely upon streams and riparian areas. In 2007 Santa Clara County adopted the “Water Collaborative Guidelines and Standards for Land Uses Near Streams”, which provides a series of techniques, standards and procedures to protect streams and streamside resources. Under the provisions of these “Guidelines”, any building project that falls within the “streamside review area” (defined as parcels abutting or within 50 feet of top of streambank), requires project review (as part of the building permit process) for conformance to the guidelines and standards. Water quality protection is one of many issues specifically addressed by the Guidelines. Consequently, application of these Guidelines provide a process to identify and mitigate potential water quality issues in that could arise from new housing construction located in the areas of most
concern (streamside locations). At a program level, this would be a less-than-significant impact, and no mitigation is required.

**Impacts to Groundwater Supplies and Recharge Due to New Construction**

**Impact 4.2-K** Potential new development could reduce available groundwater supplies through additional groundwater extraction (pumping) or interference with groundwater recharge.

Nearly half of Santa Clara County’s water supply originates from the County’s groundwater resources, and the percentage is even greater (over 90 percent) in the southern portions of the County. Approximately 150,000 acre-feet of groundwater are pumped annually to supply water demand in the County. Natural sources and rates of recharge are insufficient to replenish the water extracted for supply, averaging only about 50 percent of the amount pumped. In 1929 the Santa Clara Valley Water District was formed specifically to manage the groundwater resources in the County, including the development of recharge programs to counterbalance the land subsidence effects of over-pumping and maintain a sustainable supply of groundwater. Currently, the SCVWD groundwater recharge programs utilize local runoff and imported surface water in combination with more than 90 miles of local creeks and more than 300 acres of percolation ponds to replenish groundwater resources.

A large percentage of rural residences rely on individual wells for their domestic water supply, and it is reasonable to expect that some of the additional rural development that could potentially occur under the proposed Ordinance would result in the drilling and development of new wells for domestic supplies. For a worst case (i.e., full buildout) assumption that all additional housing possible under the proposed Ordinance (estimated at approximately 1,100 new single family residences countywide) were to result in new wells, the additional amount of groundwater pumped would amount to approximately 385 acre-feet per year, based on an average water demand of about 500 gallons per day (0.35 acre-feet per year) per rural residence. This would be equal to about 0.25 percent of the total current amount of groundwater pumped annually in the County (150,000 acre-feet); and the pumping would be dispersed widely throughout the County, and typically on lots of 1 acre or larger in size. As noted previously, other site constraints would substantially reduce the number of new residences that could be developed. Many of these lots would be in hillside areas that are not part of the groundwater resources tapped by the SCVWD. This level and distribution of additional groundwater pumping would not substantially deplete the County’s groundwater supplies.

Additionally, the development of additional residential building sites would include soil compaction and impervious surfaces that could interfere with and reduce groundwater recharge. The amount of impact that could occur is considered negligible, based on several factors:

- Groundwater recharge in the County is managed by the SCVWD through an extensive program utilizing streams and artificial basins for recharge of local runoff and imported water supplies; groundwater recharge occurring from
percolation of rainfall on residential development sites is considered incidental and not relied upon for management of the County’s groundwater supplies.

- As discussed under Geology and Soils Impact 4.1-E, development projects involving substantial over-covering of soils with impervious surfaces in most of the County would be subject to discretionary review (e.g., Building Site Approval and/or Design Review), which would include consideration of plans and factors affecting site drainage/runoff, and mitigation as necessary.

- The “Water Collaborative Guidelines and Standards for Land Uses Near Streams”, adopted by the County in 2007, provides a series of techniques, standards and procedures to protect streams and streamside resources, including groundwater resource assessments when there is judged to be potential for significant impacts to groundwater supply or groundwater quality. These “Guidelines” are implemented through the building permit process and apply to any project that falls within the “streamside review area”, defined as parcels abutting or within 50 feet of top of streambank.

Based on the relatively small amount of water demand associated with possible new housing construction and the various project-specific review procedures in place to protect water resources from home construction, impacts on groundwater supplies or groundwater recharge would be negligible under the proposed Ordinance. At a program level, this is a less-than-significant impact, and no mitigation is required.

**Drainage Impacts Due to New Construction**

**Impact 4.2-L** Potential new development could result in alteration of drainage patterns and runoff rates in a manner that would cause flooding, exceed downstream drainage system capacity, or contribute to stream erosion and sedimentation.

Substantial grading and alteration of site drainage could potentially occur as a result of new development served by on-site wastewater systems in the rural areas of the County. Typical site development for residential uses includes construction of impervious surfaces such as buildings, driveways, patios, tennis courts, etc., which changes the natural runoff rate and drainage patterns on a site. Grading to establish building pads, driveways and landscaping features normally involves installation of drainage systems (e.g., collection drains, pipes and outfall/dispersal structures) and may result in redirection of surface runoff and/or subsurface waters. Care is needed when locating, sizing and designing drainage systems to avoid the creation of runoff impacts to neighboring properties and downstream areas. Impacts from higher runoff rates, redirection of site drainage or uncontrolled runoff can include, for example, creation of nuisance water flow/seepage, increased flooding downstream, exceedance of storm drainage system capacity, increased erosion of streambanks, and sedimentation.

Site development and building plans for new residential development in the majority of the County are subject to discretionary review (e.g., Building Site Approval and/or Design Review) as described in the introduction to Chapter 4. This site specific project review includes consideration of specific plans and factors affecting site drainage. This provides a mechanism to identify, avoid and/or mitigate any substantial changes in
runoff rates and drainage patterns that may result in significant impacts to neighboring properties, local drainage facilities, or downstream areas. For the portions of the County not subject to discretionary building site and design review, a drainage permit is required for any new impervious surfaces of 2,000 square feet or greater in size. Additionally, the County has adopted the “Water Collaborative Guidelines and Standards for Land Uses Near Streams”, which provides a series of techniques, standards and procedures to protect streams and streamside resources. Under the provisions of these “Guidelines”, any building project that falls within the “streamside review area” (defined as parcels abutting or within 50 feet of top of streambank), requires project review (as part of the building permit process) for conformance to the guidelines and standards. Also, larger projects that involve either the (a) disturbance of 1 acre or more of land or (b) creation/replacement of 10,000 square feet of impervious surfaces are obligated to implement Best Management Practices for water quality protection in conformance with NPDES stormwater management program requirements administered by the County. Through the various established County procedures for building, site design, grading, and streamside review, adequate provisions are in place to ensure review and proper mitigation of changes in runoff rates and drainage patterns from new residential development utilizing on-site wastewater systems, with the possible exception of projects involving minor amounts of grading (<150 cubic yards) and not located in proximity to a stream. At a program level, this would be a less-than-significant impact, and no mitigation is required.

Construction In Flood Hazard Areas

Impact 4.2-M Potential new development could be located in 100-year flood hazard areas, posing risks of personal injury and property damage to residents, and potentially altering flood flows and impacts to others.

Large portions of unincorporated Santa Clara County are prone to periodic inundation from flood waters, predominantly in the valley areas, which were naturally formed from repeated flooding over many centuries. Urbanization and other land development and infrastructure over the years have altered drainage patterns and runoff rates, contributing to increased threat and magnitude of flooding. According to the Santa Clara Valley Water District, over fifty creeks in the County cause significant flooding and thousands of parcels are subject to flood hazards.

Placement of housing and other development in flood hazard areas can result in injury and loss of life to residents, property damage, significant public expenditures and other consequences affecting the public health, safety and general welfare. Flood impacts are largely the result of structures that are inadequately elevated, floodproofed or protected from flood damage. The inappropriate location of structures can also contribute cumulatively to increases in floodwater heights and velocities, which can expand or intensify flood damage.

New housing that would be possible under the proposed Ordinance could be located in areas of the County designated as 100-year flood hazard zones and, as such, could potentially put people and property at risk of flooding impacts as noted above. However, existing County policies require that development in flood hazard areas: (a) not be
located in a floodway or areas of highest risk; or (b) if located in hazard areas, to be
designed, elevated and/or constructed to withstand or mitigate the risk of flooding. At a
minimum, new development must be placed to ensure that the finish floor elevation of
the first story is above the 100-year flood level, which may require padding up the
building location or by elevated building design measures. These requirements and
related flood area design measures are implemented through the building permit
process according to regulations contained in the County Floodplain Management
Ordinance, Division C12 of the Santa Clara County Ordinance Code. Based on the
County floodplain management requirements placement of new housing in flood hazard
areas would be a less-than-significant impact, and no mitigation is required.

Construction in Areas With High Nitrate Concentrations in Well Water

Impact 4.2-N Potential new development could be located in areas with known
high nitrate levels in well water, potentially exposing residents to
health risks from poor quality drinking water.

High levels of nitrate in water supplies, above the drinking water maximum contaminant
level (MCL) of 45 mg/L, pose a health risk for infants under 6-months of age, pregnant
women and people with certain enzyme deficiencies. While nitrate is a naturally
occurring compound and generally found at low levels in natural settings, groundwater is
vulnerable to the buildup of elevated nitrate concentrations as a result of leaching from
various land use activities and sources such as agricultural fertilizers, animal wastes,
and municipal and on-site wastewater system discharges. In Santa Clara County high
nitrate levels, above the drinking water MCL, have been found in water wells located in
two principal areas, Coyote Valley and Llagas Subbasin (SCVWD, 2010 Groundwater
Quality Report, June 2011). Results from 2010 water quality sampling indicated nitrate
levels above the MCL in 8 percent of the wells in Coyote Valley and about 21 percent of
the wells in the Llagas Subbasin. Additional trend analysis (2001 to 2010) conducted by
the SCVWD indicated a somewhat greater number of wells with a decreasing nitrate
trend (i.e., lower nitrate concentrations over time) as compared with those showing an
increasing trend.

It is reasonable to expect that some of the additional development potentially occurring
under the proposed Ordinance would be located in the Coyote Valley and Llagas
Subbasin areas, and also that some of the proposed housing would require or seek use
of an existing well or development of a new on-site well for domestic water supply. If
located in close proximity to areas of known high groundwater nitrate concentrations, the
water well(s) could also encounter similar conditions and potentially be found to have
quality unsuitable for drinking water uses. Water quality testing, including analysis for
nitrate, is required for approval of any domestic water supplies proposed to serve new
development under provisions of County Code, Division B11, Chapter VI (Small Water
Systems). Under the Code, compliance with drinking water MCLs is required in order to
receive water supply clearance from the DEH. Any existing or new water well proposed
to serve new housing would have to be shown to be compliant with applicable drinking
water standards to avoid exposure of residents to the health risks of poor quality drinking
water. Evidence of a non-compliant water well would result in the need to obtain an
alternative (compliant) source of water, or project denial. At a program level, this would
be a less-than-significant impact, and no mitigation is required.
4.3 BIOLOGICAL RESOURCES

A. Setting

1. Vegetation

Santa Clara County has a variety of terrain – including baylands, rivers, broad and narrow valleys, rolling hillsides and steep mountainous areas – that supports a diversity of habitats. Portions of the County front the San Francisco Bay, whose bayland habitats include important wetlands and marshes. There are rivers and reservoirs that provide freshwater habitats including biotically rich riparian areas. There are flat valley areas and rolling hillsides that contain grassland communities including the serpentine native grasslands which are home to several threatened and endangered species. Associated with these grassland communities are oak woodlands. In the more mountainous regions are chaparral and forest communities.

Terrestrial natural communities that could be affected by installation of new OWTS include: grassland/savanna (including serpentine grasslands); chaparral; mixed evergreen forest; oak woodlands; conifer woodland; agriculture; developed land; and riparian habitat (though it is unlikely that the County would allow new residential development in riparian zones). Within these communities are found many distinctive land cover types. For example, the 295 square miles of oak woodland include the following distinct communities: black oak forest; black oak woodlands; blue oak woodlands; coast live oak forest; coast live oak woodlands; interior live oak woodlands; leather oak woodlands; foothill pine-oak woodland; mixed evergreen forest; and valley oak woodlands.\(^{31}\) These natural communities also include sensitive land cover types (i.e., sensitive natural communities), including non-serpentine native grassland, serpentine bunchgrass grassland, serpentine rock outcrop, serpentine seep, mixed serpentine chaparral, valley oak woodland, Central California sycamore alluvial woodland, coastal and freshwater marsh, and seasonal wetland. Additional details about these natural communities are provided below.\(^{32}\)

Grassland

Grassland consists of herbaceous vegetation dominated by grasses and forbs. Grasslands are found in the Santa Clara Valley and in the mountainous areas east and west of the valley. For example, much of the south end and the northwest corner of the County contain grasslands intermixed with chaparral and blue oak woodlands. Serpentine grasslands occur in these areas as well as other parts of the County (e.g., Coyote Ridge). Grassland in the County is mainly classified into six land cover types:


\(^{32}\) Much of the description of biological resources contained in this Setting section is from three planning documents: 1) Draft Santa Clara Valley Habitat Plan, ICF International, December 2010; 2) Lexington Quarry Biotic Assessment Update, H. T. Harvey & Associates, January 2008; an appendix of Lexington Quarry Use Permit and Expansion, County of Santa Clara, October 2009; and 3) the Santa Clara County General Plan Final EIR, 2004. Additional information about the resources and the location of the plant communities is from the San Francisco Bay Area Habitat Goals Project (Bay Area Open Space Council, at http://www.bayarealands.org/gis/ www.bayarealands.org/gis).
- California annual grassland;
- Non-serpentine native grassland (not mapped);
- Serpentine bunchgrass grassland;
- Serpentine rock outcrop / barrens;
- Serpentine seep; and
- Rock outcrop (non-serpentine).

The California Department of Fish and Wildlife (CDFW) considers serpentine bunchgrass grassland a sensitive biotic community.

The various grassland types within the County function as a dominant natural community, linking small and large patches of all other natural communities in the landscape such as oak woodland, riparian and aquatic communities, northern mixed chaparral/chamise chaparral, and northern coastal scrub/Diablan sage scrub. Rock outcrops, barrens, and seeps are contained within the larger matrix of grasslands, and in some cases, the functions of and threats to these land cover types differ from the larger grassland matrix. While most grasslands in the County are dominated by nonnative annuals, small patches of native grasses are found in many areas.

Characteristic wildlife species in grasslands include reptiles such as western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus viridis*); mammals such as black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), Botta’s pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and red-tailed hawk (*Buteo jamaicensis*).

**Chaparral and Northern Coastal Scrub**

Chaparral shrub communities are found throughout California on rocky, porous, nutrient-deficient soils and on steep slopes up to 2,000 meters in elevation. These communities are dominated by densely packed and nearly impenetrable drought-adapted evergreen woody shrubs, 1.5–4 meters tall, that possess evergreen leaves that are small, thick, and leathery (sclerophyllous). Herbaceous and arboreal plant types are often lacking, or play minor roles in this community. Chaparral species have both deep and shallow roots that allow them to tap water in several soil layers. The deep roots also allow chaparral to tolerate summer drought conditions and stay active during this period of water stress. Chaparral is divided into several land cover types, including:

- Northern mixed chaparral/chamise chaparral
- Northern coastal scrub/Diablan sage scrub
- Coyote brush scrub
- Mixed serpentine chaparral.

CDFW considers mixed serpentine chaparral to be a sensitive biotic community (California Department of Fish and Game 2007). Chaparral communities occur in the

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hilly areas on the east and west of the valley. They are dominant in the drier eastern mountains, but occur on many of the lower portions of the Santa Cruz Mountain (e.g., many hillsides between Uvas Reservoir and Lexington Reservoir and in the northwestern corner of the County). Characteristic wildlife species include gopher snake (*Pituophis melanoleucus*), western rattlesnake, western fence lizard, brush rabbit (*Sylvilagus bachmani*), California pocket mouse (*Perognathus californicus*), Botta’s pocket gopher, California ground squirrel, spotted skunk (*Spilogale gracilis*), mule deer, coyote, and bobcat (*Lynx rufus*). Common bird species include mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), Anna’s hummingbird (*Calypte anna*), western scrub-jay (*Aphelocoma californica*), Bewick’s wren (*Thryomanes bewickii*), California towhee (*Pipilo crissalis*), lesser goldfinch (*Carduelis psaltria*), fox sparrow (*Passerella iliaca*), white-crowned sparrow (*Zonotrichia leucophrys*), and dark-eyed junco (*Junco hyemalis*).

Northern coastal scrub/Diablan sage scrub may intermingle with northern mixed chaparral/chamise chaparral, coastal prairie (grassland), and mixed evergreen forest and serve as an important corridor for wildlife. In addition, small mammals tend to forage on grassland species that are bordered by shrub canopies because they afford greater protection. The fire-following forbs associated with northern mixed chaparral/chamise chaparral are abundant for one or more years after a fire and provide high-quality habitats for a diversity of insects and other wildlife. The unique flora of post-fire chaparral contributes to its trait of supporting the highest concentration of special-status plants of any community in California. Many species that inhabit chaparral also inhabit adjacent grassland and oak woodlands; however, some birds and mammals are found largely in the dense cover and shade of mature chaparral stands.

**Oak Woodland**

The most common land cover types in the County are those dominated by upland hardwood trees, primarily various species of oaks (*Quercus* sp.). These land cover types were defined as part of the *oak woodland* natural community, an upland tree-dominated community with at least 10 percent cover of hardwood tree species. The oak-dominated land cover types that occur in the County are listed below:

- Valley oak woodland
- Mixed oak woodland and forest
- Coast live oak woodland and forest
- Blue oak woodland
- Foothill pine-oak woodland
- Mixed evergreen forest.

CDFW considers valley oak woodland and blue oak woodland sensitive biotic communities. Oak woodlands are found throughout the mountains on either side of the valley but are more prevalent in the western part of the Diablo Range. Oak woodlands provide food and cover for many species of wildlife (County of Santa Clara 2005). Mature oak trees bear natural cavities, which are important resources for cavity-nesting birds and small mammals. Also, mature oak forests typically contain snags (standing dead trees), which are valuable resources for woodpeckers because they prefer dead

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34 Ibid.
trees and limbs for excavation of roost and nest sites (Thomas 1961). Snags receive high levels of use by secondary cavity-nesting birds (e.g., chickadees and wrens) and mammals. Snags also support wood-boring insects that provide food for bark-gleaning insectivorous birds. Oak forests also provide acorns, which as a seasonal food are important for the survival of many species of wildlife in fall and winter. Birds that are dependent on acorns as a food source include acorn woodpeckers, scrub-jays, band-tailed pigeons, and California quail.

Characteristic wildlife species that can be found in oak woodlands include amphibian species such as California red-legged frog (*Rana draytonii*) and California tiger salamander (*Ambystoma californiense*) that use these habitat types for summer aestivation and movement when aquatic habitats are present; reptile species such as gopher snake and western fence lizard; bird species such as red-tailed hawk, American kestrel, barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall’s woodpecker (*Picoides nuttallii*), northern flicker (*Colaptes auratus*), white-breasted nuthatch (*Sitta carolinensis*), California quail, spotted towhee (*Pipilo maculatus*), Bewick’s wren, and bushtit (*Psaltriparus minimus*); and mammal species such as deer mouse (*Peromyscus maniculatus*), western gray squirrel (*Sciurus griseus*), mule deer, and coyote (County of Santa Clara 2005).

Oak woodlands perform a variety of ecological functions, including nutrient cycling, water storage and transport, and wildlife habitat. Oak woodlands share many of the same functions as the adjacent grassland and chaparral communities. However, the structure and food provided by the dominance of oak trees in this community distinguish it from the other natural community types. Oak woodland is one of the most biologically diverse communities in California, providing essential habitat for approximately 2,000 plant, 5,000 insect, 80 amphibian and reptile, 160 bird, and 80 mammal species. Large acorn crops and a diverse insect fauna provide high-quality food for a wide variety of amphibians, reptiles, birds, and mammals. Dense oak woodlands provide cool, shady refugia for wildlife during the hot, dry summer, and more sparse oak woodlands offer raptors ideal hunting perches. Open-canopy oak woodlands provide critical upland habitat for California tiger salamander, which aestivates (i.e., spends the summer in a form of dormancy) in burrows in the grassland understory or beneath isolated oaks. These oak woodlands also provide nesting and foraging habitat for a variety of bird species. The grassland understory provides habitat for fossorial rodents such as ground squirrels and gophers, which are prey for red-tailed hawks, coyotes, and great horned owls. Rodent burrows, in turn, provide habitat for a variety of other species, including burrowing owls.

**Riparian Forest and Scrub**

*Riparian vegetation* in the County was classified into three main land cover types:

- Willow riparian forests, woodlands, and scrub
- Central California sycamore alluvial woodland
- Mixed riparian woodland and forest.

CDFW considers central California sycamore alluvial woodland a sensitive biotic Community.\(^{35}\) Riparian habitats provide food, water, migration and dispersal corridors,

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\(^{35}\) Ibid.
and nesting and cover habitat for numerous wildlife species. These habitats have high value due to their limited extent and widespread use by an abundant and diverse assemblage of wildlife species. Wildlife species that are often associated with this land cover type include amphibians such as Pacific tree frogs (Pseudacris regilla), California newts (Taricha torosa), and California slender salamander (Batrachoseps attenuates); reptiles such as western aquatic garter snake (Thamnophis couchii) and San Francisco garter snake (Thamnophis sirtalis tetrateaen); birds such as Wilson’s warbler (Wilsonia pusilla), Swainson’s thrush (Catharus ustulatus), California yellow warbler (Wilsonia pusilla), gray fox (Urocyon cinereoargenteus), mountain lion (Puma concolor), and California myotis (Myotis californicus). Riverine systems, particularly healthy riverine systems, provide habitat for aquatic macroinvertebrates, which are an important food source for local and downstream populations of birds and other animals.

While riparian land cover types occupy a very small percentage of the total land cover in the County they are particularly important because they are among the most structurally complex and richly diverse habitat types in terms of plant and animal associations. Riparian communities support both terrestrial and aquatic species by providing movement corridors across the landscape and both nesting and foraging habitat. They can also support high levels of invertebrate production; provide moist, cool refugia during the hot, dry summer; have moderate stream temperatures; help armor stream banks; and support the aquatic food chain by means of input of vegetative and other detritus. Denser canopies reduce direct solar radiation to streams and creeks, thereby lowering water temperatures and may increase habitat value for aquatic wildlife. However, algal growth, which increases aquatic insects, requires a partially open canopy for light.

These riparian land cover types are scattered throughout the County along permanent and intermittent streams. The sycamore alluvial woodland is found along streams in valleys in the northeast and northwest portions of the County.

**Conifer Woodland**

In addition to hardwood-dominated upland land cover types, conifer dominated land cover types also occur in the County. The three conifer-dominated communities listed below occur in the County:

- Redwood forest
- Ponderosa pine woodland
- Knobcone pine woodland.

Conifer woodlands mainly occur in the upper elevations of the Santa Cruz Mountains. There are scattered stands of pine woodlands in the Diablo range east of the valley.

Wildlife species often found in conifer-dominated upland land cover types include: birds such as acorn woodpecker, scrub-jay, California quail, golden eagle, Cooper’s hawk (Accipiter cooperi), olive-sided flycatcher (Contopus cooperi), and sharp-shinned hawk (Accipiter striates); amphibians such as arboreal salamanders (Aneides spp.), California slender salamander, and California newt; reptiles such as common king snake.
(Lampropeltis gentile), garter snake (Thamnophis spp.), and ringneck snake (Diadophis spp.); and mammals such as broad-footed mole (Scapanus latimanus), deer mouse, western gray squirrel, gray fox, and striped skunk (Mephitis mephitis).

Associated special status species that are known to occur in these woodlands in the County include California tiger salamander, foothill yellow-legged frog, western pond turtle, Townsend’s western big-eared bat, and golden eagle. California tiger salamanders use the grassy understory of open woodlands for terrestrial aestivation or refuge and aquatic sites for breeding. Foothill yellow legged frogs and western pond turtles utilize aquatic habitat often found in redwood forest and oak woodlands. The turtle is also known to overwinter in leaf litter or soil at upland sites. Townsend’s western big-eared bat uses trees for roosting between foraging bouts. The bat often forages along forest edges. Golden eagles use woodlands and forest edges, when associated with dependable food supply, for roosting and nesting.

Similar to oak woodland, these forests and woodlands provide food, nesting, and cover to a variety of wildlife. However, the structure and food resources that conifer-dominated forests provide make them a valuable resource. Evergreen oaks such as coast live oak, as well as California bay, madrone, and foothill pine, provide year round shelter unlike the largely deciduous vegetation of riparian forest and scrub. A largely continuous, dense leaf canopy and abundant tree cavities act to shade wildlife, provide habitat for nesting, and offer protection from predators. In addition, thick layers of leaf litter can provide secondary habitat for soil invertebrates and amphibians by offering protection from desiccation and foraging habitat.

**Wetlands**

Wetland habitat includes areas subject to seasonal or perennial flooding or ponding, or that possess saturated soil conditions and that support predominantly hydrophytic or “water-loving” herbaceous plant species. Wetland habitat in the County was classified into two land cover types:

- Coastal and valley freshwater marsh
- Seasonal wetland.

In general, wetlands represent a sensitive biotic community due to their limited distribution and importance to special-status plant and wildlife species. Perennial wetlands are important habitat for a wide variety of wildlife species Representative waterbirds that forage and rest in permanent wetlands and associated open-water areas include great blue heron (Ardea herodias) and great egret (Ardea alba); as well as various ducks, including wood duck, green-winged teal (Anas crecca), mallard (Anas platyrhynchos) and American coot (Fulica americana); killdeer (Charadrius vociferus); and greater yellowlegs (Tringa melanoleuca). Typical amphibians and reptiles in this cover type include redlegged frog, western pond turtle, and garter snakes. Many of the larger mammals, such as mule deer, may frequent permanent wetlands and use them as a source of drinking water.

Seasonal wetlands (i.e., wet meadows, seeps) are commonly used by a variety of wildlife during the wet season, including various amphibians such as Pacific chorus frog (Pseudacris regilla), western toad (Bufo boreas), and California tiger salamander;
shorebirds such as killdeer, black-necked stilt (*Himantopus mexicanus*), and American avocet (*Recurvirostra americana*); and passerines such as Brewer’s blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), brown-headed cowbird (*Molothrus ater*), and American pipit (*Anthus rubescens*). Raptors such as white-tailed kites, northern harrier, and red-tailed hawk may forage in this land cover type. During the dry season, a variety of small mammals may use seasonal wetland areas as forage source, including deer mouse, California vole, and long-tailed weasel; however, wet meadows and seeps generally do not provide suitable habitat for small mammals.

Wetland functional values are provided through several physical and biological processes. Perennial and seasonal wetlands function as essential habitat for amphibians that depend on aquatic environments for reproduction and juvenile development. These wetlands also provide high levels of insect production, which in turn creates a major food source for amphibians, birds, and other insectivorous species. The cyclical nature of inundation and drought in seasonal wetlands allows these systems to support a unique suite of highly adapted biota. Perennial wetlands are permanent water sources during the dry season in an otherwise arid landscape and thus function as an essential resource for a wide variety of water-dependant wildlife.

**Irrigated Agriculture**

Irrigated agriculture encompasses all areas where the native vegetation has been cleared for irrigated agricultural use. This land cover type occurs mainly in the valley south of San José. This natural community does not include rangeland, which is often characterized as an agricultural land use. Some native wildlife, such as small mammals, certain raptors, and migratory waterfowl utilize irrigated agriculture seasonally or year-round. Year-round activity tends to be concentrated along the margins of active farmland where vegetation is less disturbed or where trees and shrubs tend to occur (some are planted deliberately as windbreaks). Open fields that are irrigated for forage crops are also used by wildlife. Cultivated agriculture is bisected by streams, ditches, and channels. Some amphibians and reptiles utilize these linear aquatic features and the adjacent upland habitat. This land cover type has relatively low value for native plants and wildlife in terms of habitat that supports full lifecycle needs. Nonetheless, agriculture does provide some benefit, although species composition depends heavily on the planting cycle. In addition, agricultural lands often play a key role in providing connectivity between larger open space areas, especially in urbanizing areas such as the Santa Clara Valley.

**Developed Land**

Developed land cover types tend to support a low diversity of wildlife, though certain wildlife species have adapted and are common in residential and commercial landscapes.

2. **Wildlife**

A diversity of wildlife inhabits the varied terrain of Santa Clara County. Typical wildlife species occurring in the County are listed in the preceding discussion of the natural communities. Special status species are listed below, and described in more detail in
Appendix C. The following information is primarily based on the CNDDB database and the Draft Santa Clara Valley Habitat Plan.

**Mammals**

California has the most diverse mammal population of any state and also has the most endemic mammal species. The south San Francisco Bay region ranks as medium to high in mammalian species rarity and richness within the state.\(^{36}\) This is largely driven by the salt marshes in the Bay/Delta region and the riparian habitats that drain to them. Of the 195 known mammalian species within the state over 20 percent can be found within Santa Clara County. Up to 47 of those species can be found in Santa Clara Valley and up to 55 can be found in the surrounding Santa Cruz Mountains and Diablo Range.\(^{37}\) This represents a range of between 20 percent and 28 percent of the known mammalian species of the state, respectively, for the major geographic features of the County. The 10 special status species of mammals whose presence in the County has been recorded in the CNDDB are: Yuma myotis, long-eared myotis, hoary bat, pallid bat, Santa Cruz kangaroo rat, Berkeley kangaroo rat, salt-marsh harvest mouse, San Francisco dusky-footed woodrat, San Joaquin kit fox, and American badger.

**Birds**

Approximately 636 species of birds spend some part of the year in California. The south San Francisco Bay region ranks as medium to high in bird species rarity and richness within the state.\(^{38}\) This is largely driven by the salt marshes in the Bay/Delta region, which are particularly important to many migratory species and the riparian habitats and diverse upland habitats that make up the interior Bay Area. Of the 636 known bird species that either breed in or migrate through the state more than 45 percent can be found within Santa Clara County. The 20 special status species of birds recorded in the CNDDB are: great blue heron, snowy egret, osprey, white-tailed kite, northern harrier, Cooper’s hawk, golden eagle, prairie falcon, California black rail, California clapper rail, western snowy plover, California least tern, burrowing owl, long-eared owl, black swift, bank swallow, least Bell’s vireo, saltmarsh common yellowthroat, Alameda song sparrow, and Tricolored blackbird.

**Reptiles**

California ranks fifth overall in reptile diversity by state in the United States with 86 known species. The south San Francisco Bay region ranks as low to medium in reptilian species rarity within the state and medium to high in species richness. The distribution of reptilian species within the County is varied. The Santa Clara Valley supports under 10 percent of the known reptilian species within the state, while the Santa Cruz Mountains and the Diablo Range support up to 30 percent.\(^{39}\) The three special status reptile species recorded in the CNDDB are: western pond turtle, coast horned lizard, and Alameda whipsnake.

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\(^{36}\) *Draft Santa Clara Valley Habitat Plan*, 2010, ICF International.

\(^{37}\) Ibid.

\(^{38}\) Ibid.

\(^{39}\) Ibid.
**Amphibians**

California ranks ninth overall in amphibian diversity in the United States with 57 known species. The south San Francisco Bay region ranks low in amphibian species rarity within the state but medium to high in species richness. The distribution of amphibian species within the County is varied. The Santa Clara Valley supports less than 10 percent of the known amphibian species within the state, while the Diablo Range supports 15 percent and the Santa Cruz Mountains support up to 30 percent. The three amphibian species recorded in the County by the CNDDB are: California tiger salamander, California red-legged frog, and foothill yellow-legged frog.

**Freshwater Fish**

California ranks 34th overall in freshwater fish diversity by state in the United States with 62 known species. The south San Francisco Bay region ranks low in fish species rarity within the state but medium to high in species richness. The rivers and creeks that drain the Santa Cruz Mountains and the Diablo Range are home to 11 native and 19 nonnative species of fish. This represents around 17 percent of the known freshwater fish species of the state. The most species rich is Coyote Creek with 10 native species followed by the Guadalupe River with seven. In the south County, 11 native fish species are found within the Pajaro River watershed. The abundance and distribution of native species have been reduced significantly over time through human impacts. The interface with the bay provides habitat for several species of anadromous fish including steelhead/rainbow trout, which has been observed in both Coyote Creek and the Guadalupe River. The one species of special-status fish recorded in the County in the CNDDB is steelhead (south/central California Distinct Population Segment, or DPS).

**Invertebrates**

There are many thousands of invertebrate species in California, with an estimated 28,000 species of insects alone. The south San Francisco Bay region and most of the County ranks as medium in invertebrate species rarity within the state, according to the California Department of Fish and Game (2003). Most of that rarity is driven by unique grassland and scrub habitats that support rare species of plants. These rare plant species in turn support the complex life stages of many insects, especially butterflies and moths. Invertebrate surveys have not been conducted in much of Santa Clara County, and the number of species is largely unknown. The eight species of special-status invertebrates recorded in the County in the CNDDB are: Opler’s longhorn moth, unsilvered fritillary, Bay checkerspot butterfly, Zayante band-winged grasshopper, Horn’s micro-blind harvestman, Jung’s micro-blind harvestman, mimic tryonia (California brackish water snail), and an isopod.

**3. Special Status Species**

Special status species are taxa listed by the State or federal government as rare, endangered, or threatened. Special Status Species of California include:

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40 Ibid.
41 Ibid
42 Ibid
43 Ibid
1. Plant and animal species designated as threatened or endangered under Section 4 of the Federal Endangered Species Act;

2. Species designated as rare, threatened, or endangered by California Department of Fish and Wildlife under the California Endangered Species Act;

3. Species that are recognized as candidates for listing by agencies with resource management responsibilities such as USFWS, U.S. Forest Service (USFS), U.S. Bureau of Land Management (BLM), and California Department of Fish and Wildlife;

4. Species defined by the CDFW as species of concern;

5. Species considered rare, threatened, or endangered pursuant to Section 15380 of the CEQA Guidelines;

6. Species protected by California Fish and Game Code Sections 3503, 3503.5 and 3511;

7. Bald and golden eagles protected by the Federal Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668a-d); and

8. Plant species listed in the Inventory of Rare and Endangered Plants of California prepared by the California Native Plant Society (CNPS).

There are 96 species of rare and endangered plants in Santa Clara County listed in the California Native Plant Society's most recent version of its Inventory of Rare and Endangered Species. The complete list is included in Appendix C. The list includes two species ranked 1A (Presumed Extinct in California); 57 species ranked 1B (Rare, Endangered); two species ranked 2 (Endangered in California); 3 species ranked 3 (Needs Review); and 32 species ranked 4 (Uncommon). The California Natural Diversity Database (CNDDB) has record of 59 special status plant species.

The CNDDB has records of 49 species special status wildlife species within the County, including 14 that are federally or State listed as rare or endangered (see Appendix C). The Santa Clara Valley Habitat Plan identified 41 fish and wildlife special status species that might inhabit the area covered by the Habitat Plan.

A review of the EIRs prepared for the Lehigh Permanente Quarry Reclamation Plan Amendment and the Lexington Quarry Use Permit and Expansion did not include any additional species. The Alameda Watershed Management Plan Final EIR identified one additional bird species (horned lark) not listed in these other reports.

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49 Ibid.
The County Planning Office conducted a GIS records search for three special status species (California red-legged frog, California tiger salamander, and Bay checkerspot butterfly). This mapping was used in assessing impacts to special status species.

4. Regulatory Setting

The following sections outline the regulatory framework within which the proposed project would be evaluated, including descriptions of relevant policies and legislation, as well as agencies which have jurisdiction that is relevant to this EIR.

Federal Regulations

1. Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973, as amended, provides the regulatory framework for the protection of plant and animal species (and their associated critical habitats), which are formally listed, proposed for listing, or candidates for listing as endangered or threatened under the FESA. The act has four major components: provisions for listing species; requirements for consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries); prohibitions against “taking” of listed species; and provisions for permits that allow incidental “take.” The law also discusses recovery plans and the designation of critical habitat for listed species. Both the USFWS and the NOAA Fisheries share the responsibility for administration of the law. During the CEQA review process, each agency is given the opportunity to comment on the potential of the proposed project to affect listed plants and animals.

2. Clean Water Act Section 404 & 401

The Army Corps of Engineers and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act (33 U.S.C. 1344). Waters of the United States include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds as defined in Title 33 CFR Part 328.3(a). Activities in waters of the United States regulated under Section 404 include fill for development, water resource projects (such as dams and levees), infrastructure developments (such as highways and airports) and mining projects. Section 404 of the Clean Water Act requires a federal license or permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

Section 401 of the Clean Water Act (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge would comply with the applicable effluent limitations and water quality standards. This is obtained from the state in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency that has jurisdiction over the affected waters at the point where the discharge originates or would originate. A certification obtained for
the construction of any facility must also pertain to the subsequent operation of the facility. The responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs).

3. **U.S. Army Corps of Engineers**

The Army Corps has jurisdiction over alteration of Waters of the U.S., including territorial seas, tidal waters, and non-tidal waters. In the absence of wetlands, tidal waters are defined by “ordinary high water marks”. In the presence of adjacent wetlands, jurisdiction also covers the extent of the wetlands, or which the corps is the chief federal steward. As such, they have direct jurisdiction over activities which would alter fresh water wetlands (marshlands, tidelands and vernal pools) pursuant to Section 404 of the Clean Water Act. Wetlands are habitats with soils which are intermittently or permanently saturated or inundated. The resulting anaerobic conditions support plant species known as hydrophytes which show a high degree of fidelity to such soils. Wetlands are identified by the presence of hydrophilic vegetation, hydric soils (soils intermittently or permanently saturated by water), and wetland hydrology according to methodologies outlined in the 1987 *Corps of Engineers Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region*. In locations where wetlands are present, a jurisdictional study is required. In cases where the wetland acreage to be filled is small and no sensitive, rare, or endangered species occur in the area, it is possible that filling would be authorized under certain Nationwide Permits. These Nationwide Permits apply in limited circumstances where the Corps has determined that the fill would not constitute a significant impact on the environment if carried out according to the limitations and conditions of the pertinent Nationwide Permit.

If the proposed fill is not authorized under a Nationwide Permit, the applicant would be required to obtain approval under the individual permit program administered by the Corps under Section 404. When an individual permit is required, the Corps analysis would include a determination of whether the project is “water dependent.” The analysis per Section 404(b)(1) must include an analysis of practical alternatives to filling of wetlands. If the Corps authorizes a permit, it can require mitigations for the loss of jurisdictional wetlands. The Corps is required to consult with the U.S. Fish and Wildlife Service, NMFS, the EPA, and California Department of Fish and Wildlife in carrying out its discretionary authority under Section 404. No permit can be issued until the RWQCB issues a certification (or waiver of such certification) that the proposed activity would meet State water quality standards. If an applicant is able to demonstrate that the proposed filling of wetlands is necessary and that there is no practicable alternative to this filling, then the project mitigation plan would be reviewed by the U.S. Fish and Wildlife Service in relation to their mitigation policies.

4. **U.S. Fish and Wildlife Service**

The U.S. Fish and Wildlife Service (FWS) administers the Federal Endangered Species Act (ESA) and the Marine Mammal Protection Act. The FWS operates under a number of statutory and administrative authorities. Its basic responsibilities concern migratory birds, anadromous fish, and endangered species. If a project involves a “take” of a federally listed species, then the FWS must approve the permit for this “taking.” “Take” is
defined by the ESA as harassing, harming, pursuing, shooting, wounding, trapping, capturing, or collecting any listed wildlife species. Take may include significant habitat modification or degradation death of or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter.

Take incidental to an otherwise lawful activity may be authorized by one of two procedures. If a federal agency is involved with the permitting, funding or implementing of the project, then initiation of formal consultation between that agency and USFWS, pursuant to Section 7 of the ESA, is required if it is determined that the proposed project may affect a federally listed species. Such consultation would result in a biological opinion that addresses anticipated effects of the project on listed and proposed species and may authorize a limited level of incidental take. If a federal agency is not involved with the project, then an "incidental take" permit pursuant to Section 10(a) of the ESA should be obtained.

The USFWS is an advisory agency to the Army Corps on Section 404 and Section 10 projects. The USFWS would review mitigation plans for these projects. The USFWS identifies four different resource categories with criteria and mitigation goals for each. The Fish and Wildlife Service would review the resources on a site and assign a category to each. Each category has a specific set of mitigation requirements.

5. **National Oceanic and Atmospheric Administration–Fisheries**

NOAA-Fisheries administers the Federal Endangered Species Act and the Marine Mammal Protection Act as they pertain to marine and anadromous species. NOAA-Fisheries also advises the Army Corps of Engineers on Section 7 and Section 404 permits for projects that could affect fish habitat.


The Federal Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.), Title 50 Code of Federal Regulations (CFR) Part 10, prohibits taking, killing, possessing, transporting, and importing of migratory birds, parts of migratory birds, and their eggs and nests, except when specifically authorized by the Department of the Interior. As used in the act, the term “take” is defined as meaning, “to pursue, hunt, capture, collect, kill or attempt to pursue, hunt, shoot, capture, collect or kill, unless the context otherwise requires.” With a few exceptions, most birds are considered migratory under the MBTA. Disturbance that causes nest abandonment and/or loss of reproductive effort or loss of habitat upon which these birds depend would be in violation of the MBTA.

The Bald Eagle Protection Act (16 U.S.C. 668) was passed in 1940 to protect bald eagles and was later amended to include golden eagles. Under the act it is unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, their parts, products, nests, or eggs. Take includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing eagles.
State of California Regulations

1. California Endangered Species Act

The State of California enacted two laws similar to the Federal Endangered Species Act: the California Native Plant Protection Act (NPPA) of 1977 and the California Endangered Species Act (CESA) of 1984. The second expanded upon the first, and enhanced legal protection for plants, but the NPPA remains part of the California Fish and Game Code. To align with the Federal Endangered Species Act, CESA created the categories of “threatened” and “endangered” species. It converted all “rare” animals into the CESA as threatened species, but did not do so for rare plants. Thus, these laws provide the legal framework for protection of California-listed rare, threatened, and endangered plant and animal species. The California Department of Fish and Wildlife implements both the NPPA and CESA, and its Wildlife and Habitat Data Analysis Branch maintains the CNDDB, a computerized inventory of information on the general location and status of California’s rarest plants, animals, and natural communities. During the CEQA review process, the CDFW is given the opportunity to comment on the potential of the proposed project to affect listed plants and animals.

2. Fully Protected Species

The classification of “fully protected” was the CDFW’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The Fish and Game Code sections (fish at §5515, amphibians and reptiles at §5050, birds at §3511, and mammals at §4700) dealing with “fully protected” species state that these species “...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species, ” although take may be authorized for necessary scientific research. This language makes the “fully protected” designation the strongest and most restrictive regarding the “take” of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFW to authorize take resulting from recovery activities for State-listed species.

3. Species of Special Concern

Species of special concern are broadly defined as animals not listed under the FESA or CESA, which are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing or because they historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFW, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA during project review.
4. Porter-Cologne Water Quality Control Act

Waters of the State are defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The RWQCB protects all waters in its regulatory scope, but has special responsibility for isolated wetlands and headwaters. These waterbodies have high resource value, are vulnerable to filling, and may not be regulated by other programs, such as Section 404 of the Clean Water Act. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require an Army Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to Waters of the State, the RWQCB has the option to regulate such activities under its State authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

5. California Fish and Game Code

According to Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except English sparrows (*Passer domesticus*) and European starlings (*Sturnus vulgaris*). Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey). Section 3513 essentially overlaps with the MBTA, prohibiting the take or possession of any migratory non-game bird. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “take” by the CDFW.

Streams, lakes, and riparian vegetation essential as habitat for fish and other wildlife species are subject to jurisdiction by the CDFW under Sections 1600-1616 of the California Fish and Game Code. A 1602 Lake and Streambed Alteration Agreement is generally required for any activity that would substantially divert the natural flow of a stream, substantially alter its bed or bank, use any material from the streambed, or deposit material into a stream or lake. Such an agreement would usually include a requirement that there be no net loss of wildlife habitat values or that lost acreage would be replaced. Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from the CDFW.

6. Sensitive Vegetation Communities

Sensitive vegetation communities are natural communities and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These resources have been defined by federal, State, and local conservation plans, policies or regulations. The CDFW ranks sensitive communities as “threatened” or “very threatened” and keeps records of their occurrences in its CNDDB. Sensitive vegetation communities are also identified by CDFW on its List of California Natural Communities recognized by the CNDDB. Impacts to sensitive natural communities and habitats identified in local or regional plans, policies, or regulations, or by federal or State agencies, must be considered and evaluated under CEQA (CCR: Title 14, Div. 6, Chap. 3, Appendix G).
7. **Regulations for Oak Woodlands Protection**

The State Public Resources Code (Section 21083.4) states that if a County determines that a project in its jurisdiction may result in a conversion of oak woodland that would be considered significant under CEQA, then mitigation for this impact is required. The mitigation can include 1) conservation of oaks on the site; 2) replanting oaks (can be used for a maximum of 50 percent of the required mitigation); 3) contribution to the Oak Woodlands Conservation Fund; and/or 4) other mitigations developed by the County.

8. **Regulations for Timberland Conversion**

Removal of trees and converting forestland to alternative uses requires CAL FIRE approval of a Timberland Conversion Permit. An approved Timber Harvest Plan is required to conduct the conversion activities (in accordance with Subchapter 7, Article 2 of the *Forest Practice Rules*). The Harvest Plan remains in force for 3 years, with up to two 2-year extensions currently allowed.

**County Plans and Policies**

1. **Santa Clara County General Plan (1994)**

Several policies and goals in the Santa Clara County General Plan (1994) provide for the protection of biotic resources. Resource Conservation Policies and Implementation measures relevant to the Project include:

**C-RC 2.** The County shall provide leadership in efforts to protect or restore valuable natural resources, such as wetlands, riparian areas, and woodlands, and others:
   a. County-owned lands; and
   b. multi-jurisdictional endeavors.

**R-RC 19.** Habitat types and biodiversity within Santa Clara County and the region should be maintained and enhanced for their ecological, functional, aesthetic, educational, medicinal, and recreational importance.

**R-RC 20.** Strategies and policies for maintaining and enhancing habitat and biodiversity should include the following:
   1. Improve current knowledge and awareness of habitats and natural areas.
   2. Protect the biological integrity of critical habitat areas.
   3. Encourage habitat restoration wherever possible.
   4. Evaluate the effectiveness of project mitigations as required under CEQA.

**R-RC 26.** Within wetlands areas, allowable uses shall be limited to those which cause little or no adverse impacts... {the policy goes onto list a variety of wetland habitats}.

**R-RC 31.** Natural streams, riparian areas, and freshwater marshes shall be left in their natural state providing for percolation and water quality, fisheries, wildlife habitat, aesthetic relief, and educational or recreational uses that are environmentally compatible. Streams which may still provide spawning areas for anadromous fish species should be protected from pollution and development impacts which would
degrade the quality of the stream environment.

**R-RC 32.** Riparian and freshwater habitats shall be protected through the following general means: a. setback of development from the top of the bank; b. regulation of tree and vegetation removal; c. reducing or eliminating use of herbicides, pesticides, and fertilizers by public agencies; d. control and design of grading, road construction, and bridges to minimize environmental impacts and avoid alteration of the streambed and stream banks (free span bridges and arch culverts, for example); and e. protection of endemic, native vegetation.

**R-RC 37.** Lands near creeks, streams, and freshwater marshes shall be considered to be in a protected buffer area, consisting of the following: 1. 150 feet from the top bank on both sides where the creek or stream is predominantly in its natural state; 2. 100 feet from the top bank on both sides of the waterway where the creek or stream has had major alterations; and 3. In the case that neither (1) nor (2) are applicable, an area sufficient to protect the stream environment from adverse impacts of adjacent development, including impacts upon habitat, from sedimentation, biochemical, thermal and aesthetic impacts.

**R-RC 38.** Within the aforementioned buffer areas, the following restrictions and requirements shall apply to public projects, residential subdivisions, and other private nonresidential development: a. No building, structure or parking lots are allowed, exceptions being those minor structures required as part of flood control projects. b. No despoiling or polluting actions shall be allowed, including grubbing, clearing, unrestricted grazing, tree cutting, grading, or debris or organic waste disposal, except for actions such as those necessary for fire suppression, maintenance of flood control channels, or removal of dead or diseased vegetation, so long as it would not adversely impact habitat value. c. Endangered plant and animal species shall be protected within the area.

**R-RC 39.** Within areas immediately adjacent to the stream buffer area, new development should minimize environmental impacts on the protected buffer area, and screening of obtrusive or unsightly aspects of a project should be considered as a means of preserving the scenic value of riparian areas.

**R-RC 40.** Where new roads, clustered residential development, or subdivisions are proposed in proximity of streams and riparian areas, they should be designed so that:
  a. riparian vegetation is retained;
  b. creeks and streams remain open and unfenced; and
  c. there is adequate separation of new roads and building sites from the stream environment.

**R-RC 41.** Where trails and other recreational uses are proposed by adopted plans to be located in the vicinity of streams and riparian areas or reservoirs, trail alignments and other facilities should be placed on the fringe of the riparian buffer area or at an appropriate distance to avoid disturbance of the stream or vegetation.
  1. Environmental impacts from development or use of the facility shall be effectively mitigated.
  2. Fencing should not restrict access by wildlife to the stream environment.
**R-RC 43.** Large scale grading and clearing of land should not be allowed if it will significantly degrade valuable habitat or impair surface water quality.

**R-RC 47.** Impacts from new development on woodland habitats should be minimized by encouraging:
- a. clustering of development to avoid critical habitat areas, where clustering is permitted;
- b. inclusion of important habitat within open space areas for projects requiring open space dedication;
- c. siting and design of roads, utility corridors and other infrastructure to avoid fragmentation of habitat; and
- d. acquisition or avoidance of critical habitat areas.

**R-RC 49.** Retention and planting of native plant species shall be encouraged, especially for landscape uses.

**R-RC 53.** Restoration of habitats should be encouraged and utilized wherever feasible, especially in cases where habitat preservation and flood control, water quality, or other objectives can be successfully combined.


In accordance with the Oak Woodlands Conservation Act, Santa Clara County created the *Santa Clara County Planning Office Guide to Evaluating Oak Woodlands Impacts* (last updated November 18, 2008). According to the County’s guidelines, a land development project is considered to have a significant direct impact on oak woodlands if the project would result in a decrease of 0.5 acre or more of native oak canopy within oak woodland on the project site. The County requires mitigation measures for significant impacts to oak woodlands, which are based on the mitigation measures required under Public Resources Code §21083.4:

**A) Planting Replacement of Oak Trees.** Pursuant to Public Resources Code §21083.4, the planting of oaks shall not fulfill more than 50 percent of the mitigation requirement for the project. Tree replacement can be dependent upon the size of the canopy of the removed.

3. **County of Santa Clara Tree Ordinance**

The County of Santa Clara Tree Preservation and Removal Ordinance (County Code, §C16.1 to §C16.17) serves to protect all trees having a trunk that measures 37.7 inches or more in circumference (12 inches diameter) at the height of 4.5 feet above the ground or immediately below the lowest branch, whichever is lower. In the case of multi trunk trees, a trunk size of 75.4 inches in width is considered significant to the community or recommended by the historic commission can be designated as a heritage tree and, therefore, deemed protected and preserved. A permit is not required for tree removal necessary to carry out building site approval or other land use application already approved by the County. However, the number of trees removed must be established as the minimum number necessary to carry out the building or grading action.
4. **Single Building Site Review**

As described in the introduction to Chapter 4.0, the County requires building site approval (BSA) prior to development in any zoning district except in that portion of the "AR" Agricultural Ranchland zoning district located east of Highway. Because the BSA is a planning entitlement, the County has the authority to conduct CEQA review of the project if there is a reasonable possibility that it would adversely affect sensitive biological resources.

5. **Santa Clara Valley Water Resources Protection Collaborative**

The Santa Clara Valley Water Resources Protection Collaborative (Water Collaborative) has prepared the *Guidelines & Standards for Land Use Near Streams*. The Guidelines and Standards were developed as part of a cooperative decision-making process known as the Santa Clara Valley Water Resources Protection Collaborative (Collaborative). All of the cities, the County, the Santa Clara Valley Water District, citizen, business, agriculture and community groups in Santa Clara County are members of the Collaborative. The Guidelines and Standards are designed to address land use activities near streams and to protect surface and groundwater quality and quantity in Santa Clara County. The Guidelines and Standards are intended to be used for the purposes of development review of proposed land use activities for new development, major redevelopment and where appropriate, single family units.

The report includes detailed guidelines and standards for:

- Slope stability for new construction near streams;
- Erosion prevention and repair;
- Drainage and outfalls;
- Utility construction;
- Trail construction;
- Septic system design (leach field setback 100 feet from top of bank, 50 feet from swale, 200 feet from high water mark of reservoir, prohibited in 10-year floodplain or areas observed to flood from field observations);
- Groundwater protection; and
- Flood protection

Design guides and recommendations are provided for homeowners planning to construct a new residence.

6. **Water Management Initiative**

In preparing the guidelines described in the previous subsection, the Water Collaborative used data from the Watershed Stewardship Plans prepared under the aegis of the Watershed Management Institute, which is a collaborative group of local and regional public agencies, resource conservation and agricultural groups, professional and trade organizations, business and industrial sectors, and the general public. Currently, WMI members are conducting a scientific watershed assessment to document the basin's

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7. Comprehensive Water Resources Management Plan

The Santa Clara Valley Water District has adopted a Comprehensive Water Resources Management Plan that has goals to provide high quality water to the public, provide for flood protection, to maintain good water quality in streams and the bay, and to improve the quality of life by providing trails, open space, and water resources management. The plan lists more detailed objectives for realizing these goals and detailed strategies for meeting the objectives.

California Rare Plant Ranks

Regional committees made up of professional botanists review current status information and recommendations for changes made by the California Natural Diversity Database of CDFW and the CNPS, and comment on whether changes are warranted. Changes are made if there is a consensus that this is warranted. In April 2011 the California Native Plant Society (CNPS) officially changed the name “CNPS List” to “California Rare Plant Rank” (CRPR). The definitions of the ranks and the ranking system have not changed.

California Rare Plant Ranks include the following categories:

1A. Presumed extinct in California
1B. Rare, threatened, or endangered in California and elsewhere
2. Rare, threatened, or endangered in California, but more common elsewhere
3. Plants for which more information is needed
4. Plants of limited distribution – a “watch” list

Additionally, endangerment codes are assigned to each taxon as follows:

- Seriously endangered in California (over 80 percent of occurrences threatened/high degree of immediacy of threat).
- Fairly endangered in California (20-80 percent occurrences threatened).
- Not very endangered in California (<20 percent of occurrences threatened or no current threats known).

Plants designated CRPR 1A, 1B, and 2 may qualify for State listing, and are given special consideration under CEQA during project review. Although plants designated CRPR 3 and 4 have little or no protection under CEQA, they are usually included in the project review for completeness.

Habitat Conservation Plans

Habitat Conservation Plans (HCP) are plans prepared under Section 10(1)(1)(b) of the federal Endangered Species Act. The Act provides for partnerships with non-federal

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51 These reports can be accessed at: http://www.scbwmi.org/index.htm
52 The plan can be accessed at: file://localhost/ttp://www.valleywatercompplan.org;
agencies to conserve the ecosystems upon which listed species depend, ultimately contributing to their recovery. HCPs are planning documents required as part of an application for an incidental take permit. They describe the anticipated effects of the proposed taking; how these impacts will be minimized or mitigated; and how the HCP is to be funded. Once adopted, the HCP allows the permit holder to legally proceed with an activity that would otherwise result in the unlawful take of a listed species.

1. Santa Clara Valley Habitat Plan (HCP)

The Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (hereafter referred to as the HCP) project is a regional partnership between six Local Partners (the County of Santa Clara, Santa Clara Valley Transportation Authority (VTA), Santa Clara Valley Water District, and the Cities of San José, Gilroy and Morgan Hill) and two Wildlife Agencies (the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service). The County in conjunction with five cites developed a Draft HCP covering 520,000 acres — or about 62 percent — of the County. Much of the rural unincorporated lands within the hillsides of the County are included. Lands not covered include the cities (and their Spheres of Influence) of Milpitas, Santa Clara, Sunnyvale, Mountain View, Palo Alto, Los Altos, Los Altos Hills, Cupertino, Saratoga, Campbell, Monte Sereno, and Los Gatos; the baylands at the north end of the City of San José; the unincorporated hills west of San José and the other cities listed above (north of Uvas Canyon County Park); and lands in the northeast corner of the County (the “Northeast County”) and almost the entire “Calaveras Reservoir” watersheds shown on Figure 3.3-1.

A Draft HCP and a Draft EIR/EIS was prepared and released for review in December 2010. Proposed Revisions to the Draft Habitat Conservation Plan: A Framework for Preparing a Final Plan was prepared in September 2011 in response to public review of the Draft HCP, as well as an Economic Impact Analysis of the Draft Santa Clara Valley Habitat Plan (Urban Economic, August 31, 2011). The Final EIR/EIS was released in August of 2012. The Santa Clara County Board of Supervisors certified the EIR and adopted the revised HCP on October 9, 2012. As of the public release of this Draft EIR, the Santa Clara County HCP has not yet been approved by all local partners.

The plan recommends a coordinated approach to land use and habitat protection with a principal objective of addressing habitat needs for 11 special status animal species and 10 special status plant species. The plan identifies land that provides important habitat for endangered and threatened species. The land preservation is designed to mitigate for the environmental impacts of planned development, public infrastructure operations, and maintenance activities as well as to enhance the long term viability of endangered species. The plan provides a framework for the Local Partners and landowners to complete projects while protecting at-risk species and their essential habitats.

As part of implementation of the plan, resource agencies responsible for permitting land-disturbing activities (including the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service) would issue permits to local agencies to allow limited impacts to endangered species. Local agencies would then administer the endangered species permits for specific projects rather than having permits issued by a state and/or federal agency. Developers would be required to pay fees to obtain the permit. The fees would vary depending on the type of land use.
Among the activities that are covered (i.e., their impacts would be mitigated by measures recommended in the plan) under the HCP is new rural residential development within hillside areas that is consistent with the County’s General Plan. Rural development in the southern valley floor area, mainly between Morgan Hill and Gilroy, is not covered in the final plan. This area was removed from the most current draft of the HCP in recognition that this area did not contain substantial habitat critical to the HCP-covered species. In the future, if a project in those areas would affect sensitive habitat, then the owner would have the option to be covered by the plan.

In order for activities to be covered under the HCP, they are required to adhere to programmatic conditions of approval that avoid direct impacts to certain legally protected plant and wildlife species; maintain hydrologic conditions; avoid wetlands; avoid valley oak and blue oak woodlands (or minimize effects through mitigation); and comply with a list of conditions to avoid adversely affecting the 21 species covered under the HCP. The Draft Plan identifies a series of reserves (49,453 acres) that would provide protected habitat for those species.

2. **Three Creeks Habitat Conservation Plan**

Santa Clara Valley Water District (SCVWD) is in the process of preparing the Three Creeks HCP, which would cover three northern Santa Clara County watersheds:

1. Coyote Creek Watershed (Coyote, Penitencia, San Felipe, and Packwood creeks);
2. Guadalupe River Watershed (Guadalupe, Calero, Alamitos, and Los Gatos creeks and the mainstem Guadalupe River); and
3. Stevens Creek Watershed.

The Three Creeks HCP addresses take of listed species while allowing appropriate and compatible growth and development in accordance with applicable laws. The Three Creeks HCP addresses certain covered activities in the upper Los Gatos Creek and Stevens Creek areas (the Western Study Area for the Three Creeks HCP), whereas these areas are not included in two alternatives being considered.

3. **Alameda Watershed Habitat Conservation Plan**

The San Francisco Public Utilities Commission (SFPUC) began an HCP process for the Alameda Watershed in 2003, and is currently in the process of completing the HCP and the associated environmental review. The Alameda Watershed HCP Study Area encompasses 47,800 acres, including approximately 13,000 acres in Santa Clara County. The Study Area contains two reservoirs—the San Antonio Reservoir to the north and the Calaveras Reservoir to the south. Interstate 680 and Route 84 meet in the northern portion of the watershed, and Calaveras Road extends north-south down the center. Milpitas and Fremont lie to the west and Pleasanton and Livermore are located to the northeast.

The Alameda Watershed Habitat Conservation Plan is intended to mitigate impacts that ongoing SFPUC operations, maintenance, and other activities have on plants and wildlife within the Alameda Watershed. The Alameda Watershed HCP would enable the SFPUC to implement the operation and maintenance activities set forth in the Alameda Watershed Management Plan. Many of the species proposed for incidental take
coverage in the Alameda Watershed HCP also are covered in the Habitat Plan. Twelve wildlife and five plant species are proposed for coverage.

**B. Potential Impacts and Mitigation Measures**

1. **Criteria Used For Determining Impact Significance**

The CEQA Guidelines provide that a project would have a significant impact on biological resources if it would:

1. Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service.

2. 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 Wildlife or the U.S. Fish and Wildlife Service.

3. 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, etc.) or tributary to an already impaired water body, as defined by section 303(d) of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.

4. Have a substantial adverse effect on oak woodland habitat as defined by Oak Woodlands Conservation Law (conversion/loss of oak woodlands) (Public Resource Code 21083.4).

5. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

7. Conflict with any local policies or ordinances protecting biological resources, including:
   - Tree Preservation Ordinance [Section C16]
   - Wetland Habitat [GP Policy, R-RC 25-30]
   - Riparian Habitat [GP Policy, R-RC 31-41]

2. **Direct Impacts**

Impacts to biological resources may occur during the construction of OWTS, which typically involves the excavation of trenches and other ground-disturbing work that can cause the erosion of soil, habitat loss, and displacement of plants and/or wildlife. Additionally, pollutants transported off-site via soil erosion and stormwater runoff may
degrade the quality of downstream receiving waters, especially if best management practices (BMPs) for standard stormwater and erosion controls are not followed or are not successful.

Operation of a properly functioning OWTS generally would have no direct effects on terrestrial biological resources, but could contribute to degradation of water quality in sensitive freshwater ecosystems (e.g., via nutrient enrichment), which in turn could adversely affect aquatic habitat and the species that occupy or depend on the aquatic system.

Impacts on aquatic systems from OWTS operation would vary substantially because of many factors such as the number or volume of OWTS discharges, proximity of OWTS to surface waters, soil substrate and chemistry, underlying geology, groundwater conditions, system design and operation, and the characteristics and sensitivity of the receiving waters. Due to the relatively small amount of flow and constituent loadings, a properly sited and operating individual OWTS has minimal chance of causing significant changes to the aquatic environment and biological resources. Potential concerns increase for systems with larger flows, as well as the collective contribution from a large number of OWTS in a given area. Surface discharges from failing OWTS are another concern.

**Wastewater Constituents of Concern**

Typical wastewater constituents of concern and their effects on water quality and public health are detailed and discussed in Section 4.2, Hydrology and Water Quality. The following discusses only the constituents that could indirectly or directly affect wildlife and/or their habitat.

1. **Major Constituents of Concern**

**Pathogens**

Wildlife are susceptible to pathogenic microorganisms spread through direct or indirect contact with or ingestion of contaminated water or food, or via an intermediary organism. Some human pathogens found in sewage and stormwater runoff can also cause disease in wildlife, although there are no documented cases connected to OWTS.

**Biochemical Oxygen Demand**

Dissolved oxygen is a basic requirement for a healthy aquatic ecosystem. Most fish and beneficial aquatic insects take in oxygen dissolved in the water column. The dissolved oxygen can be depleted by organic matter contained in sewage discharges. The organic matter exerts a biochemical oxygen demand (BOD), as it consumes oxygen during the decomposition process. Some aquatic organisms are adapted to low oxygen conditions, but most desirable fish species (such as trout and salmon) suffer if dissolved oxygen concentrations fall too low. In a properly sited and operating OWTS, the wastewater BOD is readily and completely assimilated in the soil within a few feet of the dispersal system, and is removed to an even greater extent where supplemental treatment
systems are used. BOD is a major constituent, but a minor receiving water quality concern for OWTS.

Dissolved Nutrients

Nitrogen is a naturally occurring element and a nutrient essential to all forms of life. Nitrogen is abundant in the atmosphere and dissolves in water as the gas N₂; but biologically available forms of nitrogen (ammonium, nitrate and organic nitrogen) are often in limited supply in natural ecosystems. Human activities, including sewage discharges and soil erosion, can increase the abundance of nitrogen in the aquatic environment and contribute to excessive growth of algae and macrophytes. Large amounts of algae growth can lead to severe depletion of water oxygen reserves, resulting in fish kills, decreases in zooplankton populations that support fish and other aquatic species, and release of decomposition-related gases, such as carbon dioxide, methane, hydrogen sulfide, and toxins.

Phosphorus, like nitrogen, is an important component for living cells. It is generally found in low concentrations in nature, and is considered a limiting nutrient for plant growth. Excessive inputs of phosphorus, e.g., from sewage discharges, can stimulate aquatic plant growth in aquatic systems, particularly fresh waters which are typically phosphorus limited. While not toxic, over enrichment with phosphorus may also lead to excessive algae growth and oxygen depletion in some aquatic systems.

Total Suspended Solids and Turbidity

Turbidity and total suspended solids (TSS) are naturally present in water and generally contain minerals and organic molecules that provide ecosystem benefits such as nutrients. However, human activities (including the construction or surface failures of OWTS) may increase TSS along with associated pathogens, excessive nutrients or other contaminants. Additionally, sediments may physically block sunlight and settle out and smother benthic macroinvertebrates, fish and amphibian eggs and aquatic plants. Similar to BOD, in a properly sited and operating OWTS the soil readily filters and removes suspended solids within a short distance of the dispersal system and additionally through supplemental treatment systems. Therefore, the significant TSS component of OWTS wastewater is a minor receiving water quality concern.

2. Other Constituents of Concern

Toxic Organic Compounds

A number of organic compounds, such as pesticides and their by-products, may be found in contaminated waters, and OWTS effluent is one source that can introduce some of these compounds into the soil and aquatic environment. These compounds may be directly absorbed across an animal’s skin or through a fish’s gills as it extracts dissolved oxygen from water. In high concentrations they may cause direct mortality.

54 Ibid.
55 Ibid.
56 Ibid.
Lower concentrations may result in deformities in fish and other aquatic wildlife. With continued exposure over time some contaminants will accumulate in an animal’s body, and may result in a reduced growth rate, reduced chances for successful reproduction, impairment of physiological processes, and reduced life spans.\textsuperscript{57}

\textbf{Metals}

Mercury and lead are known to have deleterious effects on wildlife as well as humans. Metals are naturally occurring minerals, but their concentrations and distribution in the environment can be affected by human activities such as increasing stormwater runoff, air pollution and municipal and industrial waste discharges. For the most part, OWTS effluent is not a primary pathway for metals to enter the ecosystem.\textsuperscript{58}

\textbf{Endocrine-Disrupting Compounds}

Endocrine-disrupting compounds (EDCs) are unique compounds that have the ability to interact with hormone transport proteins and to disrupt hormone metabolism. Examples of environmental pollutants with endocrine-disrupting properties are some organochlorine pesticides, phthalates, alkylphenolic compounds, and PCBs. Personal care products, pharmaceuticals, plastics, synthetic hormones, and household solvents have been implicated as EDCs and are the more common EDCs likely to be found in OWTS effluent. This emerging area of research has many unknowns but has been a topic of more intensive research since the 1990s. The effects EDCs pose to the long-term health of wildlife and fisheries are still largely unknown.\textsuperscript{59}

\textbf{Special Status Species}

\textbf{Impact 4.3-A \quad Construction of alternative on-site wastewater systems allowed by the proposed Ordinance could damage habitat used by Special Status Species and/or harm or kill these species.}

Most of the special status plant species listed in Appendix C of this EIR could be adversely affected by installation of new OWTS (some of the species are aquatic or salt flat species that would not be directly affected). Populations of special status species of plants could be directly eliminated during construction of the OWTS, or construction could alter the drainage of the area adversely affecting populations dependent on existing drainage patterns. The alternative types of OWTS allowed under the proposed Ordinance generally require less space (ranging from 2,000 to 10,999 square feet as compared to the typical disturbance of 5,000 to 25,000 square feet for a standard system with leachfields). Nevertheless, there is the potential that species of special status plants may occupy the area developed for the OWTS. Direct effects on wildlife are less likely as the disturbance area for constructing an OWTS is relatively small, so that most species would be able to move away from the disturbance area and not be killed or injured. Construction would result in some noise, but this short-term impact would not be expected to cause death or injury to special status species of wildlife. The

\begin{itemize}
\item \textsuperscript{57} SWRCN, 2012.
\item \textsuperscript{58} EDAW, 2008.
\item \textsuperscript{59} SWRCB, 2012.
\end{itemize}
amount of habitat lost by installation of new OWTS would not be expected to significantly affect special status species of wildlife.

To provide additional information on the potential for future development to affect special status species, a review of the County’s GIS data on these species was conducted. GIS data was available for three species (see maps in Appendix C). The GIS data shows that the Bay checkerspot butterfly critical habitat centers on Coyote Ridge in the Coyote Creek watershed with additional critical habitat to the west in the same watershed and the Llagas San Martin, Pacheco Creek, and Alamitos Creek watersheds. Approximately 50 vacant lots are included in this critical habitat, and 10-15 more lots are in habitat where occurrence of these species is possible. All these lots would be subject to design review and/or BSA review, which would require additional environmental review under CEQA to identify and mitigate site specific impacts. The Santa Clara Valley Habitat Plan (which has been approved by the County) provides mitigation for special status species for development of these lots.

Critical habitat for the California tiger salamander is primarily in the watersheds of Alamitos Creek, Llagas San Martin, Llagas East Gilroy, Calaveras Reservoir, and in the western portion of the Coyote Creek watershed. All these vacant parcels would be subject to design review and/or BSA review except for about 15-20 vacant lots in the Calaveras Reservoir watershed (east of Joseph D. Grant Park) and 5 lots in the Coyote Creek watershed. In addition, with adoption of the Santa Clara Valley Habitat Plan, mitigation would be provided for development of these parcels where sensitive habitat would be affected under that plan. There are a few (i.e., less than 15) additional lots in Llagas San Martin watershed and in the Coyote Creek watershed) where this species is listed as present or possible in the CNDDB database. All these vacant parcels would be subject to design review and/or BSA review.

Critical habitat for the California red-legged frog includes much of the western and southern portions of the Coyote Creek watershed, most of the Pacheco Creek watershed, and a small amount of the western Calaveras Reservoir watershed (about 40 vacant lots). Most of these parcels are not subject to design review or BSA review. They would be subject to review if a grading permit was needed. As described in the Setting section, the Army Corps of Engineers requires Section 404 permits for filling of wetlands, the State can regulate the filling of wetlands where an Army Corps permit is not required, the California Department of Fish and Wildlife requires 1602 Streambed Alteration Agreements for projects affecting streams and riparian vegetation, and the Water Collaborative provides countywide regulations for development near streams. Given these existing legal protections and regulations, it is not expected that alternative OWTS would be installed in wet areas, which are the most critical habitat for this frog. There are a number of existing or proposed regulations that would address these potential impacts to special status species. They include:

1. *Migratory Bird Treaty Act.* Nesting special status birds are provided protection under the Migratory Bird Treaty Act. All landowners are required to abide by the regulations in this act regardless of whether they do or do not have a development approval from the County.
2. **Endangered Species Acts.** Species that are listed as federally Threatened or Endangered are protected under the FESA. The CESA provides protection for California-listed rare, threatened, and endangered plant and animal species.

3. **Santa Clara Valley Habitat Plan.** The Santa Clara Valley Habitat Plan provides mitigation for the 21 species covered under that plan for much of the County where there is significant development potential. Most of the area not covered under the Habitat Plan has relatively little development potential. The San Francisquito, Adobe, Permanente, Calabazas, San Tomas, Guadalupe River, Upper Los Gatos, and Alamitos Creek watersheds in the Santa Cruz Mountains area (as shown on Figure 3.3-1) are mainly west of the area covered under the Habitat Plan. There are only about 167 vacant lots (of which approximately 90 might be developable given likely other site constraints) that could be developed at buildout in this large hilly area (28,814 acres), not taking into account other potential development constraints that could lower this number. The one watershed in the Santa Cruz Mountains area not included in the Habitat Plan where there is potential for more substantial, concentrated development in a relatively small area is the Lexington Basin watershed, where the County estimates that up to 83 vacant lots could be developed under the proposed project (see the additional discussion of this area below). A third area, the northeast part of the County, is also not covered under the Habitat Plan. This includes the Northeast County watershed and much of the Calaveras Reservoir watershed. There are 73 vacant lots that could be developed if alternative OWTS are allowed in this large area (129,532 acres), not taking into account other potential development constraints that could lower this number (to approximately 40 new residences). The fourth unincorporated part of the County not proposed to be covered by the current draft HCP consists of certain areas between Morgan Hill and Gilroy and south of Gilroy (as well as one small area northwest of Morgan Hill). These areas were proposed to be covered as part of the original Draft Habitat Plan, but were dropped by the subsequent recommended revisions to the draft plan (September 2011) because they are agricultural or rural residential areas where the covered species were not expected to occur. However, if sensitive habitat is located in this area when an owner applies for future development approvals, the plan allows the owner to opt into the Plan’s coverage. It is expected that this same area would also not support many of the other special status species that have been identified as occurring in the County.

4. **Building Site Approval.** As noted in the Setting section, the County has the authority under its Building Site Approval (BSA) process to assess whether special status species may be present on a building site and to establish conditions to avoid or mitigate for impacts to said species. In reviewing applications, the County would assess applications for consistency with County General Plan policies aimed at protecting sensitive biological resources as well as compliance with State and federal laws and regulations affording protection to these species. Much of the land available for development is in the hills west and east of the Santa Clara Valley, and these are the same areas that support the most special status species (which is why the fees that would be collected under the Habitat Plan are higher for Ranchlands and Natural Lands (Zone A) than for Cultivated Agricultural Lands (Zone B) or Small Vacant Sites (Zone C).
These areas contain larger parcels where avoidance of special status species and sensitive habitats is expected to be quite feasible.

Approximately 30 percent of the vacant lots that could be developed if alternative OWTS are allowed are in the Llagas watershed (Llagas San Martin, Llagas Morgan Hill, and Llagas Gilroy subwatersheds shown on Figure 3.3-1). These three subwatersheds correspond approximately to the area where proposed coverage under the Habitat Conservation Plan (HCP) was removed as part of the 2011 recommended revisions to the draft plan unless development would affect sensitive habitat (in which case projects could opt into the plan). In recommending the revision, the HCP preparers recognized that there was not substantial risk to the covered species in this area due to past agricultural use and rural and suburban residential development.

The Lexington Basin area is another area where a relatively large amount of additional development (83 vacant lots that could be developed if alternative OWTS are allowed and other site constraints are taken into account) could be concentrated in a relatively small area (9,480 acres). A review of the Lexington Quarry EIR (located within this watershed) indicates that the following special status species were found within 5 miles of the Lexington Reservoir.\(^{60}\)

- Caper-fruited tropidocarpum (*Tropidocarpum capparideum*)
- Hairless popcorn flower (*Plagiobothrys glaber*)
- Robust spineflower (*Chorizanthe robusta* var. *robusta*)
- Loma Prieta hoita (*Hoita strobilina*)
- Robust monardella (*Monardella villosa* ssp. *globosa*)
- Metcalf Canyon jewel-flower (*Streptanthus albidus* ssp. *Albidus*)
- Smooth lessingia (*Lessingia micradenia* var. *glabrata*)
- Fragrant fritillary (*Fritillaria liliacea*)
- Santa Clara Valley dudleya (*Dudleya setchellii*)

In addition, the following species have the potential to occur in this area:

- Santa Cruz manzanita (*Arctostaphylos andersonii*)
- Brewer’s calandrinia (*Calandrinia breweri*)
- Santa Cruz Mountains pussypaws (*Calyptridium parryi* var. *hesseae*)
- Western leatherwood (*Dirca occidentalis*)
- Arcuate bush mallow (*Malacothamnus arcuatus*)
- Hall’s bush mallow (*Malacothamnus hallii*)
- Santa Cruz Mountains beardtongue (*Penstemon rattanii* var. *kleei*)
- Mt. Diablo phacelia (*Phacelia phacelioides*)
- Forget-me-not popcorn-flower (*Plagiobothrys myosotoides*)
- Hooked popcorn-flower (*Plagiobothrys uncinatus*)

There are 30 special status species of wildlife reported within about five miles of the Lexington Reservoir including:

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\(^{60}\) Data from Lexington Quarry Biotic Assessment Update. H. T. Harvey & Associates, January 2008; an appendix of *Lexington Quarry Use Permit and Expansion*, LSA, October 2009
• White tailed kite (Elanus leucurus)
• Burrowing owl (Athene cunicularia)
• Cooper’s hawk (Accipiter cooperii)
• Sharp-shinned hawk (Accipiter striatus)
• American peregrine falcon (Falco peregrinus)
• Merlin (Falco columbarius)
• Golden eagle (Aquila chrysaetos)
• Osprey (Pandion haliaetus)
• Long eared owl (Asio otus)
• Bell’s sage sparrow (Amphispiza belli)
• Bank swallow (Riparia riparia)
• Vaux’s swift (Chaetura vauxi)
• Olive-sided flycatcher (Contopus cooperi)
• Loggerhead shrike (Lanius ludovicianus)
• Yellow warbler (Dendroica petechia)
• Least Bell’s vireo (Vireo belli pusillus)
• Hoary bat (Lasiurus cinereus)
• Pallid bat (Antrozous pallidus)
• Yuma myotis (Myotis yumanensis)
• Santa Cruz kangaroo rat (Dipodomys venustus venustus)
• San Francisco dusky footed woodrat (Neotoma fuscipes annectens)
• Ringtail (Bassariscus astutus)
• California red-legged frog (Rana aurora draytonii)
• Foothill yellow-legged frog (Rana boylii)
• California tiger salamander (Ambystoma californiense)
• Western pond turtle (Emys (=Clemmys) marmorata)
• Steelhead (Central Coast ESU) (Oncorhynchus mykiss)
• Zayanta band-winged grasshopper (Trimerotropis infantilis)
• Opters longhorn moth (Adela oplerella)
• Unsilvered fritillary butterfly (Speyeria adiaste adiaste)

It is expected that most new development in this area would be within existing older subdivisions. In these areas, the habitat has already been relatively heavily disturbed as far as habitat for wildlife is concerned. It is expected that special status wildlife species would be able to avoid death or injury from construction of new OWTS. The existing regulations providing protection for sensitive species listed previously in this impact discussion apply to new development here. Absent site-specific surveys, the precise risk to special status species in this area, and all areas, remains unknown.

To summarize, a number of species of special status plants could be potentially impacted from construction of new residences using alternative OWTS as allowed under the Ordinance; wildlife species would be at substantially less risk. Much of the additional development potential occurs in hilly areas with larger parcels making avoidance of direct impacts to plants quite feasible. The possible impact would be addressed when the County conducts its review of site-specific project applications. Therefore, this impact would be less than significant, and no mitigation is required.
**Sensitive Habitat and Communities**

**Impact 4.3-B**  
Construction of additional on-site wastewater systems allowed by the proposed Ordinance could damage sensitive natural communities.

As described in the Setting section, the County supports several sensitive natural communities including oak woodlands, native grasslands, serpentine bunchgrass grassland, mixed serpentine chaparral, riparian woodlands, ponds, coastal and freshwater marsh, Central California sycamore alluvial woodland, seasonal wetlands, and serpentine seep. It is expected that oak woodlands would be most affected by construction of new OWTS.

Serpentine bunchgrass grassland (the main serpentine-related vegetation type) is found northwest of Anderson Lake along Coyote Ridge and the Silver Creek Hills. Smaller patches of serpentine bunchgrass grassland can be found in the Santa Theresa Hills, on Communications Hill, on Tulare Hill, west of Morgan Hill, and in the northeast corner of the County. There are about 11,000 acres of serpentine–related plant communities in the County. There are very few vacant parcels in the large area of serpentine habitat, and most of these parcels are large (i.e., greater than 40 acres in size). It is not expected that the Ordinance would substantially increase the number of new OWTS in this main serpentine area. However, there remains some potential for increased construction of OWTS in this area as well as in the other locations supporting serpentine communities.

Wetlands typically do not support OWTS, even alternative OWTS allowed by the proposed Ordinance (see the previous discussion of this issue in Impact 4.2-I). In addition, as described in the previous impact discussion, these wetlands are provided significant protection by the County, State and federal laws and regulations.

Native grasslands have not been mapped as they are interspersed throughout the annual grassland community. So, it is possible that additional OWTS could displace some of this community as well as the Central California sycamore alluvial woodland.

The sensitive land cover type most at risk would be oak woodlands (though only valley oak woodland type is technically identified as a sensitive land cover type, all oak woodlands are considered sensitive in this EIR given State requirements to preserve this land cover type). Oak woodland land cover types were historically more extensive and less fragmented relative to current conditions. The deep alluvial soils found throughout the lowland areas of the Santa Clara Valley formerly supported a wide range of oak forests and woodlands. Historical photos, maps, and observational accounts indicate that large areas of the Santa Clara Valley within the Coyote Watershed were dominated by valley oak woodland, all of which has been converted to urban development and agricultural uses.

Installation of additional OWTS allowed by the proposed Ordinance could result in direct removal of oaks, damage to the root systems of nearby oaks, or changes in the hydrology and water chemistry that could cause long-term mortality. However, given the small size of the OWTS, their installation would not result in removal of enough trees to

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be considered oak woodland conversion (i.e., the County’s Oak Woodlands Impact Guidelines state that a decrease of 0.5 acres of native oak canopy is required to be judged a significant impact).

The relatively small footprint of the additional OWTS allowed under the Ordinance, the few additional lots that might be developed in serpentine land cover types, existing protections for wetland communities, existing County General Plan policies aimed at protecting sensitive communities, and the ability of the County to require avoidance or mitigation for impacted sensitive communities would reduce the impact. Therefore, this impact would be less than significant, and no mitigation is required.

Pathogen Effects on Water Quality

Impact 4.3-C Use of the additional on-site wastewater systems allowed by the proposed Ordinance could release pathogens that would adversely affect biological resources.

Pathogens from OWTS would generally have to travel vertically through the soil and horizontally in groundwater before reaching surface waters. The retention, inactivation and die-off of most, if not all, pathogenic bacteria and viruses occur within 2 to 3 feet below the soil’s surface in a properly sited, designed and functioning OWTS. Therefore, the likelihood of pathogens from OWTS discharges causing substantial effects on biological resources would be low. The proposed Ordinance contains provisions for siting criteria, site evaluation, modern system design standards, qualifications for designers, contractors and service providers, and operation and maintenance requirements that are consistent with current knowledge and industry standards for proper use and management of OWTS. Nevertheless, as described under Impact 4.2-A, the potential for escape of pathogens into the environment is minimal, and at a program level this impact would be less than significant, and no mitigation is required.

Impacts on Biological Resources from Nitrogen Contamination

Impact 4.3-D Use of the additional on-site wastewater systems allowed by the proposed Ordinance could release nitrogen that would adversely affect biological resources.

High nitrogen loadings to groundwater from OWTS can contribute to nitrogen enrichment of surface waters, particularly those that are hydrologically connected to the receiving groundwater (see the previous discussion about nitrogen pollution in Impacts 4.2-B and 4.2-C). Excessive nutrient enrichment of aquatic ecosystems can in turn lead to intensive growth of algae and aquatic macrophytes (eutrophication). The consequences of this enhanced growth include reduced sunlight under water, depletion of oxygen levels in the water, a loss of habitat for aquatic plants and animals, and potential mortality of sensitive fish and benthic organisms. While it would be unlikely that the nitrogen loading contributed by a single OWTS discharge to a surface water body would excessively enrich the water with nitrogen and degrade water quality to the extent that biological resources could be affected, high densities of OWTS near a surface water body could cause such effects. The same can also be said for phosphorous; however the threat is much less because of the substantial capacity of soil to absorb phosphorous.
associated with OWTS discharges. As concluded in the previous discussions of Impacts 4.2-B and 4.2-C, this impact to water quality would be less-than-significant. Therefore, impacts on biological resources from nitrogen contamination would also be less than significant, and no mitigation is required.

**Impacts on Biological Resources from Other Constituents of Concern**

**Impact 4.3-E** Use of on-site wastewater systems allowed by the proposed Ordinance could release other constituents of concern that would adversely affect biological resources.

Other constituents of concern are known to be present in wastewater effluent, such as various heavy metals, toxic organic compound, pharmaceuticals and personal care products. For some constituents the soil properties in the dispersal areas of properly sited and functioning OWTS are generally sufficient to attenuate the contaminants, effectively limiting their ability to adversely affect biological resources. The impacts for the constituents of concern listed above, other than possible endocrine disruptors, is less than significant. With respect to pharmaceuticals, personal care products and other endocrine disruptors, there is a lack of conclusive information currently available about their occurrence and fate within OWTS effluent. Any additional analysis regarding the impact associated with discharge of these constituents from OWTS on biological resources would be speculative. Research is underway, but no further analysis can be conducted based on existing information. As concluded in Impact 4.2-D, given what is known about these pollutants and existing County programs, the impact would be less than significant, and at a program level no mitigation is required.

**Wildlife Movement and Nesting**

**Impact 4.3-F** Construction of additional on-site wastewater systems allowed by the proposed Ordinance could restrict wildlife movement and displace nesting sites.

New OWTS would be constructed below ground and would not be expected to significantly interfere with deer migration or other wildlife travel. It is possible that the new OWTS would displace existing nesting sites. Removal of active nest sites for most birds is illegal under the Migratory Bird Treaty Act or State Department of Fish and Wildlife regulations. Assuming that installers comply with these existing laws and regulations, the impact to nesting birds would be less than significant, and at a program level no mitigation is required. It is possible that installation could interfere with below-ground dens or nursery sites of wildlife. This would be a significant impact for special-status species, and these potential impacts were evaluated in Impact 4.3-A.
Conflict with Plans

Impact 4.3-G  The proposed Ordinance could conflict with adopted ordinances or plans that protect biological resources.

Installation of additional OWTS would be consistent with the County’s tree ordinance. This Ordinance does not prohibit tree removal when developing a site. Rather, it requires identification of the precise number to be removed in order to carry out grading and building.

The Santa Clara Valley HCP recommends purchase of 36,162 acres of privately-owned land for future reserves. Land would be purchased only from willing sellers. It is possible that individuals owning land that has been identified as part of a proposed reserve in the Habitat Plan would opt to develop the property and install an alternative OWTS. It is possible that the additional OWTS that could be built under the proposed Ordinance would occur on lands proposed for reserves. The plan accommodates this possibility by including an adaptive approach to allow the implementing entities to identify alternative reserve sites if there are unwilling sellers or if a site is developed before it can be purchased.

Allowing alternative OWTS would not conflict with the Santa Clara Valley HCP. By improving water quality over the long term, it would complement the Habitat Plan goals to preserve and restore ecological diversity.

A final reserve map has not been published for the Three Creeks HCP. It is expected that the Ordinance would also not be in conflict with that plan. The Alameda Watershed HCP addresses publically owned land. Because the proposed Ordinance addresses development on privately-owned land, it would have no effect on management of the public lands in the Alameda Watershed.

The proposed Ordinance would not conflict with existing or proposed ordinances and plans; therefore, there would be no impact, and no mitigation would be required.

3. Indirect Impacts

As described in the Introduction to Chapter 4, additional development could occur if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan, which would include this additional development, would have less-than-significant impacts on biological resources. The following discussions revisit that EIR analysis and at a program level review the indirect biological impacts associated with increased development activities given current regulatory requirements and environmental conditions. The level of analytic detail provided below is general, as it is unknown if and when any particular parcel would be developed.
Construction in Areas Supporting Special Status Species

Impact 4.3-H Potential new development could injure special status species or displace habitat necessary for the survival of these species.

Potential development of additional rural residences using alternative OWTS could result in harm to special status species or the habitat on which these species depend. The area disturbed and converted by residential development is larger than the area that would be disturbed when installing an OWTS on a parcel. As such, there would be additional potential for the impacts to special status species described under Impact 4.3-A. Depending upon which specific sites were developed, there could be a countywide reduction in the habitat needed for the continued existence of these species, though it is expected that by 2035 at most 115 additional lots would be developed in this sensitive habitat (the actual number of developed lots would be considerably smaller once other site constraints are taken into account). The cumulative loss of such habitat is one of the principal reasons that the County and other jurisdictions initiated the Santa Clara Valley HCP process.

As described previously under Impact 4.3-A, much of the possible new development would be on smaller lots in the southern part of the valley where there already is substantial development. Much of this area was removed from the most current draft of the HCP in recognition that this area did not contain substantial habitat critical to the HCP-covered species. In addition, it is expected that existing laws protecting rare and endangered species plus County design review and/or review of grading applications would require future homebuilders to avoid injuring special-status species and compensate for habitat losses. Therefore, this impact would be less than significant, and no mitigation is required.

Construction in Areas Containing Sensitive Habitat

Impact 4.3-I Potential new development could damage or destroy sensitive habitat.

Development of additional dwelling units would potentially result in damage to or loss of sensitive habitat and communities. The area disturbed and converted by residential development is larger than the area that would be disturbed when installing an OWTS on a parcel. As such, there is additional potential for the impacts to sensitive habitat described under Impact 4.3-B.

Development of additional residences would potentially result in loss of oak woodlands. There could also be some additional loss of native grasslands, serpentine bunchgrass grassland, mixed serpentine chaparral, riparian woodlands, freshwater marsh, Central California sycamore alluvial woodland, seasonal wetlands, and serpentine seep. There are various existing protections for these sensitive habitats and communities. The State and federal governments have regulations governing development in wetlands and riparian areas. The State and County both require mitigation for oak woodland conversion. The County General Plan has policies to protect sensitive biological resources. The County has the ability through its BSA review process to require avoidance of sensitive habitats.
Most of the areas supporting oak woodlands and serpentine grasslands are in the Diablo Range east of Santa Clara Valley with some stands of blue oak woodland and coast live oak forest on the eastern portion of the Santa Cruz Mountains (i.e., east of the coniferous forestlands). These sensitive communities are mainly located in mountainous areas of the County where many of the vacant parcels are larger than 10 acres. Development of these larger parcels would potentially remove some sensitive habitat, but much of the parcel would remain undeveloped. There are locations within these areas where there are smaller vacant parcels, such as parts of the Lexington Basin; however, this area generally has less sensitive habitat (i.e., the land cover is principally coniferous forest, though there are areas of live oak woodlands in the eastern part of the basin).

Adoption of one or more of the three HCPs being considered within the County would further reduce effects to these sensitive habitats and communities. In addition, there are several ongoing public and private efforts to purchase the title or conservation easements on many of the parcels supporting these more sensitive communities. For example, in 2008 the Nature Conservancy arranged the purchase of a conservation easement on the 28,000+-acre San Felipe Ranch in the Diablo Range. This easement provides a land connection between Henry B. Grant County Park and Henry W. Coe State Park. This as well as other Nature Conservancy-purchased easements (e.g., the Wilson Ranch) are part of a larger 1.5 million acre Mt. Hamilton project aimed at protecting biodiversity in the Diablo Range. The Bay Area Open Space Council’s Conservation Lands network project has identified much of the Diablo Range in the County as “Areas Essential to Conservation Goals.” This indicates that these sensitive areas would be high priority for future purchase of fee title or conservation easements. It is expected that more land that would be available for development under the proposed Ordinance would be protected from development within the next 20 years. As such, the development potential under the proposed Ordinance assessed in this EIR likely overstates future buildout. Future preservation of additional properties in the mountainous portions of the County would also provide additional habitat for special-status species.

These considerations plus existing County, State, and federal protections for various types of sensitive habitats would be expected to reduce the impact to a less-than-significant level. Therefore, this impact would be less than significant, and no mitigation is required.

Construction Could Affect Water Quality, Wildlife Movement, and Nesting Sites

Impact 4.3-J Potential new development could affect water quality, restrict wildlife movement, and displace nesting sites.

Additional development would potentially result in runoff of contaminants from landscaping chemicals, residues from vehicles and mechanical equipment, and other residential-generated pollutants. This could potentially impact water quality and aquatic species dependent on good water quality. New development, however, would be

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scattered over a large area, and it is not expected that runoff would significantly impact water quality in any specific river or stream.

Development would potentially result in habitat fragmentation, blocking of wildlife travel corridors, and loss of nesting and nursery habitat. Substantial north-south corridors have been protected in the Diablo Range and north-south and east-west corridors in the Santa Cruz Mountains as can be seen in the Conservation Lands Network Maps prepared by the Bay Area Open Space Council.\(^{63}\) It is not expected that additional development spread throughout the County would substantially impact regional wildlife movement. Also, many of the lots that could be developed under the Ordinance are small parcels that are in more heavily developed areas in the southern Santa Clara Valley, and development of these lots would not be expected to block significant wildlife travel corridors. Therefore at a program level, this impact would be less than significant, and at a program level no mitigation beyond compliance with existing County, State, and federal laws and regulations is required.

*Construction Could Conflict with Other Adopted Plans*

**Impact 4.3-K** Potential new development could conflict with other adopted public plans.

The proposed project could enable additional development. This additional development would occur on legal lots of record and would be consistent with existing zoning and the County General Plan land use designations. It is also expected that future development would be consistent with any Habitat Conservation Plan that is adopted. The impact on plans would be less than significant, and at a program level no mitigation is required.

*Indirect Impact Summary*

The policies and programs included in the General Plan, the County’s review of future development proposals, and other adopted regulations of the various Responsible Agencies would reduce biological resources impacts at a program level of analysis to a less-than-significant level, and no mitigation is required.

\(^{63}\) See previous footnote plus:

4.4 CULTURAL RESOURCES

A. Setting

1. Introduction

Santa Clara County contains numerous known as well as yet undiscovered archaeological, historical, and paleontological resources. Prehistoric resources are physical properties that result from human activities that predate European contact with native peoples in America. Prehistoric archaeological sites may include villages, campsites, lithic or artifact scatters, fishing sites, roasting pits/hearths, milling features, rock art (petroglyphs/pictographs, intaglios), rock features, and burials. Most of the documented sites in the County have been found during investigations for development actions. A systematic intensive survey of the County has not been previously undertaken.

People are known to have inhabited the County for at least 11,000 years prior to the arrival of Spanish explorers to California in the 16th century. Evidence suggests that Paleoindian (12,000 to 9,000 years before present [BP]) populations throughout California and elsewhere were small and the subsistence economies emphasized the capture of big game, including now extinct megafauna, such as mammoth and mastodon. During the Archaic Period (9,000 to 4,000 BP), California prehistoric cultures lost their emphasis on large game hunting. Subsistence economies probably diversified somewhat, and Archaic people may have begun to use certain ecological zones, such as the coast littoral zone, more intensively than before. Advances in technology enabled more efficient use of certain plant foods, including grains and plants with hard seeds. The earliest sites in the Bay Area are from the late Archaic Period (around 7,000 to 4,000 BP).

Population densities increased throughout the Pacific Period (4,000 to 150 BP). Consequently, California populations sought to produce more food from available land and to locate more dependable food supplies. Populations became increasingly sedentary and settled in larger villages. Increasing social stratification, ceremonialism, and long-distance trading activity is evident in the archaeological record. In the Bay Area, many villages were established by 4,000 BP.

Beginning around 1,700 BP, there was an increasing complexity in artifact assemblages that seems to reflect an intensified hunting, gathering, and fishing adaptation. The introduction of the bow and arrow, harpoon, and the use of clam disk beads as currency for trade are just a few indications that populations were larger and more densely settled.

64 Much of the following is taken from general descriptions of prehistoric habitation characteristics in the Santa Clara Valley Region provided in the Draft EIR for the Draft Santa Clara Valley Habitat Plan.
2. Ethnographic Setting

Inhabitants of the County at the time of European contact were the Ohlone (as they presently refer to themselves) or Costanoan. The Ohlone is a linguistically defined group composed of several autonomous tribelets speaking eight different but related languages. The Ohlone occupied the Coast Ranges surrounding the San Francisco and Monterey Bays and probably arrived in central California sometime after 1,500 years ago. It is estimated that the Ohlone population was about 10,000 people at the time of European contact. Aboriginally, the Ohlone were politically organized by tribelet, each having a designated territory. A tribelet consisted of one or more villages and camps in a territory designated by physiographic features. Tribelets generally had 100–250 members. The Spanish missionized the Ohlone people quickly and occupied nearly the entire coastal portion of the Ohlone territory in the latter part of the 18th century. Introduced diseases and lower birth rates drastically affected native population levels during this period. With mission secularization in 1821, Ohlone and other mission Indians left the missions to work in surrounding areas, mostly as manual laborers on ranchos. Today, descendants of the Ohlone still live in the area, and many are active in maintaining their traditions and advocating Native American causes.

3. Historic Setting

In 1542, Spanish explorers officially claimed alta (upper) California for the King of Spain. For almost 200 years, the Spanish left the Pacific Coast unattended. In the late 1700s, when the fur and mine trade drew English, Dutch, and Russian traders to the region, it attracted Spain's attention and desire to protect their territory. The Spanish government sent military expeditions to present-day California to explore the region for harbors that could provide secure military bases, called presidios. The presidios were important for the colonization of an area and the protection of the settlers.

The missions were the central economic units of the Spanish colonial system. San José was California's first town. On November 29, 1777, on orders from the Spanish viceroy of Mexico, nine soldiers, five pobladores (settlers) with their families, and one cowboy were detailed to found the Pueblo de San José de Guadalupe, named in honor of St. Joseph. Santa Clara valley's first mission and pueblo, Mission Santa Clara de Asís, was established January 12, 1777 along the banks of the river Spanish explorer's named Nuestra Senora de Guadalupe (Our Lady of Guadalupe). The mission system was created to convert the native peoples to Catholicism; the goal was to gain control of the native people and to create self-sufficient communities. Santa Clara valley's first mission and pueblo, Mission Santa Clara de Asís, was established January 12, 1777 along the banks of the Guadalupe River.

A few English speaking settlers came to the Valley, beginning about 1813; however, the first big wave of American pioneers did not arrive until the 1840's. Population in the Santa Clara Valley remained steady between 1844 and 1851, when discovery of gold in 1848 drew incoming pioneers to other parts of the state. Santa Clara County was created on February 18, 1850 and is an original California County. In 1864, the Central Railroad (now Southern Pacific) completed a line between San Francisco and San José. Several owners of large homesteads began selling five-and ten-acre parcels for small ranches. Weather and soil conditions were superb for fruit and viticulture, and
agricultural enterprises in Santa Clara Valley flourished well into the 20th century. The industrialization of the northern Santa Clara Valley took place in the 1970’s and 1980’s. Development pressures resulting from the influx of the microchip and other high-technology industries caused the urbanization of much of the rural and agricultural land in that area.

4. **Paleontological Resources**

The fossil-yielding potential of a particular area is highly dependent on the geologic age and origin of the underlying rocks. The County is underlain by many rock formations that are known or would be expected to include fossils, and a survey of EIRs prepared on several proposed projects in the County have noted the potential presence of fossils in many regions of the County.\(^65\)

5. **Regulatory Background**

   **a. State Regulations**

   The California Register of Historical Resources (the California Register) and the California Environmental Quality Act (CEQA) provide the statutory basis for this study for the County-level review. The California Register legislation was signed into law in September 1992 and its implementing regulations became effective on January 1, 1998. Guidelines for the California Register have been incorporated into the October 26, 1998 revisions to CEQA. CEQA requires the lead agency to prepare an environmental impact report for a project determined to have a significant impact on the environment, including substantial adverse changes to historical resources. Historical resources are, by definition, those resources determined eligible to the California Register by virtue of meeting the following criteria:

   1. Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
   2. Is associated with the lives of persons important in our past;
   3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and
   4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource is also automatically included in the California Register if it is listed or eligible for listing in a local register of historic resources, or determined to be significant based on substantial evidence by the lead agency.

Buildings, sites, structures, objects, and districts representative of California and United States history, architecture, archaeology, engineering, and culture convey significance when they also possess integrity of location, design, setting, materials, workmanship, feeling, and association. Integrity is the authenticity of a property’s physical identity - the presence of characteristics which were present during the resource’s period of significance. Enough of these characteristics must remain to convey the reasons for their significance.

Public Resources Code, Section 5097, implements a number of federal laws and specifies procedures in the event that human remains are discovered during any site disturbance activity. The disposition of Native American burials falls within the jurisdiction of the California Native American Heritage Commission. California Code of Regulations Section 15064.5(f) identifies the need to establish procedures in the event of discovery during construction of buried cultural resources on nonfederal land.

The State’s Office of Historic Preservation (OHP) has primary responsibility for the administration of historic preservation programs in California through the California’s Comprehensive Statewide Historic Preservation Plan, as well as other laws and regulations.

The California Native American Heritage Commission works to identify, catalogue and protect places of special religious or social significance, graves, and cemeteries of Native Americans per the authority given the Commission in Public Resources Code 5097.9.

b. County Regulations

The Santa Clara County Historical Heritage Commission acts as an advisory body to the Board of Supervisors in the preservation, protection, enhancement, and perpetuation of resources of architectural, historical, and cultural merit within Santa Clara County. The Historical Heritage Commission is chartered under County Ordinance Code Division C17, Historic Preservation. Pursuant to Division C17, the County maintains an inventory of historic resources and designated landmarks, manages a permit program for alterations to designated landmarks, and provides incentives to preserve historic resources (e.g., Historic Heritage Grant Program).

The County’s review processes for new applications for single-family residences (the BSA process described in the introduction to Chapter 4) requires a review for the presence of significant onsite cultural resources if there is some evidence that such resources could exist at the site.

c. Protections for Paleontological Resources

Paleontological resources also are afforded protection by environmental legislation set forth under CEQA. Appendix G (Part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, stating that a project would normally result in a significant impact on the environment if it would “...disrupt or
adversely affect a paleontological resource or site or unique geologic feature, except as part of a scientific study.” Paleontological resources are also protected by several federal and State statutes, most notably by the 1906 Federal Antiquities Act and other subsequent federal legislation and policies and by the State. However, these statutes only apply to projects occurring on State or federal lands.

B. Potential Impacts and Mitigation Measures

1. Criteria Used For Determining Impact Significance

A project would typically have a significant impact on cultural resources if it meets any of the following criteria:

1. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5 of the CEQA Guidelines, or the County’s Historic Preservation Ordinance (Section 17 of County Ordinance Code) – i.e. relocation, alterations or demolition of historic resources.

2. Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5 of the CEQA Guidelines.

3. Directly or indirectly destroy a unique paleontological resource or site.

4. Disturbs any human remains, including those interred outside of formal cemeteries.

5. If within New Almaden Historic area, conflict with General Plan policies of this designated special policy area.

2. Direct Impacts

Cultural Resources

Impact 4.4-A Construction of additional on-site wastewater systems allowed by the proposed Ordinance could damage or destroy historical and unique archeological resources.

As described in the previous Setting section, there are known and likely numerous unrecorded archaeological and historical resources in the unincorporated portion of the County. Because site-specific information is not available, it is not possible to determine the precise nature of potential impacts. However, OWTS installation would occur as part of a project involving discretionary permits from the Santa Clara County Planning Office, and the potential presence of archaeological or historical resources would be evaluated prior to issuance of any permits. Therefore, this impact would be less than significant, and no mitigation would be required.
Paleontological Resources

Impact 4.4-B  Paleontological resources could be damaged or destroyed by project construction.

There are numerous unrecorded paleontological resources in the unincorporated portion of the County. It is possible that OWTS allowed under the proposed Ordinance would be installed on sites that contain significant paleontological resources (i.e., fossils). This is unlikely since it is not expected the OWTS would be installed in rock formations that are the most likely location where fossils would be found. Thus, this would be a less-than-significant impact.

3. Indirect Impacts

As described in the Introduction to Chapter 4, additional rural development could occur using alternative OWTS technologies if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan, which would include this additional development, would have less-than-significant impacts on cultural and paleontological resources. The following discussions revisit that EIR analysis and at a program level review the indirect cultural and paleontological impacts associated with increased development activities given current regulatory requirements and environmental conditions. The level of analytic detail provided below is general, as it is unknown if and when any particular parcel would be developed.

Cultural and Paleontological Resources

Impact 4.4-C  Potential new development could affect cultural and paleontological resources.

As described in the Setting section, there are known and likely numerous unrecorded archaeological and historical resources in the unincorporated portion of the County. Because site-specific information is not available, it is not possible to determine the precise nature of potential impacts. It is possible that construction of additional new would be installed on sites that contain significant cultural resources. Potential impacts to paleontological resources are unlikely since it is not expected that construction would occur in rock formations that are the most likely location where fossils would be found. It is possible that additional rural development could unearth, damage, or destroy archaeological or historical resources. However, OWTS installation would occur as part of a project involving discretionary permits from the Santa Clara County Planning Office, and the potential presence of paleontological resources would be evaluated prior to issuance of any permits. Therefore, this impact would be less than significant, and no mitigation would be required.
4.5 TRAFFIC AND CIRCULATION

This section of the EIR was prepared with the technical assistance of TJKM, Transportation Consultants.

A. Setting

1. Roadway System

Santa Clara County has approximately 643 miles of rural and urban roadways within unincorporated County areas, as well as 63 miles of expressways, 39 miles of carpool lanes, and 160 signalized intersections. Regional access is provided by a network of State highways (freeways and arterials) and County roads (expressways, arterials, collectors, and local streets). Regional freeway access to the County is provided by Interstates 280, 680 and 880; US 101; and State Routes (SR) 17, 85, 87, 152, and 237. The primarily urban north County area is interconnected by an extensive County expressway system. In the rural south County, the main routes are US 101, SR 152, Monterey Road and Santa Teresa Boulevard. In the primarily rural unincorporated areas, local land uses are served by County roads, many of which would serve development resulting from the proposed project. See the Santa Clara County Valley Transportation Authority’s (VTA) Valley Transportation Plan 2035 (VTP 2035) and 1994 County General Plan Environmental Impact Report (EIR) for a description of the overall County roadway system and local and regional projects and transport needs.

2. Roadway and Intersection Level of Service

Analysis Methodology

Transportation engineers and planners commonly use a grading system called level of service (LOS) to measure and describe the operational status of the local roadway network. LOS is a description of the quality of a roadway facility’s operation, ranging from LOS A (indicating free-flow traffic conditions with little or no delay) to LOS F (representing oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). Intersections, rather than roadway segments between intersections, are almost always the capacity controlling locations for any circulation system.

Minimum Acceptable Operation

Table 4.5-1 presents the characteristics associated with each LOS grade. As shown in the table, LOS “A”, “B” and “C” are considered satisfactory to most motorists, while LOS “D” is marginally acceptable. LOS “E” and “F” are associated with severe congestion and delay and are unacceptable to most motorists.

According to Policy C-TR 12 of the Santa Clara County General Plan, the County’s minimum acceptable traffic operational standard for city streets, County roads, expressways, and State highways is LOS D during peak travel periods. The policy also states that a level of service worse than LOS D (i.e. LOS E or F) may be acceptable when LOS D cannot practically be achieved. For Santa Clara County Congestion

66 Source: Santa Clara County Roads and Airports Department, accessed online April 2012.
Management Program (CMP) roadways and intersections, LOS E is the minimum acceptable operational standard.

### Table 4.5-1
Peak Hour Level of Service (LOS) Descriptions

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Traffic Flow Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS A</td>
<td>Represents free flow. Individual users are virtually unaffected by others in the traffic stream. Control delay at signalized intersections is minimal.</td>
</tr>
<tr>
<td>LOS B</td>
<td>Stable flow, but the presence of other users in the traffic stream begins to be noticeable. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant.</td>
</tr>
<tr>
<td>LOS C</td>
<td>Stable flow, but the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.</td>
</tr>
<tr>
<td>LOS D</td>
<td>Represents high-density, but stable flow.</td>
</tr>
<tr>
<td>LOS E</td>
<td>Represents operating conditions at or near capacity level.</td>
</tr>
<tr>
<td>LOS F</td>
<td>Represents forced or breakdown flow.</td>
</tr>
</tbody>
</table>


In rural areas of the County, the Santa Clara VTA monitors the LOS performance of rural State highways: SR 9, SR 25, SR 35, SR 130, SR 152, SR 156, and Sunnyvale Saratoga Road. Rural highway performance is reported in VTA’s Monitoring and Conformance Report, which VTA publishes biennially in its capacity as the County’s congestion management agency. The performance standard for CMP rural highways is LOS E. Quantitative measures that are linked to LOS for rural highways include percent time spent following (PTSF) and average speed in miles per hour. Table 4.5-2 provides a description of each level of service (A through F) for CMP rural highways, as well as the relation of LOS to quantitative measures of PTSF and speed.
# Table 4.5-2
## Rural Highway LOS Descriptions

<table>
<thead>
<tr>
<th>LOS</th>
<th>Percent of Time Spent Following</th>
<th>Average Speed (mph)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&lt;35</td>
<td>&gt;55</td>
<td>Highest quality of traffic service, when motorists are able to travel at their desired speed. The passing frequency required to maintain these speeds has not reached a demanding level, so that passing demand is well below passing capacity, and platoons of three or more vehicles are rare.</td>
</tr>
<tr>
<td>B</td>
<td>&gt;35 to 50</td>
<td>&gt;50 to 55</td>
<td>The demand for passing to maintain desired speeds becomes significant and approximates the passing capacity at the lower boundary of LOS B. Drivers are delayed in platoons up to 50 percent of the time.</td>
</tr>
<tr>
<td>C</td>
<td>&gt;50 to 65</td>
<td>&gt;45 to 50</td>
<td>Further increases in flow exist, resulting in noticeable increases in platoon formation, platoon size, and frequency of passing impediments. Unrestricted passing demand exceeds passing capacity. At higher volumes the chaining of platoons and significant reductions in passing capacity occur. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow-moving vehicles.</td>
</tr>
<tr>
<td>D</td>
<td>&gt; 65 to 80</td>
<td>&gt;40 to 45</td>
<td>Unstable traffic flow. The two opposing traffic streams begin to operate separately at higher volume levels, as passing becomes extremely difficult. Passing demand is high, but passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common.</td>
</tr>
<tr>
<td>E</td>
<td>&gt;80</td>
<td>&lt;40</td>
<td>Passing is virtually impossible, and platooning becomes intense, as slower vehicles or other interruptions are encountered.</td>
</tr>
<tr>
<td>F</td>
<td>Whenever flow rate exceeds capacity</td>
<td></td>
<td>Heavily congested flow with traffic demand exceeding capacity. Volumes are below capacity, and speeds are below capacity as well.</td>
</tr>
</tbody>
</table>

3. **Existing and Future Year Traffic Volumes**

The 2010 Santa Clara County Annual Monitoring and Conformance Report prepared by Santa Clara VTA (in its capacity as County CMA) contains the most current detailed information about existing traffic volumes on primary State and County roads, including rural highways. The report details existing LOS for 12 CMP rural highway segments throughout the County based on the worst-case commute peak hour (either a.m. or p.m.). Existing (2010) peak hour counts and LOS for these County and State facilities are shown in Table 4.5-3. According to the report, all locations are conforming to the CMP standard of LOS E or better. The monitored CMP rural highway locations are:

- State Route (SR) 35 – North of SR 9
- SR 35 – South of SR 9
- SR 9 - West of Sanborn
- SR 9 – South of Big Basin
- Saratoga – Sunnyvale Road (North of Big Basin)
- Hamilton Road – East of Clayton
- SR 152 – West of Santa Teresa Road
- SR 152 – West of Holsclaw
- SR 25 – South of Bloomfield
- SR 156 – South of SR 152
- SR 152 – East of SR 156
- SR 9 – East of SR 35

<table>
<thead>
<tr>
<th>Rural Highway Segment</th>
<th>2010 Peak Hour Volume</th>
<th>2010 LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 35 – North of SR 9</td>
<td>121</td>
<td>A</td>
</tr>
<tr>
<td>SR 35 – South of SR 9</td>
<td>66</td>
<td>A</td>
</tr>
<tr>
<td>SR 9 - West of Sanborn</td>
<td>306</td>
<td>B</td>
</tr>
<tr>
<td>SR 9 – South of Big Basin</td>
<td>1,537</td>
<td>E</td>
</tr>
<tr>
<td>Saratoga – Sunnyvale Road (North of Big Basin)</td>
<td>1,527</td>
<td>E</td>
</tr>
<tr>
<td>Hamilton Road – East of Clayton</td>
<td>44</td>
<td>A</td>
</tr>
<tr>
<td>SR 152 – West of Santa Teresa Road</td>
<td>699</td>
<td>C</td>
</tr>
<tr>
<td>SR 152 – West of Holsclaw</td>
<td>1,617</td>
<td>E</td>
</tr>
<tr>
<td>SR 25 – South of Bloomfield</td>
<td>1,958</td>
<td>E</td>
</tr>
<tr>
<td>SR 156 – South of SR 152</td>
<td>1,143</td>
<td>D</td>
</tr>
<tr>
<td>SR 152 – East of SR 156</td>
<td>2,692</td>
<td>B</td>
</tr>
<tr>
<td>SR 9 – East of SR 35</td>
<td>269</td>
<td>B</td>
</tr>
</tbody>
</table>

Note: LOS = Level of Service
In addition, Santa Clara VTA is currently updating a Bi-County travel demand model that contains land use and transportation network assumptions throughout Santa Clara and San Mateo Counties projected to Year 2035. Table 4.5-4 shows the total existing (2010) vehicle miles traveled (VMT) on roadway links countywide for daily and peak hour periods, as well as within the unincorporated areas and remainder of the County. VMT on unincorporated County roadway links, which would be used by proposed development under the proposed Ordinance, currently represents approximately 4.1 percent of total VMT countywide (= 2,064,353 / 50,707,122). VMT along unincorporated roadway links includes trips with an origin or destination (or both) within unincorporated areas, as well as through trips with both origin and destination outside the unincorporated areas.

### Table 4.5-4
Existing (2010) Countywide Vehicle Miles Traveled

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Unincorporated</th>
<th>Remainder</th>
<th>Santa Clara County</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak</td>
<td>429,999</td>
<td>10,417,111</td>
<td>10,847,110</td>
</tr>
<tr>
<td>Mid-day</td>
<td>572,345</td>
<td>13,391,794</td>
<td>13,964,139</td>
</tr>
<tr>
<td>PM Peak</td>
<td>646,398</td>
<td>15,069,603</td>
<td>15,716,001</td>
</tr>
<tr>
<td>Evening</td>
<td>415,611</td>
<td>9,764,261</td>
<td>10,179,872</td>
</tr>
<tr>
<td><strong>Daily</strong></td>
<td><strong>2,064,353</strong></td>
<td><strong>48,642,769</strong></td>
<td><strong>50,707,122</strong></td>
</tr>
</tbody>
</table>

Source: Santa Clara VTA Bi-County Travel Demand Model (2012)

TJKM also reviewed VTA travel demand model VMT projections for the assumed County buildout year of 2035. Table 4.5-5 shows expected VMT countywide, including along unincorporated roadway links, during daily and peak hour periods in 2035. The table shows that along the unincorporated County roadway links, traffic volumes are anticipated to increase as follows:

- AM Peak Period: 4.2 percent
- Midday Period: 8.1 percent
- PM Peak Period: 8.9 percent
- Evening Period: 7.8 percent
- Daily period: 7.4 percent

It should be noted that these increases include vehicle trips that are expected to be generated by residential development allowed under the proposed Ordinance, since this development is consistent with the County General Plan. General Plan land use development buildout assumptions are included in the current Bi-County travel demand model.

In terms of overall trends in 2035, VMT on unincorporated County roadway links, including trips from development that could occur if the Ordinance is adopted, is expected to represent approximately 3.6 percent of total VMT countywide (= 2,218,030 / 62,460,624).
Table 4.5-5
Buildout (2035) Countywide Vehicle Miles Traveled

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Unincorporated</th>
<th>Remainder</th>
<th>Santa Clara County</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak</td>
<td>447,899</td>
<td>12,715,443</td>
<td>13,163,342</td>
</tr>
<tr>
<td>Mid-day</td>
<td>618,475</td>
<td>16,699,761</td>
<td>17,318,236</td>
</tr>
<tr>
<td>PM Peak</td>
<td>703,793</td>
<td>19,042,821</td>
<td>19,746,614</td>
</tr>
<tr>
<td>Evening</td>
<td>447,863</td>
<td>11,784,569</td>
<td>12,232,432</td>
</tr>
<tr>
<td>Daily</td>
<td>2,218,030</td>
<td>60,242,594</td>
<td>62,460,624</td>
</tr>
</tbody>
</table>

Source: Santa Clara VTA Bi-County Travel Demand Model (2012)
Note: Assumes complete buildout of vacant lots that would be served by alternative OWTS

4. Transit Service

Santa Clara Valley Transportation Authority (VTA) provides regional and local transit service throughout Santa Clara County, serving primarily the incorporated cities and towns of the County within a 326-square mile urbanized area. VTA provides bus, light rail, and paratransit services, and also participates as a funding partner for regional rail services serving the County - CalTrain, Amtrak’s Capitol Corridor, and the Altamont Commuter Express (ACE).

VTA’s light rail system covers 42.2 miles within the County, with all lines converging on downtown San Jose. Figure 4.5-1 illustrates VTA’s service area and system map. While new residents resulting from implementation of the ordinance would be located in predominately car-dependent, rural unincorporated areas of the County with minimal to no transit service, there is the potential that some may use the VTA transit system for work, shopping, or other trip purposes.

5. Pedestrian and Bicycle Access

The majority of the pedestrian facilities in the County are located within urban areas. Pedestrian facilities typically consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. Bicycle facilities are classified in three ways: off-street paths separated from auto traffic (Class I), on-street striped lanes (Class II), and on-street signed routes in which bicycles share the roadway with other vehicles (Class III). Other subsets of bicycle routes include bicycle boulevards, located primarily along low-volume residential streets where motor vehicles traffic is discouraged; expressways, where wide shoulders are present and suitable for bicycle use; and roadway shoulders along rural roads, which are often not signed. In some cases of rural roads, a narrow shoulder is the only feasible bicycle accommodation due to topography or all that is practical due to low traffic volumes. Additional details on bicycle facility types and features are provided in the VTA Bicycle Technical Guidelines and Caltrans Highway Design Manual Chapter 1000. 67

Since Santa Clara County has a mild year-round climate, bicycling is popular for both commute transportation and recreation. In 2008, Santa Clara VTA prepared and adopted the Santa Clara countywide Bicycle Plan.

The countywide Bicycle Plan (CBP) was developed in order to provide a single resource document for the County and VTA member cities. THE CBP includes a cross-County bicycle corridor network (i.e. paths, lanes, signed routes), including gaps and needed projects, as well as other plan elements that help local VTA member agencies secure funding and plan effectively for future bicycle projects. The CBP functions as a regional framework for local bicycle plans and identifies coordination possibilities between the local plans. The CBP is linked to the VTA Bicycle Expenditure Plan (BEP), which identifies cross-County corridor bicycle projects and other essential regional infrastructure, as well as funding programs and strategies for bicycle project implementation.

Figure 4.5-2 illustrates VTA's Santa Clara Valley Bikeways Map, which shows the countywide bicycle network, which is concentrated primarily within the urbanized and incorporated areas of the County.

6. Freeway Operation

Santa Clara County is served by a network of freeways that are operated and maintained by the California Department of Transportation (Caltrans). Freeways are intended to serve both intra-regional and interregional travel. They provide no access to adjacent properties, but rather are fed traffic from expressway, arterial, and collector roadways by access ramps at interchanges. Freeways also provide connections to other regional highways and are capable of carrying heavy traffic volumes. The typical maximum speed limit on freeways in Santa Clara County is usually 65 miles per hour (mph).

Freeways serving the County include Interstates 280, 680, and 880; US 101; and State Routes (SR) 17, 85, 87, 152, and 237. The freeways are primarily located in the urbanized areas of the County. SR 17 is a mixed expressway and freeway facility within the Lexington Basin area, with grade-separated interchanges serving the areas at Summit Road and Bear Creek Road. According to the 2010 VTA Monitoring and Conformance Report, SR 17 currently operates at the following service levels at key freeway segments:

- A.M. Peak Hour: SR 17 Northbound – LOS F (Summit to Bear Creek); SR 17 Southbound – LOS D (Bear Creek to Summit)
- P.M. Peak Hour: SR 17 Northbound – LOS D (Summit to Bear Creek); SR 17 Southbound – LOS E (Bear Creek to Summit)

It should be noted that the LOS F condition on SR 17 northbound during the existing a.m. peak hour does not meet current VTA freeway operational standards of LOS E or better.
7. Planned Improvements

The Santa Clara Valley Transportation Authority (VTA) is responsible for preparing and updating a countywide Valley Transportation Plan (VTP) on a cycle coinciding with the update of the Metropolitan Transportation Commission’s (MTC) Bay Area Regional Transportation Plan (RTP). The 2009 Regional Transportation Plan (RTP), prepared by the Metropolitan Transportation Commission (MTC), guides transportation planning and funding throughout the nine-County San Francisco Bay Area to the year 2035. Countywide plans, like VTP 2035, provide input to the RTP. The VTP 2035 and the 2009 RTP share common themes, including an Express Lane network, the reduction of CO₂ emissions, focused growth, and the use of technology to reduce congestion. MTC’s RTP contains a fiscally constrained list of transportation projects and programs that can reasonably be expected to be funded during the plan’s timeline. County-level projects seeking State or federal funding, completing environmental clearances, or desiring to enter into construction must be in this section of the RTP. In turn, the RTP helps to inform the development of the State Transportation Improvement Program (STIP), which prioritizes the use of State transportation funds.68

VTP 2035, the most recent countywide plan adopted by the VTA Board of Directors in January 2009, identifies transportation programs, projects and policies to be pursued over the lifetime of the plan within Santa Clara County. The plan describes how anticipated funding is connected to future transportation projects and also provides a framework for the development and maintenance of the Santa Clara County transportation system over the next 25 years. VTP 2035 considers all travel modes, including autos, transit, and bicycles. The Plan also addresses the links between transportation and land use planning, air quality, energy use and community livability. VTA notes that VTP 2035 is not a programming document, nor does it include precise schedules for transportation project implementation or assumptions regarding financing costs that may be necessary to implement specific transportation improvement projects in specific years.

The financial element of VTP 2035 provides a 25-year projection of transportation project costs, anticipated revenues and shortfalls in the funding of Santa Clara County’s transportation needs. The Plan projects that $15.2 billion will be available over the next 25 years from a range of State and federal sources based on revenue projections through 2035 developed in consultation with the California Department of Transportation (Caltrans), Caltrans District 4, the Metropolitan Transportation Commission (MTC), and VTA Member Agencies.

One of the general transportation programs identified in VTP 2035 is the Local Streets and County Roads Program (LSCR). According to the VTP 2035, the VTA Board of Directors created this program to address the difficulties that VTA Member Agencies (such as Santa Clara County) have with raising revenues for local street and County road projects that are not connected to new development projects. VTA Staff, working through the Capital Improvement Project Working Group of the Technical Advisory Committee (TAC), developed a list of local street and County road projects using VTA Board-adopted program eligibility and scoring criteria. The criteria are based on street

68 Santa Clara Valley Transportation Plan 2035, Santa Clara Valley Transportation Authority (2009)
connectivity, congestion relief, safety, and the interface between transportation and land use. The VTP 2035 Program Area allocation identifies up to $628 million for local streets and County roads on the committed project list, with another $58 million in grant fund requests appearing on the uncommitted project list. The VTP 2035 identifies the following project types as eligible for VTA's LSCR funds:

- New street connections and extensions, local road crossings of freeways and expressways
- Multimodal reconstruction of streets
- Roadway operational improvements including new lanes, intersection turn lanes, and modern roundabouts
- New or major upgrades of sidewalk and Class II and III bicycle facilities
- Traffic calming measures
- New grade separations at railroads and roadways
- ITS projects and project elements

The following is a list of unincorporated Santa Clara County transportation projects eligible for LSCR funding. For purposes of the OWTS EIR, these projects are assumed to be complete by 2035. These transportation projects may or may not mitigate the potential traffic impacts that could result from individual residences built and occupied as permitted by the proposed Ordinance, as the timing of construction and occupation of such individual residences is not known. The future LSCR transportation projects located within unincorporated Santa Clara County and listed in the VTP 2035 are:

- Center Avenue and Marcella Avenue Two-Lane Connection
- DeWitt Avenue/Sunnyside Avenue Realignment at Edmunsen Avenue
- Hill Road Extension: East Main Avenue to Peet Road
- Marcella Avenue Two-Lane Realignment
- Foothill-Loyola Bridge
- Fitzgerald Avenue/Masten Avenue Realignment at Monterey Road
- Alum Rock Avenue Pedestrian Connection to Miguelita Bridge
- Santa Teresa Boulevard and Tilton Avenue Traffic Signal Improvements
- Railroad Crossing Improvements at Church Avenue and Monterey Highway
- McKee Road Pedestrian Improvements
- Watsonville Road Center Turn Lane
- Santa Teresa Boulevard and San Martin Avenue Traffic Signal Improvements
- Doyle Road Bicycle and Pedestrian Trail Connection.

There are no current plans to fully upgrade the SR 17 facility to freeway standards within the County, including the segment within the Lexington Basin area currently operating at LOS F (northbound Summit to Bear Creek segment during a.m. peak hour). Over the past several years, Caltrans has implemented spot improvement projects that have upgraded safety and capacity of SR 17 within the County, including roadway widening and elimination of at-grade intersections. Some of these spot improvements have been made within the Lexington Basin area, including safety and capacity improvements that converted at-grade intersections to grade-separated interchanges at Summit Road and Bear Creek Road. However, safety and capacity deficiencies remain on the remaining

69 Santa Clara Valley Transportation Plan 2035, Santa Clara Valley Transportation Authority (2009)
facility, and Caltrans and the County have determined that the overall cost and environmental impacts for a full upgrade of this facility are prohibitive, and therefore no such upgrade is planned at this time.

8. Regulatory Background

County of Santa Clara General Plan - Transportation Chapter

The County General Plan Transportation Chapter provides information about the transportation goals, policies, and needs of the County, both at the countywide and rural unincorporated level. The Plan also includes Level of Service (LOS) standards for the County. Currently, the County deems LOS D or better to be the acceptable service levels for intersections and roadway segments, and LOS E for designated, County-monitored Congestion Management Program (CMP) roadways. The following policies that pertain to the project are from the General Plan Transportation Chapter:

Countywide

- **Policy C-TR 1**: the County should develop and maintain an adequate, balanced, and integrated transportation system that is affordable and convenient to use and that is capable of meeting projected future demand.

- **Policy C-TR 12**: It is the goal of this plan to achieve a level-of-service (LOS) no lower than D at peak travel periods on city streets, County roads, expressways and State highways. However, in certain instances, a lower level of service may be acceptable when LOS D cannot practically be achieved.

Rural Unincorporated Areas

- **Policy R-TR 2**: Transportation plans for facilities in the rural unincorporated areas should be periodically reviewed and revised.

- **Policy R-TR 3**: Future width line right-of-ways should be reserved to allow future roadway expansions based on planned long term development.

- **Policy R-TR 6**: Pathways and/or sidewalks which would provide safe, non-motorized circulation routes (i.e. pedestrian, equestrian and bicycle) should be provided within identified rural residential areas.

- **Policy R-TR 11**: New development which would significantly impact private or public roads should be allowed only when safety hazards and roadway deterioration will be mitigated to a less than significant level.

Santa Clara Valley Transportation Authority Congestion Management Program

The Santa Clara Valley Transportation Authority (VTA) serves two roles in Santa Clara County: (1) as the Congestion Management Agency (CMA) and (2) as primary operator of public transportation. As the County CMA, VTA is responsible for managing the County blueprint for reducing traffic congestion and improving air quality. VTA is authorized to set State and federal funding priorities for transportation improvement projects that affect the Santa Clara County Congestion Management Program (CMP) transportation network. CMP designated transportation system components in the County include regional, State, and County operated roadways, a public transportation...
network, and a countywide bicycle network. The County CMP roadway network includes all State highways, County expressways, and some principal arterials and intersections, while the transit network includes rail service and selected bus service.

The VTA bicycle network focuses on Cross County Bicycle Corridors, a network of 16 routes identified in the Santa Clara Countywide Bicycle Plan (2008). The Valley Transportation Plan (VTP) 2035, adopted in 2009, is a long-range countywide transportation plan that documents the means by which projects compete for funding and prioritization. VTP 2035 has been prepared consistent with the Bay Area region’s Metropolitan Transportation Commission (MTC) Regional Transportation Plan.

VTA also requires local jurisdictions within the County to analyze impacts of new developments or land use policy changes on CMP facilities if they are expected to generate 100 or more new peak hour trips. VTA developed the Transportation Impact Analysis Guidelines (updated March 2004) that were adopted by the County and all cities to provide local jurisdictions with a uniform program for evaluating the transportation impacts of proposed land use decisions on the designated CMP System.

**Santa Clara Valley Transportation Authority Transit Service**

In its role as public transportation operator, VTA is responsible for the development, operation, and maintenance of the bus and light rail transit system within the County. VTA operates over 70 bus lines and three light rail lines, in addition to shuttle and paratransit service. The VTA also provides transit service to major regional destinations, as well as to transfer centers in adjoining counties.

VTA’s Short Range Transit Plan (SRTP) is a federally mandated planning document that describes the plans, programs and goals of VTA’s public transit service. The SRTP has a 10-year planning horizon and is updated annually. It focuses on the characteristics and capital needs of the existing system, and on expansion plans with committed funding. The current plan proposes to keep bus and light rail service at existing levels, expand Community Bus services (neighborhood-based circulator and feeder routes that travel within a limited area), to continue to contribute monetarily to CalTrain service (for which VTA is a Joint Power Board member agency), and to replace and expand the bus vehicle fleet.

The SRTP also includes transit route productivity standards pursuant to VTA’s Transit Sustainability Policy (TSP). The TSP has established service standards and performance measures for each service type (i.e. light rail, community bus, etc.) that aid in determining areas of improvement for VTA service. The goals of the TSP are to improve system ridership, productivity, and efficiency; improve farebox recovery; improve the role of transit as a viable alternative travel mode; and more effectively use transit investments and resources.70

**Santa Clara County Roadway, Bicycle, and Pedestrian Facilities**

In terms of roadway facilities, the Santa Clara County Roads and Airports Department is responsible for operating and maintaining roadways under County jurisdiction. Such roadways include those within unincorporated areas, as well as all County expressways.

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In terms of bicycle and pedestrian facilities, the Santa Clara County Trails Master Plan (1995) directs ongoing and future County trail implementation efforts that balance regard for the public good and individual desires for privacy. The plan implements a vision to provide a contiguous trail network that connects cities to one another, cities to the County’s regional open space resources, County parks to other County parks, and also connects the northern and southern urbanized regions of the County. The plan identifies regional trail routes, sub-regional trail routes, connector trail routes, and historic trails. The County has also developed another policy and programming document, the Santa Clara Countywide Bicycle Plan (2008), which synthesizes other County and local city plans into a comprehensive 20-year cross-County bicycle corridor network and expenditure plan.

**California Department of Transportation (Caltrans)**

Caltrans operates and maintains the State highway system within Santa Clara County, which includes freeways, interchanges, and arterial urban and rural State Routes. Caltrans approves the planning, design, and construction of improvements for all State-controlled facilities including US 101, SR 17, SR 82 (El Camino Real), SR 85, SR 237, and the associated interchanges for these facilities located in the County. Caltrans LOS standards and traffic impact study requirements are detailed in Guide for the Preparation of Traffic Impact Studies (Caltrans 2002), which covers the information needed for Caltrans to review the impacts on State highway facilities including freeway segments, roadway segments, and intersections.

**B. Potential Impacts and Mitigation Measures**

1. **Criteria Used For Determining Impact Significance**

   A project-related traffic impact or cumulative traffic impact is considered to be significant if it would:

   1. Conflict with an applicable congestion management program, including, but not limited to level of service standards and transportation demand management measures, or other standards established by the County congestion management agency for designated roads or highways. For purposes of this EIR, the impact would be significant if it exceeded thresholds listed below under the Santa Clara County Significance Criteria.

   2. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

   3. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
4. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

5. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

The CEQA Guidelines are intended to provide general guidance for lead agencies to evaluate impacts to the transportation system. For purposes of evaluating the proposed OWTS, the above significance criteria are interpreted as described below. As Santa Clara County does not have adopted local program-level significance criteria, these significance criteria were developed based on similar impact thresholds developed for other program-level EIRs in Santa Clara County and VTA CMP significance criteria.

1. **Roadway Segment Criteria**: A daily roadway segment operation is considered significant if implementation of a proposed project would cause Santa Clara County roadway segment operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F). This applies to both urban and rural roads under County jurisdiction, including all expressways. If a segment is already operating at unacceptable levels, as defined by the controlling agency (i.e., Santa Clara County for County roads and Caltrans or VTA for State roads including El Camino Real), an increase in traffic volume on the road segment consisting of more than one (1.0) percent of the facilities’ capacity is considered significant.

2. **Freeway Segment Criteria**: Similar to the roadway segment significance criteria, freeway segment significant impacts are defined to occur under the VTA CMP standard (LOS E) when the addition of traffic from a proposed project causes freeway segment operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F). VTA’s 2010 Transportation Impact Analysis Guidelines provide further guidance for freeway segments already operating at LOS F under a baseline condition before the addition of proposed project traffic. These guidelines state that LOS F freeway segments would be impacted by a proposed project if that project adds trips greater than one (1) percent of the segment’s capacity.

3. **The Caltrans LOS standard from the Guide for the Preparation of Traffic Impact Studies (2002)**: traffic impacts on Caltrans-maintained freeway and arterial segments are defined to occur when traffic operations on such segments deteriorate from an acceptable level (LOS C/D cusp) to an unacceptable level (LOS D, E or F) with the addition of project traffic.

2. **Direct Impacts**

**Less-than-Significant Impacts Not Requiring Further Analysis**

The installation of new OWTS and the possible construction of new development would not be expected to change air traffic patterns. As a result, there would be no impact per Significance Criterion 5.
Short-Term Construction Traffic Impacts

Impact 4.5-A  Construction of additional on-site wastewater systems allowed by the proposed Ordinance would not cause a substantial increase in construction traffic.

Construction of the OWTS would generate new traffic. Future servicing of septic systems, including hauling of sludge would also add new traffic to the road system in the County.

Most construction equipment would be trailered and left at the site until the job is complete (2-3 days). Construction of new alternative OWTS would require the importation of pipe, gravel or sand, and/or equipment. It is estimated that hauling of materials and equipment would take on average 4-5 roundtrips per installation. Installation of the OWTS would take about 3 workers per day. Assuming it takes an average of 2 days to deliver equipment and materials and 3 days to install a system, delivery and installation would generate approximately 5 roundtrips per day for a week. If as many as 30 OWTS are installed per year under the proposed project, this additional traffic would have no measureable impact on the County road system.

This would not cause a substantial increase in traffic or cause intersections to operate at unacceptable levels of service. The project would be consistent with the applicable congestion management program. This small amount of additional traffic would not be expected to cause increased safety hazards nor interfere with plans regarding alternative forms of circulation. This construction-generated traffic would have a less-than-significant impact per all the significance criteria, and at a program level no mitigation is required.

3. Indirect Impacts

As described in the Introduction to Chapter 4, additional rural development could occur using alternative OWTS technologies if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan, which would include this additional development, would have less-than-significant impacts on traffic. The following discussions revisit that EIR analysis and at a program level review the indirect traffic impacts associated with increased development activities given current regulatory requirements and environmental conditions. The level of analytic detail provided below is general, as it is unknown if and when any particular parcel would be developed.

Impacts on Roadway Traffic Operations

Impact 4.5-B  Potential new development could generate additional residential-related daily and peak hour traffic volumes that could degrade service below acceptable levels.

As described in the Introduction to Chapter 4, it is projected that adoption of the OWTS Ordinance along with accompanying changes to the Zoning Ordinance and General Plan would allow as many as 30 new residential units per year or up to 690 new units by
2035. Based on trip generation estimates using Institute of Transportation Engineers’ (ITE) vehicle trip rates (Trip Generation, 8th Edition, 2008), this level of development is expected to generate between 6,000 and 6,600 additional vehicle trips on the countywide road system in 2035.

Given that all County-monitored rural road locations are currently operating at an acceptable LOS E or better and that traffic from additional residential development would be spread out geographically over a 23-year period, this additional traffic would have a **less-than-significant impact** on level of service operations on County roads. However, the County CMP does not monitor operations on all State highway facilities. The EIR prepared for the Lexington Quarry Use Permit identified a significant cumulative traffic impact from that project on the intersection of Old Santa Cruz Highway with the SR 17 northbound off ramp.\(^{71}\) This intersection is currently operating at LOS F. Also, as mentioned earlier, the 2010 VTA CMP identified current a.m. peak hour operations on the northbound SR 17 freeway segment between Summit Road and Bear Creek Road at LOS F.

Given these LOS F conditions, the potential project impacts to SR 17 were assessed. Based on location, residents of the 83 single-family homes that could be built through adoption of the Ordinance would access SR 17. Based on ITE trip generation rates, this would result in a worst case of 83 p.m. new peak hour vehicle trips generated. These 83 trips would be expected to be distributed on local roads accessing SR 17 as follows (based on recent County-approved Redwood Estates Community Center traffic study):\(^{72}\)

- Summit Road - 51% (42 trips)
- Idylwild Road - 21% (17 trips)
- Bear Creek Road - 17% (14 trips)
- Alma Bridge Road - 11% (9 trips)

Current capacity on the SR 17 northbound segment from Summit to Bear Creek is 4,400 vehicles per hour. If all 42 estimated project trips access SR 17 from Summit Road, then the project would add 0.95 percent to the northbound segment’s capacity (=42/4,400), which falls below the one percent VTA CMP threshold for freeway facilities. Similarly, project trips added to Idylwild, Bear Creek, and Alma Bridge Roads that would access SR 17 would also represent an increase of less than one percent. As a result, the project is not expected to significantly impact SR 17 and its intersections/interchanges with Summit, Idylwild, Bear Creek, and Alma Bridge Roads based on VTA CMP standards.\(^{73}\) As a result, the project impact would be **less than significant**, and no mitigation is required.

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\(^{71}\) See at: [http://www.sccgov.org/sites/planning/Permits - Development/Environmental Protection/Active Environmental Documents/Documents/Lexington Recirculated DEIR.pdf](http://www.sccgov.org/sites/planning/Permits - Development/Environmental Protection/Active Environmental Documents/Documents/Lexington Recirculated DEIR.pdf)

\(^{72}\) Multitran Transportation Consultants, Inc. 2009.

\(^{73}\) The cited Old Santa Cruz Highway intersection with SR 17 is the eastern component of the Bear Creek Road interchange. Even if all 14 peak hour trips used that portion of the interchange, it would still be less than one percent of capacity.
Traffic Safety Impacts

Impact 4.5-C Potential new development would add residential-related vehicle traffic to existing substandard roads, increasing the potential for traffic hazards.

According to the 1994 County General Plan DEIR, most unincorporated areas in the County were developed in a piecemeal fashion over time. As a result, the County road system serving these areas is sometimes incomplete and/or inadequate, with roads not yet up to current County standards and also creating inefficient and confusing circulation patterns. The County does not maintain a formal list of sections of the roadway system that do not meet County road standards. The TJKM review indicates that several County roadways could be categorized as inadequate, including many of the roads serving as collector roads for mountainous portions of the County (e.g., Mt. Hamilton Road / Quimby Road (SR 130) and Big Basin Way (SR 9)). These roads feature narrow to nonexistent shoulders and sharp horizontal and vertical curves with limited sight distance. According to County engineering staff there is not a current capital project list that would correct such deficiencies countywide for rural roads.

Comparing the additional buildout potential that could result from the proposed Ordinance with the status of the principal collector roads that would be expected to serve the areas where additional development is possible indicates several areas of particular concern. The principal areas of concern are in the mountainous areas east and west of the Santa Clara Valley, since generally roads in these areas have significant elevation change, numerous sharp horizontal and vertical curves, and often inadequate lane width and shoulders that could be considered inadequate for some cyclists. The following is a summary of the condition of the main collector roads in the watersheds of particular concern (though other areas may also contain inadequate collector roads). In reading this summary, it should be remembered that it is based on full buildout of all vacant lots that could be developed if alternative OWTS are allowed; it does not account for other development constraints (which reduced the development potential in the Lexington Basin area by 55%). The actual projection of 30 new residences per year would have no to little impact on the County’s road system.

1. The Northeast County watershed (where there are 35 vacant lots that could be developed if alternative OWTS are allowed) would be served by Mines Road and SR 130, both of which are mountain roads with multiple sharp curves with locations containing inadequate road sections and narrow to nonexistent shoulders. New driveways or roads would need to be developed to provide access from most of the vacant parcels in this area to these two collectors, which would likely be a significant constraint to development of these lots. According to the most recently published Caltrans traffic volumes (2010), up to 7,000 daily vehicles use SR 130 in the Northeast County watershed vicinity.

2. The Calaveras Reservoir watershed (where there are 38 vacant lots that could be developed if alternative OWTS are allowed) would principally be served by Felter Road, Sierra Road, Calaveras Road, and SR 130 all of which are roads

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that contain inadequate road sections. New driveways or roads would need to be developed to provide access from most of the vacant parcels in this area to these collectors.

3. The southern portion of the Coyote Creek watershed (where there are 99 vacant lots) would principally be served by SR 152 as well as by a few rural roads that are twisty mountain roads, including Finley Ridge Road, East Dunne Avenue, Frost Road, Metcalf Road, and San Felipe Road. New driveways or roads would need to be developed to provide access from most of the vacant parcels in this area to SR 152. The northern portion of this watershed would be served by Crothers Road, Alum Rock Avenue (SR 130), Quimby Road, Sierra Road, Calaveras Road, Mountain Peak Road, and other County roads. These roads also contain inadequate sections but are generally not as steep and twisty because they serve the lower foothills east of the Valley.

4. The Lexington Basin watershed (where an additional 83 units may be constructed) would principally be served by SR 17. The feeder collectors to SR 17 that would serve new development would include Summit Road (SR 35), Bear Creek Road, Idylwild Road, and Alma Bridge Road. These feeder roads are mountain roads that contain inadequate road sections. Also, the additional traffic has the potential to increase safety hazards to “at grade” SR 17 intersections and for turns onto and off SR 17 at locations along the highway (except at Bear Creek Road and Summit Road where there are interchanges).

5. The western portions of the Uvas Creek watershed (where there are 172 vacant lots) would be principally served by Hecker Pass Road (SR 152), Watsonville Road, and Uvas Road (with access to Oak Glen Avenue and to Bailey Avenue). Other than SR 152 and Watsonville Road, these are mountain roads with multiple sharp curves that include inadequate road sections. New driveways or roads would need to be developed to provide access from most of the vacant parcels in this area to these arterials.

6. The eastern portion of Adobe watershed (where there are 26 vacant lots) would principally be served by Page Mill Road and Moody Road. These two roads are mountain roads with sharp curves and that contain inadequate road sections. However, most of the vacant parcels in this watershed are infill lots at lower elevations.

7. The Permanente watershed (where there are 52 vacant lots) would principally be served by Stevens Creek Boulevard, Swiss Creek Lane, Montebello Road, and Stevens Canyon Road. These facilities are mountain roads with sharp curves and contain inadequate road sections. New driveways or roads would need to be developed to provide access from most of the vacant parcels in this area to these roadways.

8. The San Tomas watershed (where there are 30 vacant lots) would be principally served by SR 9 (Big Basin Way), Sanborn Road, and Bohiman Road. These roads contain multiple horizontal curves and inadequate road sections. New driveways or roads would need to be developed to provide access from most of the vacant parcels in this area to these arterials.
9. The Guadalupe River watershed (where there are 27 vacant lots) would principally be served by SR 17 with feeder roads including Hicks Road, Bohiman Road, and Limekiln Canyon Road. The latter two roads contain inadequate road sections. It is possible that other new development would have driveways extending to residential streets further east. There is also the potential to add additional traffic to certain at grade intersections with SR 17 as discussed under No. 4 above.

10. The Alamitos Creek watershed (where there are 36 vacant lots) would be principally served by Alamitos Creek Road, Hicks Road, and Loma Prieta Road. Many of the smaller vacant lots are adjacent to or near Alamitos Creek Road, which runs easterly through Almaden Quicksilver Park to the Santa Clara Valley. This road consists of sharp horizontal curves and contains inadequate road sections.

11. The Upper Llagas Creek watershed (where there are 23 vacant lots) would be principally served by Uvas Road, Casa Loma Road, and Aram Road. These are mountain roads that contain sharp horizontal curves and inadequate road sections. New driveways or roads would need to be developed to provide access from most of the vacant parcels in this area to these arterials.

Most of these 11 watersheds have so little development potential that even in the worst case scenario with all vacant lots being developed, the new traffic would not substantially affect traffic safety. In addition as noted above, many of these lots are constrained by lack of driveway access, which is an example of how the buildout projections likely substantially overstate how many lots would eventually be developed.

Three of the watersheds in the mountainous areas have more substantial development potential – Coyote Creek, Uvas Creek, and Lexington Basin. Much of the additional development in the Coyote Creek watershed would be in the northern portion of that watershed on foothills east of the valley. This development would be spread throughout a very large area. It is expected that at full buildout in this watershed new development that would use mountainous roads not meeting County road standards would constitute fewer than 50 residential units. Much of the additional development in the Uvas Creek watershed would occur on the valley floor or adjacent to Hecker Pass Road (SR 152). It is expected that at full buildout new development in this watershed that would use mountainous roads not meeting County road standards would constitute fewer than 50 residential units.

The one watershed that has more development potential that would be served by roads not meeting County standards would be the Lexington Basin watershed. Up to 830 new daily trips could eventually occur if all 83 additional units were developed. Because most of the vacant lots in this watershed are small lots in existing subdivisions, and because they have existing public road access, it is more likely that these lots would be developed than vacant lots in more remote parts of the County.

At this program level of analysis, it is not possible to identify how owners of additional residences would provide access from each development site to the County and State roadway system. It is not possible to identify specific safety hazards for motorists, bicyclists, or pedestrians from the trips generated by the additional residential
development. However, it is expected that additional development of many vacant lots would use roads that do not meet current County road standards, and therefore would increase the risk of collisions due to increased traffic volumes. Most of the lots that could have inadequate road access would be in the 11 watersheds listed above, though there are also roads that would serve new development on the valley floor (e.g., San Felipe Road and Metcalfe Road) that do not meet County road standards.

To summarize, in most of the watersheds that are served by a constrained roadway system, though even at full buildout the number of new residences that could occur are relatively few, especially as compared to existing development plus the number of new residences that could be developed under the existing regulations. The EIR that was prepared for the County General Plan did not find the addition of more traffic to these roads that do not meet County road standards to be a significant impact. No mitigation would be required by the County for new development that would be served by conventional OWTS on the basis that the property was designated by the General Plan to allow residential development, and neither the General Plan EIR nor other County regulations require mitigation for the effects of such development on road safety.

It is concluded that in designating lands served by inadequate roads with land use designations allowing residential development, the County has accepted the potential for increased risk of collisions that may accompany increases in development-related vehicle traffic. The likely increase in annual trips (about 300 per year spread across the County) would be so small that the impacts would be difficult to measure. The additional lots that could be developed in areas with the most constrained roads (i.e., the mountainous areas of the County) are not substantially greater than the number of lots that can be developed with conventional OWTS. On these bases and at a program level, it is concluded that the impact is less than significant, and at a program level no mitigation is required.

**Pedestrian and Bicyclist Safety**

**Impact 4.5-D** Potential new development could add vehicle traffic to existing roads with substandard pedestrian and bicycle facilities, thereby decreasing the safety of such facilities.

The Santa Clara County General Plan Transportation Chapter Policy R-TR 6 calls for provision of pathways and/or sidewalks that would provide safe, non-motorized circulation routes (i.e. pedestrian, equestrian and bicycle) within identified rural residential areas. As identified earlier, many County roadways have inadequate shoulders that are not sufficiently wide enough for bicycles (based on VTA's Bicycle Technical Guidelines) and lack pedestrian provisions such as sidewalks. As described under Impact 4.5-D, there are many roads that do not meet County standards for bicyclists or pedestrians. County engineering staff states that there is not a current capital project list that would correct such deficiencies countywide for rural roads. Furthermore, the VTP listed transportation projects for rural roads would not mitigate existing deficiencies on the County roads listed above. Increased residential traffic on

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76 Masoud Akbarzadeh, personal communication, 5/12.
roads with substandard bicycle and pedestrian facilities has the potential to exacerbate existing traffic conflicts and decrease safety.

Countywide, approximately 300 new trips per year are expected to be generated. In addition, most of these mountainous roads (with some notable exceptions like Mines Road) are lightly used by bicyclist and pedestrians. In addition, the County has accepted the potential for increased risk of accidents involving pedestrians and bicyclists when designating lands to allow residential development. The additional lots that could be developed in areas with the most constrained roads (i.e., the mountainous areas of the County) are not substantially above the number of lots that could be developed with conventional OWTS, and no mitigation is required for that development. Therefore, at a program level this impact would be *less than significant*, and no mitigation is required.
4.6 AIR QUALITY

A. Setting

The project is located in unincorporated watershed areas throughout Santa Clara County. Elevations within the County range from sea level at San Francisco Bay in the north to 3,790 feet at Loma Prieta Peak in the Santa Cruz Mountains to the west and 4,373 feet at Copernicus Peak on Mount Hamilton within the Diablo mountain range to the northeast. The County lies within the San Francisco Bay Area Air Basin, which consists of Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, and Napa Counties, and the southern portions of Solano and Sonoma Counties. An air basin generally has similar meteorological and geographic conditions throughout. Areas within each air basin are considered to share the same air masses and are therefore expected to have similar ambient air quality. The local air quality regulatory agency responsible for managing air quality in the area including Santa Clara County is the Bay Area Air Quality Management District (BAAQMD).

1. Climate and Meteorology

As described in the 1994 Santa Clara County General Plan Environmental Impact Report (EIR), the County climate is shaped by the same forces that influence and control the overall weather patterns of the San Francisco Bay Area Air Basin. In general, northwesterly winds generated by high-pressure cells in the Pacific Ocean are drawn through the Golden Gate and forced into a more westerly orientation. Once inside the Bay, this air mass is split and re-channeled by the East Bay hills, producing southwesterly winds at San Pablo and northwesterly winds at San Jose. Wind data taken at San Jose Airport indicate the predominance of northwesterly and west-northwesterly winds during most of the year.

During the summer, the semi-permanent high-pressure zone of the eastern Pacific Ocean normally remains near the California coast. High-pressure systems characteristically supply dry air that warms as it descends. This dry, subsiding air often acts as a cap over the cooler marine air near the surface and restricts precipitation. Subsidence inversions may be several thousand feet deep and, together with strong sunlight, can produce worst-case conditions for the formation of photochemical smog, of which the largest single component is ozone. In addition, summer winds are generally light and provide little ventilation of pollutant emissions.

In the winter, the Pacific high-pressure cell retreats southward, exposing the Bay Area to numerous low-pressure storm systems. Between storms, however, there are periods of stagnation characterized by very light surface winds. Surface inversions, observed most often in the morning from October to February, are caused by radiation cooling of land surfaces, rather than subsiding air. Such inversions also trap pollutant emissions close to the ground. Both types of inversion may combine in autumn to produce the heaviest pollution.

77 Santa Clara County 1994 General Plan EIR.
2. Regulatory Framework

Air quality and air pollution sources are regulated by federal, State, regional, and local regulatory agencies. Air quality regulations provide the standards by which air quality is determined and institute controls on air pollution sources to improve air quality. The Federal Clean Air Act established the national ambient air quality standards and delegated the enforcement of air pollution control regulations to the states. In California, the California Air Resources Board (CARB) develops and enforces air regulations, but delegates the responsibility of stationary emission source regulation to local air pollution control agencies. In the project area, the BAAQMD is responsible for air pollution source regulation. Mobile sources of air pollutant emissions are regulated on a statewide basis by the CARB. The air pollutants of concern and the roles of the agencies primarily responsible for managing the air quality within the project area and relevant air quality regulations are further discussed below.

Federal Air Quality Regulations

Federal Clean Air Act

The Federal Clean Air Act (Federal Act) was established in an effort to assure that acceptable levels of air quality are maintained in all areas of the United States. Air quality is characterized by the presence of pollutants that fall into two basic categories; criteria air pollutants and toxic or hazardous air contaminants. Criteria air pollutants refer to a group of pollutants that the regulatory agencies have adopted ambient air quality standards and pollution management and control strategies. Toxic or hazardous air contaminants refer to a category of air pollutants that have potential adverse health effects but do not have an associated ambient air quality standard. These pollutants are called hazardous air pollutants (HAPs) in federal law and toxic air pollutants (TACs) in California law.

Criteria Air Pollutants

The Federal Act requires the EPA to establish ambient air quality standards for air pollutants that cause or contribute to air pollution and that may reasonably be anticipated to endanger public health. Pollutants with air quality standards are called criteria pollutants. National Ambient Air Quality Standards (NAAQS or national standards) have been established for seven pollutants: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), particulate matter, which includes both respirable particulate matter, PM₁₀ (particulate matter 10 microns or less in diameter) and fine particulate matter, PM₂.₅ (particulate matter 2.5 microns or less in diameter), sulfur dioxide (SO₂), and lead (Pb). There can be two standards for each criteria pollutant – primary and secondary NAAQS. The primary NAAQS establish the acceptable ambient concentration of each criteria pollutant, the attainment and maintenance of which protect the public health with an adequate margin of safety. The secondary NAAQS are the ambient concentration levels requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of that pollutant in the ambient air. Often the secondary standard is the same as the primary standard.
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 (µg/m³). The significance of a pollutant concentration is determined by comparing it to an appropriate ambient air quality standard. Depending on the pollutant and its associated effects, the standards may be short term, from one to twenty-four hours, or an annual average. In general, short-term standards represent the maximum acceptable concentrations that may be reached but not exceeded more than once per year. Annual standards are maximum acceptable concentrations that may be reached but not exceeded. Table 4.6-1 lists the primary and secondary NAAQS, along with the California Ambient Air Quality Standards (CAAQS or State standards). Potential health effects and primary sources of criteria pollutants are described below.

**Nitrogen Dioxide.** Nitrogen dioxide is a reddish-brown gas that is a by-product of combustion processes. During combustion processes at high temperatures, nitrogen from the atmosphere and the fuels being burned combines with oxygen to form various oxides of nitrogen. Nitric oxide (NO) and nitrogen dioxide (NO₂) are the most significant air pollutants generally referred to as NOx. Nitric oxide is a colorless and odorless gas that quickly converts to NO₂ and is easily measured in the atmosphere. Nitrogen dioxide also contributes to ground-level ozone formation. Adverse health effects associated with exposure to high levels of nitrogen dioxide include the risk of acute and chronic respiratory illness.

**Ozone.** Ground-level ozone (ozone) is the principal component of smog. Ozone is not directly emitted into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the presence of sunlight. VOCs and NOx are known as precursor compounds for ozone. Ozone levels are highest during late spring through early summer when precursor emissions are high and meteorological conditions are favorable for the complex photochemical reactions to occur. Ozone is a regional air pollutant since it is not emitted directly by sources, but is formed downwind of sources of VOCs and NOx emissions. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infection and impair lung defense mechanisms and lead to emphysema and chronic bronchitis. Ozone can cause damage to vegetation and other materials.

**Carbon Monoxide.** Carbon monoxide (CO) is a non-reactive pollutant that is colorless and odorless, and is toxic in high concentrations. It is formed by the incomplete combustion of fuels. The largest source of CO emissions is motor vehicles. Wood stoves and fireplaces also contribute to high levels of CO, particularly in the wintertime. Unlike ozone and NO₂, CO is directly emitted to the atmosphere without additional chemical conversion. The highest CO concentrations generally occur during the nighttime and early mornings in late fall and winter. CO levels are strongly influenced by meteorological factors such as wind speed and atmospheric stability. High CO concentrations can develop during periods of light winds combined with ground-level temperature inversions, typical of wintertime conditions during the evening through early morning hours. Adverse health effects of carbon monoxide include the impairment of oxygen transport in the bloodstream, increase of carboxyhemoglobin, aggravation of cardiovascular disease, impairment of central nervous system function, and fatigue, headache, confusion, and dizziness. Exposure to carbon monoxide can be fatal in the case of very high concentrations.
Particulate Matter. Respirable particulate matter, $\text{PM}_{10}$, and fine particulate matter, $\text{PM}_{2.5}$, consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. $\text{PM}_{10}$ and $\text{PM}_{2.5}$ represent fractions of particulate matter that can be inhaled and cause adverse health effects. $\text{PM}_{10}$ and $\text{PM}_{2.5}$ are a health concern, particularly at levels above the $\text{PM}_{10}$ federal and State ambient air quality standards. $\text{PM}_{2.5}$ (including diesel exhaust particles) can have greater effects on health than $\text{PM}_{10}$. Because these particles are so small they are able to penetrate to the deepest parts of the lungs. Scientific studies have identified links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more susceptible to the health risks of $\text{PM}_{2.5}$ because their immune and respiratory systems are still developing. Very small particles of certain substances (e.g., sulfates and nitrates) can also cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health.

Several forms of particulate matter, in particular diesel particulate matter, have adverse health effects at concentrations well below the standards established for $\text{PM}_{10}$ or $\text{PM}_{2.5}$. The CARB identified diesel exhaust particulate matter as a toxic air contaminant based on its potential to cause cancer, premature death, and other health problems. Diesel exhaust also contributes to fine particulate matter ($\text{PM}_{2.5}$) air quality problems. Thus, diesel particulate matter presents both an air quality concern, as well as a health risk concern. As such, diesel particulate matter emissions require separate evaluation as a toxic air contaminant in order to assess potential health risks.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. In addition to health effects, particulates also can damage materials and reduce visibility. Dust comprised of large particles (diameter greater than 10 microns) settles out rapidly and is more easily filtered by human breathing passages. This dust is of concern more as a soiling nuisance rather than a health hazard.

Sulfur Dioxide. Sulfur dioxide is a colorless gas with a strong odor and potential to damage materials. It is produced by the combustion of sulfur containing fuels such as oil and coal. Refineries, chemical plants, and pulp mills are the primary industrial sources of sulfur dioxide emissions. Adverse health effects associated with exposure to high levels of sulfur dioxide include aggravation of chronic obstruction lung disease and increased risk of acute and chronic respiratory illness.

Lead. Lead occurs in the atmosphere as particulate matter. It was primarily emitted by gasoline-powered motor vehicles; however, the use of lead in fuel has been virtually eliminated. As a result of lead being eliminated from fuels, levels throughout the U.S. have dropped dramatically in the past 20 years. Dust from old lead paints represent very localized lead problems. Lead concentrations measured at ambient monitoring stations in California are well below the ambient standards.
Federal Requirements

Each state is divided into air basins based on topographic, geographic, and meteorological conditions. Each air basin is then assessed to determine if the area meets the NAAQS. Air basins or portions thereof have been classified as either “attainment” or “nonattainment” for each criteria air pollutant based on whether or not compliance with the standards have been achieved.

If an area does not meet the NAAQS over a set period of time, the EPA designates the area as a “nonattainment” area for that particular pollutant and sets deadlines for bringing the area into compliance with the standards. These deadlines vary by pollutant, the current level of air pollution in the air basin, and the ability of each region to meet the deadline. The EPA requires states that have areas that are not in compliance with the national standards to prepare and submit air quality plans showing how and when the standards will be met. These plans are referred to as State Implementation Plans (SIPs). If the states cannot show how the standards will be met, then they must show progress toward meeting the standards. Under severe cases, the EPA may impose a federal plan to show progress in meeting the federal standards.

SIPs typically contain measures to reduce air pollution and specific strategies for achieving attainment. SIPs for nonattainment areas must require new sources to achieve the “lowest achievable emission rate.” The Federal Act also contains specific measures relating to air pollution from cars, trucks, and other “mobile sources.” States have the authority to implement transportation control measures to reduce mobile source pollution. Except for California, states do not have the authority to prescribe the level of pollutants emitted directly from the tailpipe of mobile sources. The Federal Act also contains specific measures to be included in the SIP for areas that have not attained the ozone and particulate matter NAAQS.

Areas with monitored air pollutant concentrations lower than ambient air quality standards are designated as attainment areas on a pollutant-by-pollutant basis. Areas are designated as unclassified when data are insufficient to have a basis for determining the area’s attainment status. From a regulatory standpoint, unclassified areas are treated the same as an attainment area. Table 4.6-2 shows the attainment status of the project area with respect to the national and State air quality standards. The Bay Area as a whole, including Santa Clara County within the BAAQMD, does not meet the federal or State ambient air quality standards for ozone and PM$_{2.5}$. For PM$_{10}$, it is unclassified with respect to the federal standards and nonattainment for the State standards. For all other pollutants it is classified as in attainment or unclassified with respect to the federal and State air quality standards.
### Table 4.6-1
California and National Ambient Air Quality Standards

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>California Standards</th>
<th>National Standards (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Primary (b,c)</td>
<td>Secondary (b,d)</td>
</tr>
<tr>
<td>Ozone</td>
<td>8-hour</td>
<td>0.070 ppm (137 µg/m³)</td>
<td>0.075 ppm (147 µg/m³)</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>0.09 ppm (180 µg/m³)</td>
<td>—</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>8-hour</td>
<td>9.0 ppm (10 mg/m³)</td>
<td>9 ppm (10 mg/m³)</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>20 ppm (23 mg/m³)</td>
<td>35 ppm (40 mg/m³)</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>Annual</td>
<td>0.03 ppm (57 µg/m³)</td>
<td>0.053 ppm (100 µg/m³)</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>0.18 ppm (339 µg/m³)</td>
<td>0.100 ppm (188 µg/m³)</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>Annual</td>
<td>—</td>
<td>0.030 ppm (80 µg/m³)</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>0.04 ppm (105 µg/m³)</td>
<td>0.14 ppm (365 µg/m³)</td>
</tr>
<tr>
<td></td>
<td>3-hour</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>0.25 ppm (655 µg/m³)</td>
<td>75 ppb (196 µg/m³)</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>Annual</td>
<td>20 µg/m³</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>50 µg/m³</td>
<td>150 µg/m³</td>
</tr>
<tr>
<td>PM₂.₅</td>
<td>Annual</td>
<td>12 µg/m³</td>
<td>15 µg/m³</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>—</td>
<td>35 µg/m³³</td>
</tr>
<tr>
<td>Lead</td>
<td>Calendar quarter</td>
<td>1.5 µg/m³</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>30-day average</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Notes: ppm = parts per million  
µg/m³ = micrograms per cubic meter  
mg/m³ = milligrams per cubic meter  
(a) Standards, other than for ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.  
Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state’s implementation plan is approved by the EPA.  
Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.  
The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005. A new 8-hour standard was established in May 2008.  
The form of the 1-hour NO₂ standard is the 3-year average of the 99th percentile of the daily maximum 1-hour average concentration.  
The annual PM₁₀ standard was revoked by U.S. EPA on September 21, 2006 and a new PM₂.₅ 24-hour standard was established.  
The U.S. EPA established a new 1-hour sulfur dioxide standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations.
Table 4.6-2
Attainment Status of Santa Clara County

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Federal</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone (O₃) - 1 hour</td>
<td>Nonattainment</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>Ozone (O₃) - 8 hour</td>
<td>Nonattainment</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>Attainment</td>
<td>Attainment</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO₂)</td>
<td>Unclassified/Attainment</td>
<td>Attainment</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO₂)</td>
<td>Attainment</td>
<td>Attainment</td>
</tr>
<tr>
<td>Respirable Particulates (PM₁₀)</td>
<td>Unclassified</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>Fine Particulate Matter (PM₂.₅)</td>
<td>Nonattainment</td>
<td>Nonattainment</td>
</tr>
</tbody>
</table>


State Air Quality Regulations

California Clean Air Act

Air pollution in California is regulated under the provisions of the California Clean Air Act (State Act). These statutes provide the basis for implementing the Federal Act. The CARB is responsible for establishing and reviewing the State standards, compiling the California SIP, securing approval of that plan from the EPA, and identifying toxic air contaminants. CARB also regulates mobile emission sources in California, such as construction equipment, trucks, and automobiles. The State Act divides implementation responsibility between the CARB and local or regional agencies called air quality management districts or air pollution control districts.

The air districts are primarily responsible for implementing and enforcing federal and State regulations for stationary sources at industrial and commercial facilities within their jurisdictions and for preparing the regional air quality plans that are required under the Federal Clean Air Act and California Clean Air Act. These regional air quality plans prepared by districts throughout the state are compiled by the CARB to form the California SIP. The local air districts also have the responsibility and authority to adopt transportation control measures and emission reduction programs for indirect and area-wide emission sources.

The CARB oversees air district regulation of stationary sources and is the agency primarily responsible for controlling air pollution from mobile sources in California. Regulations have been adopted at both EPA and CARB levels that set specific emission standards for vehicles. As older vehicles are retired and replaced with newer, cleaner vehicles (called “fleet turnover”), it is expected that the air quality will improve. Consistent with this notion, most air quality planning documents project reduced vehicle emissions in the future.

Local councils of governments, County transportation agencies, cities and counties, and various nongovernmental organizations also join in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and...
policies, as well as implementation of extensive education and public outreach programs. The BAAQMD is the regional agency with jurisdiction over Santa Clara County. The BAAQMD is responsible for bringing and/or maintaining air quality within federal and State air quality standards. This includes the responsibility to monitor ambient air pollutant levels and to develop and implement attainment strategies to ensure that future emissions will be within standards.

Criteria Air Pollutants

The California Clean Air Act outlines a program for areas in the state to attain the California Air Quality Standards (CAAQS) by the earliest practical date. The California Clean Air Act set more stringent air quality standards, as shown in Table 4.6-1, for most of the pollutants covered under the federal standards. Additionally, California has adopted ambient air quality standards for vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates.

In a manner similar to the federal requirements, the California Clean Air Act requires designation of attainment and nonattainment areas with respect to CAAQS. The California Clean Air Act also requires that local and regional air districts prepare a Clean Air Plan (CAP) if the State air quality standards for CO, SO<sub>2</sub>, NO<sub>2</sub>, or ozone are violated in their district. These CAPs include information on existing air quality in the region, an inventory of current and forecasted future emissions, emission reductions required to meet the standards, and the control measures required to achieve the emission reduction. The CAP must show satisfactory progress in attaining the State air quality standards. The California Clean Air Act requires that the State air quality standards be met as expeditiously as practicable but unlike the Federal Clean Air Act, does not set precise attainment date deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

Unlike for other pollutants an attainment plan is not required for areas that violate the State PM<sub>10</sub>, or PM<sub>2.5</sub> standards. However, in 2003 the California Legislature enacted Senate Bill 656 which seeks to reduce public exposure to PM<sub>10</sub> and PM<sub>2.5</sub> and to make progress toward attainment of State and National PM<sub>10</sub> and PM<sub>2.5</sub> standards. SB 656 requires CARB, in consultation with local air quality districts, to develop and adopt a list of the most readily available, feasible, and cost-effective control measures that could be used to reduce particulate matter.

Toxic Air Contaminants

Toxic Air Contaminants (TAC) are a comprised of large group of compounds known to cause short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects. TACs are considered separately from criteria pollutants in the regulatory process. Unlike criteria pollutants, there are no ambient air quality standards for evaluation of TACs. Instead, TAC emissions are generally evaluated based on the degree of health risk that could result from exposure to these pollutants.

TAC sources include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), some agricultural activities, and mobile sources. In general, mobile sources, particularly those with diesel engines, contribute more significantly to health risks than stationary sources. In comparison to other air toxics the CARB has identified
and controlled, diesel particulate matter emissions are responsible for about 70 percent of the total ambient air toxics risk. In addition to these general risks, diesel particulate matter can also present elevated localized or near-source exposures.

The State requires the local air districts to quantify and prioritize emissions from individual facilities. High priority facilities must then perform a health risk assessment, and if specific thresholds are exceeded, they are required to communicate the results to the public in the form of notices and public meetings. Depending on the level of risk, facilities can be required to implement varying levels of risk reduction measures. Regulation of TACs from mobile sources has traditionally been implemented through use of engine emission standards for on-road motor vehicles and through specifications for gasoline and diesel fuel sold in California. However, as discussed below, due to the significant contribution to health risks in the state from diesel exhaust, the CARB has implemented a diesel exhaust control program.

**CARB Diesel Exhaust Control Program**

In August of 1998, CARB identified particulate matter emitted from diesel-fueled engines (diesel particulate matter [DPM]) as a TAC that is carcinogenic (causes cancer) in addition to other adverse health effects. Diesel engines emit TACs in both gaseous and particulate forms. Diesel particulate matter is of particular concern since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by EPA as HAPs, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. Because the vast majority of diesel exhaust particles are very small (92% to 94% of their combined mass consists of particles less than 2.5 micrometers in diameter), the particles are inhaled into the lung. Like other particles of this size, a portion will eventually become trapped within the lung. While the gaseous portion of diesel exhaust also contains TACs, CARB uses diesel particulate matter as a surrogate for all the compounds in diesel exhaust that are carcinogenic.

To address the issue of diesel emissions in the state, CARB developed the **Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles** (CARB, 2000a) and the **Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines** (CARB, 2000b). The Diesel Risk Reduction Plan was adopted by the CARB in September 2000. In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. The projected emission benefits associated with full implementation of this plan, including existing and new federal measures, are reductions in diesel particulate matter associated cancer risks by 75 percent in 2010 and 85 percent by 2020. The measures in the plan will substantially reduce localized risks associated with activities that expose nearby individuals to diesel particulate matter emissions.

Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines in 2004 and 2007 previously discussed, as well as adoption of regulations for low sulfur fuel in California. The California diesel fuel regulations are similar to the federal regulations in that they require the maximum sulfur content to be
15 ppmw, but they also require reductions in the aromatic content. Reductions in aromatic content reduce emissions of several other toxic substances other than diesel particulate matter, including benzene and polynuclear aromatic hydrocarbons (PAHs). Additionally, the low sulfur diesel fuel requirements are be accelerated compared to the federal requirements. The California low sulfur diesel fuel is currently required for use in both on-road and non-road engines in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations.

In December 2008 CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles. The regulation requires fleets that operate in California to reduce diesel truck and bus emissions by retrofitting or replacing existing engines. Amendments were considered in December 2010 to provide more time for fleets to comply. The amended regulation would require installation of PM retrofits beginning January 1, 2012 and replacement of older trucks starting January 1, 2015. By January 1, 2023, nearly all vehicles would need to have 2010 model year engines or equivalent.

In July 2007, the CARB adopted regulations to reduce DPM and NOx emissions from in-use (existing) off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, etc.). The regulations apply diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NOx exhaust emissions by requiring owners to or turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. The regulations call for different requirements and an implementation schedule that depends on the size of the fleet. Large fleets are those with a total combined equipment horsepower of more than 5,000 hp, medium fleets are those with a total combined horsepower between 2,500 and 5,000 hp, while small fleets are those with a total combined horsepower of 2,500 hp or less.

In December 2010 the CARB amended these regulations to change the requirements and implementation schedule. The amended regulations delay the original compliance timeline for all fleets by four years, making the first compliance deadline for January 1, 2014, for large fleets, January 1, 2017 for medium fleets, and January 1, 2019 for small fleets. Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NOx.

**Local/Regional Air Quality Plans, Policies and Regulations**

**BAAQMD Plans and Regulations**

The Bay Area Air Quality Management District (BAAQMD) is the agency responsible for regulating air pollutant emissions in the San Francisco Bay Area Air Basin. BAAQMD is
responsible for implementing emissions standards and other requirements of federal and State laws. Emissions of criteria air pollutants are regulated through both emissions limitations and the State standards. The BAAQMD operates a regional network of monitoring stations that provides information on meteorology and ambient concentrations of air pollutants.

Generally, emissions from stationary and area sources are regulated by the BAAQMD through a permit process. As part of the permitting process for stationary sources, the BAAQMD may require the use of Best Available Control Technology (BACT) to control emissions from sources at a facility. BACT emission control methods and acceptable emission levels have been identified for most types of emission sources. In addition to specifying air pollution control equipment, in order to minimize emissions the BAAQMD may impose restrictions on throughput volumes and total emission quantities from a facility. Depending on the total emissions from a facility, the BAAQMD may also require that emissions from the facility be offset in order to maintain a no net increase in emissions from the facility. Emissions of TACs are evaluated by the BAAQMD on a case-by-case basis under a policy-based new source review program called “Risk Screening/Risk Management Procedures.”

The BAAQMD and other agencies prepare clean air plans in response to the State and federal Clean Air Acts.

2001 Ozone Attainment Plan Addressing the National Standards

The BAAQMD, the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG) prepared the Bay Area 2001 Ozone Attainment Plan as part of the State Implementation Plan (SIP) to achieve the NAAQS for the 1-hour ozone standard. Although U.S. EPA revoked the National 1-hour ozone standard, commitments made in that plan along with emissions budgets remain valid until the region develops an attainment demonstration/maintenance plan for the 8-hour National standard for ozone. The U.S. EPA has already determined that the region met the 1997 8-hour ozone standard. However, the region will be required to submit a maintenance plan and demonstration of attainment with a request for redesignation to U.S. EPA prior to be formally redesignated. BAAQMD will likely not act on this submittal for a few years. In addition, the U.S. EPA’s new, slightly more stringent, 8-hour ozone standard was recently established. The U.S. EPA will be making new attainment designations based on that standard in about 3 years and eventually revoking the older standard.

Bay Area 2010 Clean Air Plan Addressing the State Standards

Air quality plans addressing the California Clean Air Act with respect to ozone have been prepared to demonstrate progress toward meeting the more stringent 1-hour and 8-hour State ozone standards, for which the Bay Area is designated nonattainment. In addition, emissions of ozone precursors (NOx and ROG) contribute to higher ozone levels in neighboring air basins. State law requires ozone nonattainment areas to include all feasible measures to reduce ozone precursors and reduce transport of ozone and it’s precursors to neighboring air basins.

In September 2010, the BAAQMD adopted the Bay Area 2010 Clean Air Plan (CAP). This CAP updates the most recent ozone plan, the 2005 Ozone Strategy. Unlike
previous Bay Area CAPs, the 2010 CAP is a multi-pollutant air quality plan addressing four categories of air pollutants:

- Ground-level ozone and the key ozone precursor pollutants (reactive organic gases and NOx), as required by State law;
- Particulate matter, primarily PM\textsubscript{2.5}, as well as the precursors to secondary PM\textsubscript{2.5};
- Toxic air contaminants; and
- Greenhouse gases.

While the CAP addresses State requirements, it will also provide the basis for developing future control plans to meet federal requirements (NAAQS) for ozone and PM\textsubscript{2.5}. The region is required to prepare (by December 2012) a federally-enforceable plan to meet the NAAQS for PM\textsubscript{2.5}. In addition, U.S. EPA is likely to adopt a more stringent NAAQS for ozone. These new standards will likely trigger new planning requirements for the Bay Area and more stringent federally enforceable control measures.

While previous CAPs have relied upon a combination of stationary and transportation control measures, the 2010 CAP adds two new types of control measures: (1) Land Use and Local Impact Measures and (2) Energy and Climate measures. These types of measures would indirectly reduce air pollutant and greenhouse gas emissions through reductions in vehicle use and energy usage. In addition, the plan includes Further Study Measures, which will be evaluated as potential control measures.

PM\textsubscript{10} and PM\textsubscript{2.5} Plans

The BAAQMD adopted a Particulate Matter implementation Schedule, per the requirements of SB 656. The BAAQMD has found that the primary constituents of elevated PM\textsubscript{2.5} and PM\textsubscript{10} are secondary ammonium nitrate and wood smoke. Secondary ammonium nitrate forms in the atmosphere as a result primarily of fossil fuel combustion (e.g., motor vehicles). The clean air planning efforts for ozone will also reduce PM\textsubscript{10} and PM\textsubscript{2.5}, since a substantial amount of this air pollutant comes from combustion emissions such as vehicle exhaust. BAAQMD adopts and enforces rules to reduce particulate matter emissions and develops public outreach programs to educate the public to reduce PM\textsubscript{10} and PM\textsubscript{2.5} emissions (e.g., Spare the Air Program). SB 656 requires further action by CARB and air districts to reduce public exposure to PM\textsubscript{10} and PM\textsubscript{2.5}. Efforts identified by BAAQMD in response to SB 656 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.

Santa Clara County General Plan

The 1994 Santa Clara County General Plan is the County’s long range guide for use of land and protection of natural resources. The General Plan policies relative to air quality center on the following four strategies, whose aims are to reduce overall population exposure to air pollution and achieve air quality standards:

- Growth Management and Land Use Policies For Cleaner Air
- Develop Transit Systems Providing Feasible Travel Options
• Increase Travel Demand Management and Traffic Congestion Relief
• Reduce Particulate and Small Scale Emissions

3. Existing Air Quality Conditions

The ambient air quality in a given area depends on the quantities and types of pollutants emitted within the area, the location and distribution of emission sources, transport of pollutants to and from surrounding areas, local and regional meteorological conditions, as well as the surrounding topography of the air basin. Meteorological conditions such as wind speed and direction, atmospheric stability, and for photochemical pollutants, sunlight, all combine to affect the atmosphere’s ability to mix, transform, and disperse pollutants. Long-term variations in air quality typically result from changes in air pollutant emissions, while short-term variations result from changes in atmospheric conditions.

The important effect of a temperature inversion is to prevent pollutants from rising and being diluted vertically. The pollutants are trapped in the lower layer of air where people breathe.78 According to the County General Plan EIR, the Santa Clara Valley is bordered on the south, west, and east by mountain ranges. Under an inversion, pollutant emissions from urban areas to the north, as well as those generated in the greater San Jose area, are pushed up against the mountains by the northwesterly winds. Local conditions thus act to frequently concentrate the pollutants in Santa Clara County rather than disperse them.

Over the last couple of decades, air quality in Santa Clara County and the overall Bay Area has experienced a significant improvement because of stricter emissions regulations for stationary (point) and automotive (non-point) sources. In the past, air quality was poorer; the air contained high levels of lead, carbon monoxide, and other pollutants. Among the improvements within the BAAQMD region as a whole, ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as hot, sunny summer afternoons or cold, windless winter nights.

Pollutant monitoring results generally indicate that air quality in the region has generally been good. No exceedances of the State or federal CO standards have been recorded at any of the region’s monitoring stations since 1991. The Bay Area is currently considered a maintenance area for federal and California CO standards.

Ambient ozone, SO2, NO2, CO, PM10, and PM2.5 are measured in San Jose at the 158 Jackson Street monitoring station. The measured pollutant concentrations at the monitoring station are considered to be representative of conditions in the project area. Measured pollutant concentrations for the most recent three years (2008 through 2010) of data available are summarized in Table 4.6-3.

Ozone levels, which are measured by the number of days over the State 1-hour standard and peak concentrations, have declined substantially as a result of aggressive BAAQMD programs and programs by other regional, State and federal agencies. The reduction of peak concentrations represents progress in improving public health.

78 Santa Clara County 1994 General Plan EIR.
However, ozone levels have exceeded the State’s 1-hour standard two of the last three years; in addition, both the State and federal 8-hour standards were also exceeded twice over this time period.  

According to the recent monitoring results, only one violation of the State PM$_{10}$ daily standard was recorded during the 3-year period and no violations of the federal PM$_{10}$ standards were recorded. The area is considered a nonattainment area for this pollutant relative to State standards, and is considered an unclassified area for the federal PM$_{10}$ standard.

It should be noted that PM$_{2.5}$ levels exceeded the federal 24-hour standard five times in 2008, and three times in 2010. However, no violations of the State’s PM$_{2.5}$ standard were recorded during the 3-year period. As for SO$_2$ and NO$_2$ standards, these were not exceeded in this area during the 3-year period.

### Table 4.6-3

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbon Monoxide (CO)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1 hour concentration (ppm)</td>
<td>3.3</td>
<td>ND</td>
<td>ND</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 20 ppm</td>
<td>0</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td>Federal: &gt; 35 ppm</td>
<td>0</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Maximum 8 hour concentration (ppm)</td>
<td>2.48</td>
<td>2.50</td>
<td>2.19</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 9 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Federal: &gt; 9 ppm</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Ozone (O$_3$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 1 hour concentration (ppm)</td>
<td>0.118</td>
<td>0.088</td>
<td>0.126</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 0.09 ppm</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Maximum 8 hour concentration (ppm)</td>
<td>0.080</td>
<td>0.068</td>
<td>0.086</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 0.07 ppm</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Federal: &gt; 0.08 ppm</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>Coarse Particulates (PM$_{10}$)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24 hour concentration (µg/m$^3$)</td>
<td>55.0</td>
<td>41.1</td>
<td>44.2</td>
<td></td>
</tr>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 50 µg/m$^3$</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Federal: &gt; 150 µg/m$^3$</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Exceeded for the year:</td>
<td>State: &gt; 20 µg/m$^3$</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Federal: &gt; 50 µg/m$^3$</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

---

79 Mountain View Draft 2030 General Plan Draft EIR (November 2011).
## Table 4.6-3 (continued)
### Maximum Measured Air Pollutant Concentrations for the Project Area

#### Fine Particulates (PM$_{2.5}$)

<table>
<thead>
<tr>
<th>Maximum 24 hour concentration (µg/m$^3$)</th>
<th>41.9</th>
<th>35.0</th>
<th>41.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of days exceeded:</td>
<td>Federal: &gt; 35 µg/m$^3$</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Annual arithmetic avg. concentration (µg/m$^3$)</td>
<td>11.5</td>
<td>10.1</td>
<td>9.0</td>
</tr>
<tr>
<td>Exceeded for the year:</td>
<td>State: &gt; 12 µg/m$^3$</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Federal: &gt; 15 µg/m$^3$</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Nitrogen Dioxide (NO$_2$)

<table>
<thead>
<tr>
<th>Maximum 1 hour concentration (ppm)</th>
<th>0.080</th>
<th>0.069</th>
<th>0.064</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 0.25 ppm</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Annual arithmetic avg. concentration (ppm)</td>
<td>0.017</td>
<td>0.015</td>
<td>0.014</td>
</tr>
<tr>
<td>Exceeded for the year:</td>
<td>Federal: &gt; 0.053 ppm</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Sulfur Dioxide (SO$_2$)

<table>
<thead>
<tr>
<th>Maximum 1 hour concentration (ppm)</th>
<th>ND</th>
<th>ND</th>
<th>ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 0.25 ppm</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Maximum 3 hour concentration (ppm)</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Number of days exceeded:</td>
<td>Federal: &gt; 0.5 ppm</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Maximum 24 hour concentration (ppm)</td>
<td>ND</td>
<td>0.001</td>
<td>0.002</td>
</tr>
<tr>
<td>Number of days exceeded:</td>
<td>State: &gt; 0.04 ppm</td>
<td>ND</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Federal: &gt; 0.14 ppm</td>
<td>ND</td>
<td>0</td>
</tr>
<tr>
<td>Annual arithmetic avg. concentration (ppm)</td>
<td>ND</td>
<td>ND</td>
<td>0.000</td>
</tr>
<tr>
<td>Exceeded for the year:</td>
<td>Federal: &gt; 0.030 ppm</td>
<td>ND</td>
<td>ND</td>
</tr>
</tbody>
</table>

---

* BAAQMD air monitoring station at 158 Jackson Street in San Jose.

Notes: ppm = parts per million, µg/m$^3$ = micrograms per cubic meter.
Values reported in bold exceed ambient air quality standard.
ND = No data. There was insufficient (or no) data to determine the value.
4. Existing Emissions in Santa Clara County

**Santa Clara County Emissions**

CARB estimated annual average daily air emissions in 2010 for Santa Clara County are presented in Table 4.6-4. This table shows both the man-made (anthropogenic) emissions as well as the natural (nonanthropogenic) emissions for the County. Mobile sources are one of the largest contributors to anthropogenic (man-made) TOG, ROG, CO, NO\textsubscript{X}, and SO\textsubscript{X} emissions, while their contribution to particulate matter emissions is much smaller. As discussed earlier, the majority of PM\textsubscript{10} and PM\textsubscript{2.5} emissions are from area-wide sources. For VOC emissions in the County, the natural emission sources are also a large contributor, accounting for almost half of the total emissions.

<table>
<thead>
<tr>
<th>Source Type/Category</th>
<th>TOG</th>
<th>ROG</th>
<th>CO</th>
<th>NO\textsubscript{X}</th>
<th>SO\textsubscript{X}</th>
<th>PM</th>
<th>PM\textsubscript{10}</th>
<th>PM\textsubscript{2.5}</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stationary Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Combustion</td>
<td>2.2</td>
<td>0.5</td>
<td>15.9</td>
<td>9.7</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Waste Disposal</td>
<td>128.4</td>
<td>17.2</td>
<td>0.7</td>
<td>0.2</td>
<td>0.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cleaning and Surface Coatings</td>
<td>13.6</td>
<td>8.5</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Petroleum Production and Marketing</td>
<td>10.6</td>
<td>2.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Industrial Processes</td>
<td>2.3</td>
<td>1.7</td>
<td>0.2</td>
<td>0.9</td>
<td>0</td>
<td>3.1</td>
<td>2.1</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>157.0</strong></td>
<td><strong>30.7</strong></td>
<td><strong>16.8</strong></td>
<td><strong>10.8</strong></td>
<td><strong>1.1</strong></td>
<td><strong>4.1</strong></td>
<td><strong>3.0</strong></td>
<td><strong>2.1</strong></td>
</tr>
<tr>
<td><strong>Area wide Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvent Evaporation</td>
<td>20.8</td>
<td>18.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Miscellaneous Processes</td>
<td>14.8</td>
<td>3.1</td>
<td>33.4</td>
<td>4.0</td>
<td>0.1</td>
<td>83.4</td>
<td>44.1</td>
<td>11.5</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>35.6</strong></td>
<td><strong>21.5</strong></td>
<td><strong>33.4</strong></td>
<td><strong>4.0</strong></td>
<td><strong>0.1</strong></td>
<td><strong>83.4</strong></td>
<td><strong>44.1</strong></td>
<td><strong>11.5</strong></td>
</tr>
<tr>
<td><strong>Mobile Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-Road Motor Vehicles</td>
<td>26.6</td>
<td>24.4</td>
<td>225.6</td>
<td>40.2</td>
<td>0.2</td>
<td>2.4</td>
<td>2.4</td>
<td>1.6</td>
</tr>
<tr>
<td>Other Mobile Sources</td>
<td>13.8</td>
<td>12.4</td>
<td>113.1</td>
<td>28.6</td>
<td>0.1</td>
<td>1.6</td>
<td>1.6</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>40.5</strong></td>
<td><strong>36.8</strong></td>
<td><strong>338.7</strong></td>
<td><strong>68.8</strong></td>
<td><strong>0.3</strong></td>
<td><strong>4.0</strong></td>
<td><strong>4.0</strong></td>
<td><strong>3</strong></td>
</tr>
<tr>
<td><strong>Natural Sources (nonanthropogenic)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31.1</td>
<td>29.2</td>
<td>5.7</td>
<td>0.2</td>
<td>0.1</td>
<td>0.6</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>County Total</strong></td>
<td><strong>264.1</strong></td>
<td><strong>118.1</strong></td>
<td><strong>394.6</strong></td>
<td><strong>83.8</strong></td>
<td><strong>1.6</strong></td>
<td><strong>92.2</strong></td>
<td><strong>51.7</strong></td>
<td><strong>17.1</strong></td>
</tr>
</tbody>
</table>

Note: Subtotal and total values may not add up due to rounding.

5. Sensitive Receptors

Sensitive receptors are locations where an identifiable subset of the general population (children, asthmatics, the elderly, and the acutely or chronically ill) that is at greater risk than the general population to the effects of air pollutants are likely to be exposed. These locations include residential areas, schools, retirement homes, convalescent homes, hospitals, and medical clinics.

Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the young, the elderly, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Agricultural crops, especially broad-leaved produce crops and cultivated flowers, are also sensitive to air pollutants such as nitrogen oxides, sulfur dioxide, and ozone.

Residential districts are sensitive to air pollutants because people, including the young and elderly, are at home for extended periods so exposure periods are long. Industrial and commercial districts are less sensitive to poor air quality because exposure periods are shorter and workers in these districts are, in general, the healthiest segment of the public. Recreational land uses are moderately sensitive to air pollution because, although exposure periods are generally short, vigorous exercise associated with recreation places a high demand on human respiratory functions, which air pollution can impair. Noticeable air pollution also detracts from the recreational experience.

Residences that are to be developed under the proposed Ordinance are in residential areas as designated by the County General Plan. Some are located in mountainous areas, while others are near agricultural areas, commercial development, other residential development, and/or high-volume roadways (e.g. freeways). New residences in these designated areas may be sensitive to air pollutants based on where they are situated near such features within the County.

6. Greenhouse Gas Emissions and Global Climate Change

Climate change is caused by greenhouse gases (GHGs) emitted into the atmosphere around the world from a variety of sources, including the combustion of fuel for energy and transportation, cement manufacturing, and refrigerant emissions. GHGs are those gases that have the ability to trap heat in the atmosphere, a process that is analogous to the way a greenhouse traps heat. GHGs may be emitted as a result of human activities, as well as through natural processes. GHGs have been accumulating in the earth’s atmosphere at a faster rate than has occurred historically. Increasing GHG concentrations in the atmosphere are leading to global climate change.

Carbon dioxide (CO$_2$) is the most important anthropogenic GHG because it comprises the majority of total GHG emissions emitted per year and it is very long-lived in the atmosphere. Common GHGs include carbon dioxide, methane, nitrous oxides, and halocarbons (a group of gases containing fluorine, chlorine, or bromine). Typically, when evaluating GHG emissions they are expressed as carbon dioxide equivalents, or CO$_2$e, which is a means of weighting the global warming potential (GWP) of the different gases relative to the global warming effect of CO$_2$, which has a GWP value of one. Other GHGs, such as methane and nitrous oxide which are commonly found in the
atmosphere, but at much lower concentrations, have a GWP of 23 and 296, respectively. In the United States, CO₂ emissions account for about 85 percent of the CO₂e emissions, followed by methane at about eight percent and nitrous oxide at about five percent.

**Current Regulatory Setting**

**Federal**

The United States participates in the United Nations Framework Convention on Climate Change (UNFCCC). While the United States signed the Kyoto Protocol, which would have required reductions in GHGs, Congress never ratified the protocol. The federal government chose voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science. In 2002, the U.S. announced a strategy to reduce the greenhouse gas intensity of the American economy by 18 percent over the 10-year period from 2002 to 2012.

In 2007, the EPA identified CO₂ as an air pollutant as defined under the Clean Air Act, and that the EPA has the authority to regulate emissions of GHGs. In 2009, the EPA published their “Proposed Endangerment and Cause or Contribution Findings for Greenhouse Gases under the CAA”. This finding is based and the Federal Clean Air Act, which states that the Administrator (of EPA) should regulate and develop standards for emissions of air pollution from any class or classes of new motor vehicles or new motor vehicle engines, which in its judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.

Since the EPA’s endangerment finding, the EPA has promulgated several GHG regulations, which for the most part, apply to larger facilities that emit large amounts of CO₂ or its equivalent in other regulated GHGs. These regulations include the Federal Mandatory Reporting of Greenhouse Gases (Mandatory Reporting Rule) and the Tailoring Rule. In 2009 the EPA established the Mandatory Reporting Rule, which requires reporting of CO₂ and other GHG emissions. This rule applies to particular facility types, some of which are required to report based on the quantity of GHGs that they emit, while others are required to report regardless of the quantity of their GHG emissions. Stationary fuel combustion sources are subject to the rule if the aggregate maximum heat input capacity of all units is 30 million British thermal units per hour (MMBtu/hr) or more and the combined GHG emissions equals 25,000 metric tons of CO2e or more per year.

In May 2010, the EPA issued a final rule that addressed greenhouse gas emissions from stationary sources and requirements under Title V and PSD permitting programs. This rule is known as the PSD and Title V Greenhouse Gas Tailoring Rule, or Tailoring Rule. After July 1, 2011, new sources with GHG emissions of at least 100,000 tons per year will be subject to PSD permitting requirements. Additionally, new and existing sources with GHG emissions of at least 100,000 tons per year will be subject to Title V permitting requirements.
In response to the increasing body of evidence that GHGs will continue to affect the global climate, the State has enacted key legislation and implemented regulations in an effort to reduce the State’s contribution to climate change.

California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHG emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030.

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels. The California Climate Action Team’s (CAT) Report to the Governor contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met.

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG in California. GHG as defined under AB 32 include: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 requires the California Air Resources Board, the State agency charged with regulating statewide air quality, to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020. CARB approved the Climate Change Scoping Plan (Scoping Plan) in December 2008. The Scoping Plan outlines actions to obtain the goal set out in AB 32 of reducing emissions to 1990 levels by 2020. The Scoping Plan “proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health”. The measures in the Scoping Plan will be in place by 2012. The Scoping Plan’s recommendations for reducing greenhouse gas emissions to 1990 levels by 2020 providing for emission reduction measures, including a cap-and-trade program linked to Western Climate Initiative partner jurisdictions, green building strategies, recycling and waste-related measures, and Voluntary Early Actions and Reductions. CARB has also developed and approved a 1990 State GHG emissions inventory of 427 million metric tons of carbon dioxide equivalent (MMTCO₂e) in December 2007. Therefore, in 2020, GHG emissions in California are required to be at or below 427 MMTCO₂e.

AB 32 also required development of a mandatory reporting rule for major sources of GHGs. The CARB reporting rule (sections 95100 – 95313 of Title 17, California Code of Regulations) became effective in January 2009. The rule requires reporting GHG emissions for certain specific industrial sectors and for other facilities that emit greater than 25,000 metric tons per year of CO₂e (MT CO₂e/year) from stationary combustion sources.

Executive Order S-01-07 was enacted by the Governor on January 18, 2007. The order mandates a two pronged approach to achieving lower fuel emissions. First, it states that
a statewide goal shall be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020, then from that baseline a Low Carbon Fuel Standard for transportation fuels shall be established for California.

California Senate Bill 97 (SB-97), signed by the governor in August 2007, acknowledges climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Governor’s Office of Planning and Research to prepare, develop, and transmit to the California Resources Agency by July 1, 2009 guidelines for mitigating GHG emissions or the effects of GHG emissions, as required by CEQA. The California Resources Agency was required to certify and adopt these guidelines by January 1, 2010. Amendments to the CEQA Guidelines pursuant to SB-97 were adopted in March 2010.

California Senate Bill 375 passed on August 30, 2008 and was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of greenhouse gas emissions, which emits over 40 percent of the total greenhouse gas emissions in California. SB 375 states that “Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32.” SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing greenhouse gas emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

In January 2010, the State Building Standards Commission adopted the State Green Building Standards Code (CALGreen). CALGreen supplements the California Building Standards Code (Title 24) which became effective on January 1, 2011 requires all new buildings in the state to incorporate energy saving features. New standards include:

1. Water efficiency: New buildings must demonstrate at least a 20 percent reduction in water use over typical baseline conditions.
2. Construction waste: At least 50 percent of construction waste must be recycled, reused, or otherwise diverted from landfilling.
3. Interior finishes: Interior finishes such as paints, carpet, vinyl flooring, particle board, and other similar materials must be low-pollutant emitting.
4. Landscape irrigation: In nonresidential buildings, separate water meters must be provided for a building’s indoor and outdoor water use. Large landscape projects must use moisture-sensing irrigation systems to limit unnecessary watering.

Local Plans and Policies

BAAQMD

BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy—all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance.
to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

The BAAQMD has also adopted CEQA Guidelines related to GHG emissions.

Santa Clara County

In 2007, the Santa Clara County Board of Supervisors signed the Cool Counties Climate Stabilization Declaration and established a set of aggressive goals for greenhouse gas (GHG) emissions reductions that would reduce the government’s greenhouse gas emissions by 80% before 2050. The Climate Action Plan represents a year-long effort among multiple County agencies, resulting in a set of strategic changes in County operations, facilities and employee behaviors which will facilitate not simply emissions reductions, but water conservation, and decreases in fuel consumption and solid waste volume.

In 2009, Santa Clara County prepared a Climate Action Plan (CAP) for Operations and Facilities, which includes the following GHG emission reduction goals:

- Stop increasing the amount of emissions by 2010
- Decrease emissions by 10% every 5 years from 2010 – 2050
- Reach an 80% reduction by 2050

The Santa Clara County CAP focuses on County operations, facilities and employee actions that will reduce not only GHG emissions but also energy and water consumption, solid waste and fuel consumption. The CAP focuses primarily on steps needed to reach the 10 percent reduction goal by 2015, but also identifies policies and actions that are needed to set the stage for reductions past 2015.

The Baseline Inventory for 2005 attributed 133,459 metric tons of GHG to County operations and facilities. The CAP is using the 2005 Inventory as its baseline for future reductions.

From 2001 to 2009, the County has addressed its resource consumption by implementing energy efficiency and water conservation projects, designing and building green buildings, purchasing hybrid and alternative fuel vehicles, providing Eco Passes to employees to encourage the use of transit and encouraging reduced consumption. These actions have resulted in the leveling off of GHG emissions that are observable from 2005 to 2008, if the change in the PGE conversion factor is excluded.

The reduction target for 2015 is 13,346 metric tons. The CAP identifies projects with potential savings of over 30,000 metric tons, as well as policies, procedures and approaches to reduce global GHG impacts, even if they are not locally measurable in subsequent inventories.

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81 Santa Clara County CAP for Operations and Facilities, September 2009.
Methods of Assessing Global Climate Change

Amendments to the CEQA Guidelines, pursuant to SB-97 include a new section 15064.4 designed to assist lead agencies in determining the significance of the impacts of GHG emissions. Section 15064.4 encourages lead agencies to quantify the greenhouse gas emissions of proposed projects where possible and recommends lead agencies consider several factors in determining significance: (1) the extent to which the project may increase or reduce GHG emissions compared with the existing environment, (2) whether the emissions exceed a threshold of significance that applies to the project, and (3) the extent to which the project complies with requirements adopted to implement statewide, regional, or local plan for reduction of GHG emissions.

There is currently no County Greenhouse Plan for reduction of emissions that can be used in assessing project impacts. In June 2010, BAAQMD adopted updated draft California Environmental Quality Act (CEQA) Air Quality Guidelines and finalized them in May 2011 (BAAQMD, 2011). These guidelines superseded previously adopted agency air quality guidelines and were intended to advise lead agencies on how to evaluate potential air quality impacts, including greenhouse gas impacts. The new CEQA guidelines introduced numerical thresholds of significance for determining if land use plans and land development projects would contribute a significant amount of greenhouse gases to the atmosphere. The recommended thresholds included both a total per-project limit of 1,100 metric tons of CO2e per year as well as an efficiency-based threshold of 4.6 metric tons of CO2e per year per service population. Projects would have the option of addressing either of the thresholds.

In late 2010, the Building Industry Association filed a lawsuit in Alameda Superior Court, challenging BAAQMD’s CEQA Guidelines on the grounds that the agency did not comply with CEQA. In March of 2012, the Court ruled that the BAAQMD CEQA Guidelines constitute a project under CEQA and that the District must “set aside all approvals in [the resolution approving the Guidelines] and … not disseminate these or any new approvals of officially sanctioned air quality thresholds of significance until the District fully complies with CEQA.” The claims made in the case concerned the CEQA impacts of adopting the thresholds. Those issues are not relevant to the scientific soundness of the BAAQMD’s analysis of what level of GHG emissions should be deemed significant. The County has determined that these thresholds are based on substantial evidence, as identified in Appendix D of the Guidelines, and has therefore incorporated them into this EIR.

For this EIR, GHG emissions are quantified for the proposed Ordinance in terms of net increase in GHG emissions.

B. Potential Impacts and Mitigation Measures

This section provides an assessment of the potential adverse impacts related to air quality within Santa Clara County as a result of the OWTS ordinance. It begins with the significance impact criteria, which establishes the threshold for determining whether an impact is significant. The latter part of this section identifies potential impacts based on these criteria. Where potentially significant impacts are identified, mitigation measures are recommended.
1. Criteria for Determining Impact Significance

The CEQA Guidelines provide that a project would have a significant impact on air quality if it would:

1. Conflict with or obstruct implementation of the current Air Quality Plan.

2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

4. Expose sensitive receptors or the general public to substantial pollutant concentrations as defined by federal or State air quality standards.

5. Create objectionable odors affecting a substantial number of people.

According to the BAAQMD CEQA Air Quality Guidelines (see the preceding note in the Setting regrading the status of BAAQMD significance thresholds) for plans to meet the threshold of significance for operational-related criteria air pollutant and precursor impacts, the plan would have to conflict with the current air quality plan (AQP) control measures (this requirement applies to project-level as well as plan-level analyses); and the plan’s projected vehicle miles travelled (VMT) or vehicle trips (VT) increase would need to exceed the VMT or VT that would be generated by the projected population increase that would result from the proposed plan.

For GHG emissions, a project would have a significant effect if it would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

3. Result in emission of more than 6.6 MT per SP (service population) per year of carbon dioxide equivalent (CO2e).

2. Direct Impacts

Construction Emissions

Impact 4.6-A Installation and operation of new alternative OWTS would generate emissions of criteria pollutant emissions (NOx, CO, ROG, PM10, and PM2.5), diesel particulate matter, GHG emissions, and odors, which could exceed applicable significance levels.
Installation of new OWTS would require the use of construction equipment (e.g., backhoe) that would generate emissions of criteria pollutants. It is estimated that the use of heavy equipment in the installation of a new OWTS would be completed in 2-3 days. Emissions of criteria pollutants from intermittent construction over 2-3 days would be below the threshold of significance described in Table 4.6-3.\textsuperscript{82} For emissions of criteria pollutants, this would be a less-than-significant impact. Consistent with BAAQMD requirements, contractors installing new OWTS would need to apply best management practices for dust control. Installation of new alternative OWTS would be consistent with BAAQMD’s Clean Air Plan and not expose sensitive receptors to substantial pollutant exposure. Use of construction equipment would also emit small amounts of GHGs. BAAQMD does not have significance thresholds for GHGs for emissions from project construction stages. For residential construction projects, including installation of OWTS, these emissions are very small in relation to any established thresholds, and they only occur on a short-term basis. Therefore, the impact of GHG emissions from construction would be less than significant.

New alternative OWTS installed and maintained per the requirements of the proposed Ordinance and Manual would not generate odors. Odors from OWTS are caused by malfunctioning systems, and even then, the odors are rarely noticeable beyond the property lines; therefore, this impact from odors would be less than significant.

To conclude, installation and operation of alternative OWTS would have a \textbf{less-than-significant impact} as regards violating an air quality standard, exposing people to substantial pollutant concentrations, exposing people to objectionable odors, and emitting substantial amounts of GHGs. No mitigation is required.

3. \textbf{Indirect Impacts}

As described in the Introduction to Chapter 4, additional rural development could occur using alternative OWTS technologies if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan, which would include this additional development, would have less-than-significant impacts on air quality. The following discussions revisit that EIR analysis and at a program level review the indirect air quality impacts associated with increased development activities given current regulatory requirements and environmental conditions. The level of analytic detail provided below is general, as it is unknown if and when any particular parcel would be developed.

\textit{Construction Emissions}

\textbf{Impact 4.6-B} \hspace{1cm} Construction of potential new development would generate emissions of criteria pollutant emissions (NOx, CO, ROG, PM\textsubscript{10}, and PM\textsubscript{2.5}), diesel particulate matter, greenhouse gases, and odors which could exceed applicable significance levels.

\textsuperscript{82} Only major construction projects emit sufficient emissions to meet the significance thresholds. For example, the BAAQMD CEQA Guidelines contain “construction criteria screening level sizes” for land uses. To meet the level where analysis is required, a project would need, for example, to involve construction of 114 dwelling units (BAAQMD 2012).
During construction of additional development short-term degradation of air quality could occur due to the release of particulate emissions generated by hauling, grading, excavation, and other activities. Emissions from construction equipment are also anticipated and would include ROG, NOx, CO, directly-emitted particulate matter (PM$_{2.5}$ and PM$_{10}$), and TACs such as particulate matter from diesel exhaust.

In addition to dust-related PM$_{10}$ emissions, construction equipment and heavy trucks powered by diesel and gasoline engines would generate NOx, SO$_2$, CO, VOCs and some soot particulate (PM$_{2.5}$ and PM$_{10}$) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction sites.  

It should be noted that the construction impacts from additional residential development in connection with the proposed Ordinance would be spread out over the 23-year period of the ordinance. With implementation of the proposed project, an additional 30 OWTS could be installed per year at individual sites, enabling residential development at those sites. However, it is not possible to determine the future location and timing of construction and occupancy of these individual developments. Because construction of new rural residential development would be spread out over time, the contribution to the overall County pollutant load and degradation to air quality would be minimal. Future residential construction would have a less-than-significant impact as regards violating an air quality standard, exposing people to substantial pollutant concentrations, exposing people to objectionable odors, and emitting substantial amounts of GHGs, and at a program level of analysis no mitigation is required.

**Criteria Pollutants**

**Impact 4.6-C**

Occupancy of potential new development could generate emissions of criteria pollutants (NOx, CO, ROG, PM$_{10}$, and PM$_{2.5}$ which could exceed applicable significance levels.

Occupancy of additional residential units that could be made possible under the proposed Ordinance would generate emissions of criteria pollutants. Primarily these emissions would be from the additional vehicle trips generated by the residents of these homes. As described in the Introduction to Chapter 4, a worst case analysis of full buildout of all vacant parcels that could be developed if alternative OWTS are allowed was performed for traffic and air quality. Because these additional units would be built over at least 23 years, the additional emissions from any one new residence would be less than significant.

This maximum buildout is the same buildout allowed by the General Plan, and the cumulative impact of this development is therefore addressed in this EIR as “plan level” buildout. Per the impact significance criteria for plans, emission of these pollutants would be significant if the proposed project: 1) does not support the goals of the Clean Air Plan; 2) does not include applicable control measures from the Clean Air Plan; and 3) disrupts or hinders implementation of any control measures from the Clean Air Plan.

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83 Ibid.
The additional residential development that could be accommodated by the proposed Ordinance would be consistent with the projected residential land uses and densities allowed in the County General Plan. The BAAQMD Clean Air Plan was prepared consistent with the proposed development under the various Bay Area jurisdictions’ general plans. Because the proposed Ordinance would not allow any more development than currently permitted under the General Plan and zoning, that future development would be consistent with the goals of the BAAQMD Clean Air Plan.

The County General Plan established the following four air quality strategies to reduce overall population exposure to air pollution and achieve air quality standards:

1. Growth Management and Land Use Policies For Cleaner Air
2. Develop Transit Systems Providing Feasible Travel Options
3. Increase Travel Demand Management and Traffic Congestion Relief
4. Reduce Particulate and Small Scale Emissions

The General Plan developed a series of policies flowing from these strategies that ultimately support the BAAQMD Clean Air Plan. Again, growth that could be accommodated by the proposed Ordinance would be consistent with the Clean Air Plan. It would be correspondingly consistent with air quality plan control measures because no additional development beyond that allowed under the adopted General Plan would be accommodated, nor would that additional development otherwise hinder implementation of the Clean Air Plan.

The significance criteria also state that at a plan level a project would have a significant impact if the vehicle miles traveled (VMT) increase generated is more than the projected population increase resulting from the plan. For example, if a plan projects a population increase of 1,000 people, the vehicle trip increase would be about 1,100; if the plan also added new job opportunities or large shopping centers, the vehicle trip increase would exceed the 1,100 trips generated by the projected population growth. This would then be a significant impact of that hypothetical plan. As noted above, the additional development that could be accommodated by the adoption of the proposed Ordinance is assessed at a plan level of analysis since the project accommodates the buildout allowed by the General Plan.

TJKM used the latest versions of the Bi-County Santa Clara and San Mateo County Travel Demand Model (VTA) and CalEEMod air quality model to determine expected VMT within Santa Clara County before and after the buildout of all additional residences that could be accommodated by the proposed Ordinance. This was evaluated under two model years – 2010 (effectively existing conditions) and 2035 (model land use buildout year).

Based on the VMT analysis, and as shown in Table 4.6.5, if there were full buildout of vacant lots by 2035, the travel model predicts that average daily VMT would increase countywide by approximately 0.21 percent in 2035, while the rate of service population increase would be 0.09 percent. Given that the OWTS residences would be spread out countywide, on average it is expected that average trip lengths for residences would be substantially similar to what they are today.
population plus total employment within a given project area, in this case Santa Clara County. Since the development that could be accommodated by the proposed project would consist almost entirely of residences (little to no commercial uses), the projected residential growth would be the “service population” increase. Because the rate of increase in VMT countywide in 2010 and 2035 is projected to be higher than the comparable increase in the countywide residential population, adoption of the proposed project could accommodate additional residential development that could technically exceed the significance criterion.

Table 4.6-5
Santa Clara County Vehicle Miles Traveled (VMT), Residential Population, and Service Population Accommodated by the Project (Full Buildout)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Year 2010</th>
<th>Year 2035</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline plus</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Project</td>
<td>% Change</td>
</tr>
<tr>
<td>Daily vehicle miles traveled (VMT)</td>
<td>50,707,122</td>
<td>133,475</td>
</tr>
<tr>
<td></td>
<td>50,840,597</td>
<td>130,567</td>
</tr>
<tr>
<td>Residential Population</td>
<td>1,821,992</td>
<td>3,401</td>
</tr>
<tr>
<td></td>
<td>1,825,393</td>
<td>3,401</td>
</tr>
<tr>
<td>Service Population (residents plus employees)</td>
<td>2,683,405</td>
<td>3,401</td>
</tr>
<tr>
<td></td>
<td>2,686,806</td>
<td>3,401</td>
</tr>
</tbody>
</table>

Sources: TJKM, May 2012; Santa Clara VTA travel demand model (2012).

This impact is solely due to differing assumptions used in the CalEEMod air quality model and VTA travel demand model in terms of residential trip rates. CalEEMod bases its project-only VMT calculation on Institute of Transportation Engineers (ITE) residential trip rates, which are more conservative (i.e., higher) than comparable residential rates assumed countywide in the VTA travel demand model. As a result, as project-generated VMT grows, the two models together predict that it would outpace service population growth, while in reality the growth rates for both VMT and service population are more likely to be equal for a project of this type that only includes a residential component.

In addition, the actual increase in VMT from the projected development of 30 new residences per year would have an almost immeasurable effect on criteria pollutant emissions.

On these grounds, it is concluded that the increase in the service area population from worst-case induced growth possibly accommodated by the proposed project would be approximately equal to the increase in VMT projected for that population buildout. In addition, as noted previously, the project is consistent with the County General Plan. The project would therefore have a less-than-significant impact with regards to emission of criteria pollutants, and at a program level no mitigation is required.
Greenhouse Gases and Global Climate Change

Impact 4.6-D  Potential new development could result in GHG emissions that may have a significant impact on the environment.

The proposed project would result in indirect emissions of GHGs. TJKM conducted a GHG analysis using the latest version of CalEEMod software, which projects GHG emissions based on vehicle miles traveled, service population, and other project inputs. Table 4.6-6 shows the results of this analysis. Based on the worst-case projection of a service population increase of 3,401 (as calculated using the VTA travel demand model) with development of all possible additional units by 2035, it is expected that this full development would result in emission of 15,540.58 MT of CO$_{2}$e annually, resulting in a GHG emission rate of 4.57 MT CO$_{2}$e per service population annually. Section 9.2 of the BAAQMD CEQA guidelines indicates that a plan (as noted above, this cumulative development is assessed at a plan level of analysis) would have a significant impact if annual GHG emissions per service population exceeded 6.6 MT CO$_{2}$e. Since the projected rate of 4.57 MT CO$_{2}$e is less than 6.6 MT CO$_{2}$e threshold, this impact is less than significant, and at a program level, no mitigation is required.

Table 4.6-6
Expected GHG Emissions with Full Buildout Possibly Accommodated by the Proposed Ordinance in 2035 (Full Buildout)

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO$_{2}$e (MT/Yr)</td>
<td>15,540.58</td>
</tr>
<tr>
<td>Service Population (SP)</td>
<td>3,401</td>
</tr>
<tr>
<td>GHG/SP- MT CO$_{2}$e/SP/yr</td>
<td>4.57</td>
</tr>
<tr>
<td>BAAQMD Significance Threshold - MT CO$_{2}$e/SP/yr (Section 9.2 BAAQMD CEQA Guidelines)</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Source: TJKM

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85 The 3,401 population increase is derived from a model assumption of 2.94 people per household times 1,156 maximum new units. At the time traffic and air quality modeling was initially done, it was assumed that a maximum of 65 new secondary units might be developed. Subsequently, the Planning Office calculated that as many as 158 secondary units might be developed, or 93 more than initially calculated. New modeling to incorporate these additional secondary units is not warranted because the modeling results substantially overstate the current buildout projection of 600 lots as described in the Introduction to Chapter 4. The results presented here remain a worst case condition.
4.7 NOISE

A. Setting

1. Background Information on Noise

*Noise Units*

Noise may be 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 (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound 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 ten 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 intensity. 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 Table 4.7-1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, 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.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about 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 about plus or minus 1 to 2 dBA.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decibel, dB</td>
<td>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, which is 20 micropascals (20 micronewtons per square meter).</td>
</tr>
<tr>
<td>Frequency, Hz</td>
<td>The number of complete pressure fluctuations per second above and below atmospheric pressure.</td>
</tr>
<tr>
<td>A-Weighted Sound Level, dBA</td>
<td>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. All sound levels in this report are A-weighted.</td>
</tr>
<tr>
<td>$L_{01}$, $L_{10}$, $L_{50}$, $L_{90}$</td>
<td>The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.</td>
</tr>
<tr>
<td>Equivalent Noise Level, $L_{eq}$</td>
<td>The average A-weighted noise level during the measurement period.</td>
</tr>
<tr>
<td>Community Noise Equivalent Level, CNEL</td>
<td>The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night between 10:00 p.m. and 7:00 a.m.</td>
</tr>
<tr>
<td>Day/Night Noise Level, $L_{dn}$</td>
<td>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 p.m. and 7:00 a.m.</td>
</tr>
<tr>
<td>$L_{max}$, $L_{min}$</td>
<td>The maximum and minimum A-weighted noise level during the measurement period.</td>
</tr>
<tr>
<td>Ambient Noise Level</td>
<td>The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.</td>
</tr>
<tr>
<td>Intrusive</td>
<td>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.</td>
</tr>
</tbody>
</table>
Since the sensitivity to noise increases during the evening and at night (because excessive noise interferes with the ability to sleep), 24-hour descriptors have been 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 five dB penalty added to evening (7:00 p.m. - 10:00 p.m.) and a ten dB addition to nocturnal (10:00 p.m. - 7:00 a.m.) 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 day-time period.

**Effects of Noise**

**Hearing Loss.** While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard which is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

**Sleep and Speech Interference.** The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA $L_{dn}$. Typically, the highest steady traffic noise level experienced during the daytime is about equal to the $L_{dn}$ (i.e., the day-night average), and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation (i.e., mitigation) is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dB for an older structure and 25 dB for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA $L_{dn}$ with open windows and 65-70 dBA $L_{dn}$ if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, and those facing major roadways and freeways typically need specially designed glass windows.

**Annoyance.** Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The $L_{dn}$ as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the
annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L$_{dn}$. At an L$_{dn}$ of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the L$_{dn}$ increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. There is, therefore, a noise increase of about 1 percent per dBA between an L$_{dn}$ of 60-70 dBA. Between an L$_{dn}$ of 70-80 dBA, each decibel increase increases by about 2 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the L$_{dn}$ is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 3 percent increase in the percentage of the population highly annoyed.

2. Existing Noise Environment

The new OWTS would be installed throughout the County. Existing noise in the various parts of the County vary extensively depending on proximity to highways, major roads, rail lines, and major industrial land uses. The parts of the County where new OWTS allowed under the proposed Ordinance could be constructed would be expected to be relatively quiet, since they are rural or less developed areas of the County.

3. Regulatory Background

**County of Santa Clara General Plan Health and Safety Chapter**

The Public Health and Safety Chapter of the County General Plan establishes a land use compatibility standard of 55 dB L$_{dn}$. This noise level limit is considered “satisfactory” for residential and other noise-sensitive uses, and is generally measured at outdoor activity areas. An interior noise exposure limit of 45 dB L$_{dn}$ is recommended for residential receivers (assuming doors and windows closed).

**County of Santa Clara Ordinance Code**

County Municipal Code Chapter VIII §B11-152 establishes noise exposure criteria for non-transportation noise sources (i.e., stationary sources) at noise-sensitive uses. These standards are generally established for conflict resolution in established parts of the County and are appropriate for the determination of Project noise impacts. The criteria are summarized in Table B11-152 in the Code (as shown below).
TABLE B11-152

Exterior Noise Limits
(Levels not to be exceeded more than 30 minutes in any hour)

<table>
<thead>
<tr>
<th>Receiving Land Use Category</th>
<th>Time Period</th>
<th>Noise Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One- and Two-Family Residential</td>
<td>10:00 p.m.—7:00 a.m. 7:00 a.m.—10:00 p.m.</td>
<td>45 55</td>
</tr>
<tr>
<td>Multiple-Family Dwelling</td>
<td>10:00 p.m.—7:00 a.m.</td>
<td>50</td>
</tr>
<tr>
<td>Residential Public Space</td>
<td>7:00 a.m.—10:00 p.m.</td>
<td>55</td>
</tr>
<tr>
<td>Commercial</td>
<td>10:00 p.m.—7:00 a.m.</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>7:00 a.m.—10:00 p.m.</td>
<td>65</td>
</tr>
<tr>
<td>Light Industrial</td>
<td>Any Time</td>
<td>70</td>
</tr>
<tr>
<td>Heavy Industrial</td>
<td>Any Time</td>
<td>75</td>
</tr>
</tbody>
</table>

Because most noise directly generated with implementation of the proposed project would be during construction of the new OWTS, the portion of the Code Section relevant to construction noise is most pertinent. That subsection is presented below.

Construction/demolition.

a. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekdays and Saturday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance. This section will not apply to the use of domestic power tools as specified in Subsection 11.

b. Where technically and economically feasible, construction activities will be conducted in a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

i. Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than ten days) of mobile equipment:

<table>
<thead>
<tr>
<th></th>
<th>Single- and Two-Family Dwelling Residential Area</th>
<th>Multifamily Dwelling Residential Area</th>
<th>Commercial Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily, except Sundays and legal holidays 7:00 a.m.—7:00 p.m.</td>
<td>75 dBA</td>
<td>80 dBA</td>
<td>85 dBA</td>
</tr>
<tr>
<td>Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays</td>
<td>50 dBA</td>
<td>55 dBA</td>
<td>60 dBA</td>
</tr>
</tbody>
</table>
ii. Stationary equipment. Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of ten days or more) of stationary equipment are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Single- and Two-Family Dwelling Residential Area</th>
<th>Multifamily Dwelling Residential Area</th>
<th>Commercial Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily, except Sundays and legal holidays 7:00 a.m.—7:00 p.m.</td>
<td>60 dBA</td>
<td>65 dBA</td>
<td>70 dBA</td>
</tr>
<tr>
<td>Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays</td>
<td>50 dBA</td>
<td>55 dBA</td>
<td>60 dBA</td>
</tr>
</tbody>
</table>

B. Potential Impacts and Mitigations

1. Criteria Used to Determine Impact Significance

A project would typically have a significant impact if it meets any of the following criteria:

1. Exposes people to, or generates, noise levels in excess of the County General Plan.

2. Causes a substantial permanent increase in ambient noise levels in the project vicinity above the noise levels existing without the project. A substantial increase is an increase of over 5 dBA Ldn in noise environments where the noise levels would remain less than 60 dBA Ldn, or a 3 dBA increase where the future noise level would exceed 60 dBA Ldn.

3. Causes a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

4. Exposes people to or generates excessive groundborne vibration or groundborne noise levels.

5. 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, would the project expose people residing or working in the project area to excessive noise levels.

6. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.
2. Direct Impacts

**Less-than-Significant Impacts Not Requiring Further Analysis**

*Criterion 4 – Groundborne Noise and Vibration.* Construction of new alternative OWTS would not require the use of equipment that generates substantial groundborne vibrations or noise. Equipment would consist of such commonly used machines as backhoes, loaders, bulldozers, and haul trucks. This type of machinery does not produce substantial groundborne vibrations or groundborne noise, so there would be a less-than-significant impact per Criterion 4.

*Criteria 5 and 6 – Airport Noise.* Construction of new OWTS would not expose people to excessive noise from airports, so there would be no impact per Criteria 5 and 6.

**Short-term and Long-term Noise Effects**

*Impact 4.7-A Construction and operation of additional on-site wastewater systems allowed by the proposed Ordinance could expose persons to significant amounts of noise.*

Construction of new OWTS would generate noise from heavy equipment such as loaders, backhoes, and trucks. A typical system is installed in two to three days. Construction noise would be a short-term impact that could potentially affect immediate neighbors of the construction site. This impact is described in more detail below.

Short-term impacts would include noise from dump trucks importing gravel or sand to the site; trucks hauling in septic tanks, pipes and other material; and backhoes for excavation and moving gravel and other materials. As shown on Table 4.7-2, backhoes typically generate a maximum of 80 dBA at a point 50 feet from the machine, while dump trucks and other large trucks generate about 84 dBA at 50 feet from the source. Noise generated from fixed sources is reduced about 6 dBA for every doubling of the distance from the source (and the reduction can be greater if there are intervening slopes, vegetation, or buildings). So, if a neighboring home were located 100 feet distant from the construction equipment, the maximum noise at the outside of that home would be about 74 dBA during the time the equipment was actually operating. This would be consistent with the County’s noise standards for construction noise. Inside the homes, the noise would be significantly less due to the noise insulation provided by the walls. This short-term noise impact is not significant because it would only occur periodically for 2-3 days and would be required to be consistent with the County noise ordinance.

The only potentially significant permanent noise sources would be from electric pumps on some of the alternative systems allowed under the proposed Ordinance. These pumps would be submersible pumps located beneath the ground and would not be audible above ground.

Neither the short-term noise generated during installation of the OWTS nor the noise from pumps on certain types of allowed alternative systems would generate noise levels that would exceed County standards. Therefore, this impact would be less than
**significant**, and at a program level no mitigation is required beyond compliance with existing County regulations governing construction noise.

3. **Indirect Impacts**

As described in the Introduction to Chapter 4, additional development could occur if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan, which would include this additional development, would have less-than-significant impacts on the noise environment. The following discussions revisit that EIR analysis and at a program level review the indirect noise impacts associated with increased development activities given current regulatory requirements and environmental conditions. The level of analytic detail provided below is general, as it is unknown if and when any particular parcel would be developed.

**New Development Could Cause Noise and/or Be Exposed to Excessive Noise**

**Impact 4.7-B** Potential new development could generate excessive noise or be exposed to excessive noise.

It is possible that traffic generated by the additional development that could occur with implementation of the proposed Ordinance would create additional noise at sensitive receptors along the roads used to access the new residences. These new residences would be spread through many areas in the County, and the increase in traffic, even at full buildout, from these scattered residences built out over at least 20 years on any particular road would not be expected to be substantial. It is expected that the noise increase generated by drivers accessing new residences would be less than 1 dBA on most roadways, and in no case would the traffic be expected to exceed the 3 dBA significance threshold. Therefore, the additional traffic would not be expected to cause a significant noise impact.

Construction of the residences and ancillary improvements would generate noise and vibrations that could adversely affect neighboring residents. This construction would be required to comply with requirements under the County noise ordinance that limit construction times. Compliance with these regulations would reduce construction noise impact to a less-than-significant level.

It is possible that some of these additional residences could be constructed in areas that have noise levels that exceed the level that the County considers acceptable for residential use or near airport facilities. Additional development in noise-impacted areas is unlikely since the additional lots that could be made easier to develop under the proposed Ordinance generally would be located on lands zoned for rural or large lot residential uses and not within urbanized areas served by municipal wastewater systems. As such, it is not expected that this new development would be near significant noise corridors or noise generators. In addition, it is expected that new development applications in any area with significant ambient noise levels would be assessed for the need to mitigate noise as part of design review or BSA review. On these bases, at a program level the proposed Ordinance would have less-than-significant noise impacts, and no mitigation is required.
### Table 4.7-2

**Noise Emissions Limits at 50 feet from Construction Equipment**

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>(L_{\text{max}} \text{ Level (dBA)}^{1,2})</th>
<th>Impact/Continuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc Welder</td>
<td>73</td>
<td>Continuous</td>
</tr>
<tr>
<td>Auger Drill Rig</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Backhoe</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Bar Bender</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Boring Jack Power Unit</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Chain Saw</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Compressor</td>
<td>70</td>
<td>Continuous</td>
</tr>
<tr>
<td>Compressor (other)</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Concrete Mixer</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Concrete Pump</td>
<td>82</td>
<td>Continuous</td>
</tr>
<tr>
<td>Concrete Saw</td>
<td>90</td>
<td>Continuous</td>
</tr>
<tr>
<td>Concrete Vibrator</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Crane</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Dozer</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Excavator</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Front End Loader</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Generator</td>
<td>82</td>
<td>Continuous</td>
</tr>
<tr>
<td>Generator (25 KV or less)</td>
<td>70</td>
<td>Continuous</td>
</tr>
<tr>
<td>Gradall</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Grader</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Grinder Saw</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Horizontal Boring Hydro Jack</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Hydra Break Ram</td>
<td>90</td>
<td>Impact</td>
</tr>
<tr>
<td>Impact Pile Driver</td>
<td>105</td>
<td>Impact</td>
</tr>
<tr>
<td>Insitu Soil Sampling Rig</td>
<td>84</td>
<td>Continuous</td>
</tr>
<tr>
<td>Jackhammer</td>
<td>85</td>
<td>Impact</td>
</tr>
<tr>
<td>Mounted Impact Hammer (hoe ram)</td>
<td>90</td>
<td>Impact</td>
</tr>
<tr>
<td>Paver</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Pneumatic Tools</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Pumps</td>
<td>77</td>
<td>Continuous</td>
</tr>
<tr>
<td>Rock Drill</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Scraper</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Slurry Trenching Machine</td>
<td>82</td>
<td>Continuous</td>
</tr>
<tr>
<td>Soil Mix Drill Rig</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Street Sweeper</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Tractor</td>
<td>84</td>
<td>Continuous</td>
</tr>
<tr>
<td>Truck (dump, delivery)</td>
<td>84</td>
<td>Continuous</td>
</tr>
<tr>
<td>Vacuum Excavator Truck (vac-truck)</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>Vibratory Compactor</td>
<td>80</td>
<td>Continuous</td>
</tr>
<tr>
<td>Vibratory Pile Driver</td>
<td>95</td>
<td>Continuous</td>
</tr>
<tr>
<td>All other equipment with engines larger</td>
<td>85</td>
<td>Continuous</td>
</tr>
<tr>
<td>than 5 HP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Illingworth & Rodkin Inc., Acoustic Consultants

Notes:

1. Measured at 50 feet from the construction equipment, with a “slow” (1 sec.) time constant.
2. Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.
4.8 AESTHETIC RESOURCES

A. Setting

1. Primary County Landscapes

As described in the EIR prepared for the County General Plan, Santa Clara County can be divided into three basic landscape areas: 1) the flat bayside and valley lands that extend through the center of the County from San Francisco Bay to Gilroy; 2) the semi-arid hills of the Diablo Range to the east; and 3) the more verdant, steep-sided slopes of the Santa Cruz Mountains to the west. In the northern half of the County, the Santa Cruz Mountains and the Diablo Range form a broad basin that contains the south end of San Francisco Bay and surrounding lowlands and a gently sloped alluvial plain. The plain is approximately four to six miles wide at Palo Alto and Milpitas, but widens out to the south to become the floor of the Santa Clara Valley. In southern San José, the valley narrows to just a mile or two through the Coyote area, and then at Morgan Hill broadens into an approximately four-mile-wide corridor that continues through San Martin and Gilroy to the County’s southern border. In all areas of the County, the edges of the valley are well defined by the steep slopes of the Diablo Range, which rise to elevations of 3,000 to 4,000 feet, and the Santa Cruz Mountains, which rise to elevations of 2,000 to 3,000 feet.

During the past six decades, the bayside and valley areas in the northern half of the County have undergone a dramatic transformation from rural to urban. Consequently, much of the visual interest that now exists in the bayside and northern valley areas is provided by views of the heavily forested slopes of the Santa Cruz Mountains to the west and the oak and chaparral lands on the slopes of the Diablo Range to the east, as well as by glimpses of the natural environments that still exist in places around the bay and along the riparian corridors that extend through the valley floor.

Within this general landscape, important natural scenic resources include the following:

1. *Hillsides and Mountains*. Hillside and mountain areas flanking both sides of the Santa Clara Valley comprise the majority of the County’s open space. On the west side of the Valley, the forested Santa Cruz Mountains rise sharply to form the scenic backdrop for West Valley communities. Across the Valley, the rangeland, open woodlands, and wilderness areas of the Diablo Range cover the eastern half of the County.

2. *Creeks and Streamsides*. Dozens of creeks and streams traverse the County, serving as scenic features in hillside and ranchland areas as well as in urbanized areas.

3. *Baylands*. Undeveloped baylands at the southern tip of San Francisco Bay contain a variety of wetlands, sloughs, and salt ponds.

4. *Ranchlands*. Privately-owned ranchlands can be found in remote areas east of the valley floor in the vicinity of the Diablo Range, and in the Santa Cruz Mountains foothills.
5. **Agricultural Lands.** Crops, orchards, and other agricultural lands still dominate the southern portion of the County, primarily in the fertile valley floor areas south and east of Gilroy.

6. **Parks.** Publicly-owned parks, including the County's regional park system, Henry Coe State Park, and the preserves of the Midpeninsula Regional Open Space District and the San Francisco Bay National Wildlife Refuge, contribute to the scenic resources of the County.

2. **Scenic Roads**

The Scenic Road System of Santa Clara County consists of all existing and proposed State scenic routes within the County and County scenic routes. County scenic routes include scenic freeways and expressways, scenic arterial routes, and scenic rural roads. The Regional Parks and Scenic Highways Map of the County General Plan (adopted in June 2008) displays scenic highways and roads in the County. Section 3.30.050 of the County Code (under the Scenic Roads Combining District) identifies the following County-designated scenic roads:

- Alamitos Road
- Aldecroft Heights Road (from Alma Bridge Road to Wright Station Road)
- Alma Bridge Road
- Almaden Road (San José city boundary to Alamitos Road)
- Bear Creek Road
- Black Road
- Bloomfield Avenue
- Bohlman Road
- Bowden Avenue
- Calaveras Road
- Cañada Road
- Casa Loma Road
- Congress Springs Road (SR 9) (from Saratoga city boundary to Santa Cruz County boundary)
- Coyote Reservoir Road
- Croy Road (from Watsonville Road to the boundary of Uvas Canyon County Park)
- Del Puerto Road
- Dunne Avenue (from Cochrane Bridge to Henry Coe State Park)
- Edmundson Avenue (from Oak Glen Avenue to Sunnyside Avenue)
- Felter Road (from Calaveras Road to Sierra Road)
- Gilroy Hot Springs Road
- Gist Road
- Hecker Pass Highway (SR 152) (from Gilroy city boundary to Santa Cruz County boundary)
- Hicks Road
- Highway 17 (SR 17) (from Los Gatos city boundary to Santa Cruz County boundary)
- Highway 156 (SR 156)
- Highway 280 (US 280) (from Page Mill Road to San Mateo County boundary)
- Idylwild Road
- Jameson Road
- Junipero Serra Boulevard
- Kennedy Road (from Los Gatos city boundary to Shannon Road)
- Llagas Road
- Loma Prieta Road (from its northerly intersection with Summit Road to its southerly intersection with Summit Road)
- McKean Road
- Metcalf Road
- Mines Road
- Montebello Road (from Stevens Canyon Road to Palo Alto city boundary)
- Montevina Road
- Moody Road
- Mountain Charlie Road
- Mt. Eden Road
- Mt. Hamilton Road (from Springview Lane to easterly terminus at San Antonio Valley Road)
- Mt. Madonna Road
- Oak Glen Avenue (from Uvas Road to Sycamore Avenue)
- Old Santa Cruz Highway
- Pacheco Pass Highway (SR 152) (from Cañada Road to Merced County boundary)
- Page Mill Road
- Quimby Road (from Murillo Avenue to Mt. Hamilton Road)
- Redwood Retreat Road (from Watsonville Road to Mt. Madonna Road)
- Roop Road
- San Antonio Valley Road
- San Felipe Road (from Delta Road to Metcalf Road)
- Sanborn Road
- Santa Teresa Boulevard (existing and future, which includes Coolidge Avenue, DeWitt Avenue, Hale Avenue, Murphy Lane, Sunnyside Avenue)
- Saratoga-Los Gatos Road (SR 9)
- Shannon Road (from Los Gatos city boundary to Hicks Road)
- Sierra Road
- Silver Creek Road
- Skyline Boulevard (SR 35) (from SR 17 to San Mateo County boundary)
- Soda Springs Road
- Stevens Canyon Road
- Summit Road (SR 35) (from SR 17 to Mt. Madonna County Park)
- Sycamore Avenue (from Oak Glen Avenue to Santa Teresa Boulevard/Sunnyside Avenue)
- Uvas Road
- Watsonville Road (from Sunnyside Avenue to Hecker Pass Highway)
- Willow Springs Road

The one State-designated scenic highway is SR 9 from the Santa Cruz County line to the Los Gatos City Limit. Eligible State Scenic Highways (not officially designated) include: SR 17 from the Santa Cruz County line to SR 9; SR 35 from Santa Cruz
County line to SR 9, SR 280 from the San Mateo County line to SR 17; and the entire length of SR 152 within the County. 86

3. Regulatory Background

**County of Santa Clara**

*General Plan*

The County General Plan designates many scenic resources in the County, including roads and highways. Santa Clara County has developed specific design policies for areas with visual sensitivity to certain types of land uses. The most extensive of these policies involve guidelines for the San Martin Area, a rural community in the south County. The flat topography and location of San Martin make it a prime area for industrial development that could be incompatible with the mostly agricultural and low-density residential uses in the area. In 1990, the Santa Clara County Planning Commission adopted the "Design Guidelines for Non-Residential Development in San Martin."

There are specific guidelines for the West Valley Hillsides Preservation Area (the foothills of the Santa Cruz Mountains). The West Valley Hillsides Joint Planning Review, a collaborative effort of the cities of Cupertino, Monte Sereno, Saratoga, Los Gatos and the County, has developed joint land use principles and objectives to minimize the visual impacts of hillside development and to provide mechanisms for resolution of future hillside land use issues. The primary purpose of this Special Area Policy within the County General Plan is to limit the expansion of urban development into hillside areas.

Specific guidelines have also been adopted for the New Almaden Historical Area, the Los Gatos Watershed (all land within the County that drains into Lexington Reservoir below Lake Elsman), the Los Gatos Hillside Specific Plan Area, the Monterey Highway Use Permit Area, the Guadalupe Watershed Area of Critical Environmental Concern, and the City of Morgan Hill Urban Growth Boundary.

In 2006, the County amended the Growth and Development Chapter of the General Plan to add additional protections for visual resources. The requirement for design review was extended to include all areas of the primary viewshed most immediately visible within approximately 1-2 miles of the valley floor (up to and including the first ridge). This is the Santa Clara Valley Viewshed (-d₁ District). Policies to regulate development on ridgelines and hilltops were added to minimize the visual effects of building in these locations. A review of County zoning maps shows that the County has placed the Design Review Combining District on those lands that are most visible from the valley floor. Design review is also required for the Milpitas Hillside (-d₂ District).

*County Review Guidelines*

Depending on the location of the building site and type of proposed development, a development application for a new residence may need to undergo review through the

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Architectural and Site Approval (ASA), Design Review, or a Building Site Approval (BSA). Details about these three review processes were described previously in the introduction to Chapter 4.

B. Potential Impacts and Mitigations

1. Criteria Used to Determine Impact Significance

The project would have a significant impact if it would:

1. Has a substantial adverse effect on a scenic vista.

2. Substantially damages scenic resources along a designated scenic highway.

3. Substantially degrades the existing visual character or quality of the site and its surroundings.

4. Creates a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

5. If subject to ASA, is generally in non-compliance with the Guidelines for Architecture and Site Approval.

6. If within a Design Review Zoning District for purposes of viewshed protection (d, -d1, -d2), conflicts with applicable General Plan policies or Zoning Ordinance provisions.

2. Direct Impacts

*Less-than-Significant Impacts Not Requiring Further Analysis*

Installation and operation of new alternative OWTS would have no impact or a less-than-significant impact on views and aesthetic resources. The following provides the explanations to support this conclusion.

*Criteria 1 to 3 – Scenic Views and Resources.* New OWTS would be installed below the ground surface. At most, visible improvements would be a small post with a control panel. Therefore, the project would have no impacts on scenic vistas or scenic resources.

*Criterion 4 - Light and Glare.* The new OWTS would not include new lighting, so there would be no nighttime impact. The system would be below ground and would not cause glare. The small above ground control post would not be lit nor cause glare.

*Criteria 5 to 6 - Plan Compliance.* The new systems would not be subject to ASA or design review. See the Indirect Impacts discussion below regarding the applicability of these significance criteria to new residential development that would accompany the new OWTS.
3. **Indirect Impacts**

As described in the Introduction to Chapter 4, additional development could occur if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan, which would include this additional development, would have less-than-significant impacts on aesthetic resources. The following discussions revisit that EIR analysis and at a program level review the indirect visual impacts associated with increased development activities given current regulatory requirements and environmental conditions. The level of analytic detail provided below is general, as it is unknown if and when any particular parcel would be developed.

**Less-than-Significant Impacts Not Requiring Further Analysis**

*Criteria 5 and 6 – Plan Consistency.* Where pertinent, new residential applications that are subject to ASA or design review would undergo that review. As such, it is speculative whether that review would uncover inconsistencies with the General Plan or ASA Guidelines.

**Effects on Scenic Vistas and Scenic Roads.**

**Impact 4.8-A** Potential new development could adversely affect scenic vistas/resources and substantially degrade the visual quality of the area.

Development in the eastern part of the County (the Northeast County, Calaveras Reservoir, Pacheco Creek and the eastern Coyote Creek watersheds as shown on Figure 3.3-1) would be visible primarily from the few roads traversing these sparsely settled areas. At a program level of analysis, the maximum 227 additional units that might be developed at full buildout on the approximately 250,000 acres in these four watersheds would be unlikely to substantially affect views from public vantage points (as described previously, the actual buildout would be substantially less due to other site constraints). New development would need to comply with design review requirements for development near the designated scenic roads in these watersheds. On average, if full buildout occurred, the proposed Ordinance would allow one additional residence per 1,000 acres in these four watersheds.

Possible new development in the eastern foothills would be mainly within the Coyote Creek and the western part of the Llagas watersheds. The parcels in these foothills that could be developed are within the Design Review Combining Districts and would be subject to County design review requirements. Similarly, most vacant lots on the lower foothills of the Santa Cruz Mountains are within a Combining Zone and subject to design review.

Further west in the higher elevations of the Santa Cruz Mountains, the additional parcels that could be developed are relatively few (most of the additional development potential in these 12 western watersheds is at lower elevations where design review is required). In addition, there are many designated scenic roads in this area where new development applications near the road would undergo design review. The Lexington Basin is one area that contains clusters of small undeveloped lots. An additional 83 new lots could be
developed in this upper elevation watershed. While these possible 83 new residences would constitute a relatively substantial development increase in a relatively small area (a 9,480 acre watershed), many would occur as infill in existing older subdivisions (including Lexington Hills, Redwood Estates, and Chemeketa Park). Any of these new small lots that are visible from Highway 17, Old Santa Cruz Highway, or Idylwild Road (all County-designated scenic roads) would be subject to County requirements for design review. Given these review requirements for development near scenic roads and the likelihood that many of the new lots would be within already developed rural residential subdivisions, at a program level of analysis the visual impacts of development in this watershed would be less than significant.

Other potential development could occur in the flatter areas in the southern part of Santa Clara Valley (there are approximately 400 vacant lots that could be developed if alternative OWTS are allowed in eastern portions of the Llagas Watersheds). Generally, this flatter area is not as visually sensitive as the hills and mountains to the east and west where views of new residences may be possible from many public vantage points in the valley below and from upper elevation vantage points. New non-residential development and subdivisions in the San Martin area are subject to the *San Martin Integrated Design Plan and Guidelines*. However, these guidelines do not apply to applications for new single family residences or second units. There are some designated scenic roads along the east and west edges of this area (e.g., Oak Glen Road on the west side and Roop Road on the east side), and new development here would be subject to County design review requirements. While these new residences and second units would likely be visible from nearby private and public vantage points, it is not expected that additional rural residential development in this area that is already developed with similar development would substantially affect scenic resources or scenic vistas, nor substantially degrade the existing rural residential visual character of that area.

The potential new residences would all be constructed in areas where the County General Plan and Zoning Ordinance permit residential development. The General Plan EIR found the aesthetic impacts of this development to be less than significant. At a program level, there is no evidence that the conditions regarding aesthetic resources have substantially changed since that EIR was certified. Since then, the County has added additional viewshed protections for hillside properties nearest to and most visible from the valley. The impact on scenic views and resources would be less than significant, and it is not expected that this new development spread across the unincorporated areas would substantially degrade the visual character of any particular area. Therefore, at a program level this impact would be *less than significant*, and no mitigation beyond compliance with existing County regulations requiring ASA, grading permit, design review, and/or BSA would be required.

**Lighting and Glare.**

**Impact 4.8-B** Potential new development could cause glare affecting daytime views and/or adversely affect nighttime views.

The additional new development would include new lighting. It is likely that rural residences may also include security lighting. This new lighting, particularly security
lighting, could alter the nighttime visual environment. Lights at residences on the foothills would have the most substantial effect. Most hillside homes nearest the valley that would be expected to result in the most lighting impacts would be subject to design review. The Design Review Guidelines require that light sources be designed to not be visible from off-site vantage points, which would reduce the impact from new development in these areas to a less-than-significant level. More distant homes in the Diablo Range are not visible from the valley floor and would not affect public views from the few roads in this region.

More distant residences in the Santa Cruz Mountains are subject to design review only if within 100 feet of a designated scenic road. So, it is possible that these more isolated residences would create light visible from other residences and roads in the valley. Vegetative and topographic screening and the distance to the valley floor would be expected to reduce the impacts of this lighting to a less-than-significant level. New development on the valley floor would also add new light that could be visible from public roads and other development. Much of this area is already developed with rural residential development.

The new development would cause some glare off roofs, large windows, and other flat surfaces. It is not expected that the glare would be substantial as these are single family residences and not large commercial or industrial buildings that have large expanses of flat walls and roofs. In addition, design review would minimize such effects for hillside homes near the valley and along scenic roads.

The EIR prepared for the General Plan found that at a program level of analysis the glare and light from this land development pattern, given General Plan policies and design review requirements reduced the visual impacts to a less-than-significant level. Since then, the County has added additional viewshed protections for hillside properties nearest and most visible from the valley, and there is no evidence to indicate that this conclusion is not still valid or that new development spread across the unincorporated areas of the County would substantially degrade the visual character of any particular area. The impact would be less than significant, and at a program level no mitigation beyond compliance with existing County regulations requiring ASA, grading permit, design review, and/or BSA is required.
4.9 UTILITIES AND PUBLIC SERVICE SYSTEMS

A. Setting

Municipal wastewater services are not available to lots that would be affected under this proposed Ordinance, so these systems are not discussed in this section. The following summarizes information about the principal service providers in the unincorporated areas that would be subject to the proposed Ordinance.

1. Fire Protection and Emergency Medical

Fire protection services vary throughout the unincorporated portions of Santa Clara County. Unincorporated pockets within cities are normally served by the city's fire departments. Lands adjacent to cities or on the valley floor are typically served by fire districts. Fire protection and emergency medical services within the County are currently provided by 14 jurisdictions. Some cities provide their own fire and emergency medical services, some cities are included in fire districts, and some contract for services with other providers. As a result of this complex service delivery system, the cities and the unincorporated areas in the County are served by nine provider agencies plus five volunteer fire companies: These include:

- Gilroy Fire Department
- Milpitas Fire Department
- Mountain View Fire Department
- Palo Alto Fire Department
- San José Fire Department
- Santa Clara Fire Department
- Sunnyvale Public Safety Department
- Santa Clara County Central Fire Protection District - CCFD (serving the cities of Cupertino, Los Gatos, Monte Sereno, Campbell, Morgan Hill, Los Altos, part of Saratoga, the Saratoga Fire Protection District, the Los Altos Hills County Fire District and unincorporated areas)
- South Santa Clara County Fire Protection District (SCFD), through a contract with the California Department of Forestry and Fire Protection (CAL FIRE), serving unincorporated lands in the south part of the County.\(^\text{87}\)

Much of the unincorporated land of the County lies in the Santa Cruz Mountains and the Diablo Range, and falls under the jurisdiction of the CAL FIRE. CAL FIRE provides fire protection during the summer and fall fire season, but limits its operations substantially in the winter season.

**Santa Clara County Central Fire Protection District**

The Santa Clara County Central Fire Protection District serves unincorporated areas within the County and the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Morgan Hill, and Saratoga. In 2010, SCCFD had over

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\(^{87}\) LAFCO of Santa Clara County 2010 countywide Fire Service Review, Management Partners, Inc. at: [file://localhost/tp://www.google.com/search%3Fclient=safari&rls=en&q=santa+clara+County+lafco+review&ie=UTF-8&oe=UTF-8]
285 employees and 17 fire stations to cover a population of over 246,000. In 2010, it responded to a total of 18,007 emergencies of which 1,701 calls (9.45 percent) were fires. The department’s established time standard for an urban single structure fire is a travel time of 8 minutes or less on 85 percent of calls. The department reported meeting the standard on 87.9 percent of calls in 2009. The department met the EMS established response standards on 95.13 percent of calls in 2009.

In its 2011 countywide review of fire service, the LAFCO of Santa Clara County concluded that the district has had a stable financial base, although it will be affected by the downward property assessments. The district has a prudent reserve. If property taxes remain relatively stable, finances should be adequate to provide services at current levels.  

**South Santa Clara County Fire Protection District**

The District serves unincorporated lands within the district directly surrounding the cities of Morgan Hill and Gilroy, which are developed with mostly low-density rural-residential development or agricultural uses. Lands located outside of the district’s boundary but within its SOI consist of mostly remote areas of the Santa Cruz Mountains and the Diablo Range that are difficult to access, hard to serve, and have limited development potential.

The district maintains four stations. Four engines are staffed daily. The department’s established time standard for non-medical emergency calls varies depending upon call classification as urban, suburban or rural. The performance standard is to respond to all calls within the established standard 90 percent of the time. The department reported meeting response standards on 90 percent of calls in 2009. The department responded to medical calls within the County EMS standards on 97.53 percent of calls in 2009.

In its 2011 countywide review of fire service, the LAFCO of Santa Clara County concluded that the present capacity of infrastructure and service performance is sufficient to serve projected population growth provided stations, apparatus and mutual/automatic aid agreements are maintained.  

**Los Altos Hills County Fire District**

The Los Altos Hills County Fire District (LAHFD) provides fire protection and emergency medical services to the Town of Los Altos Hills and to the unincorporated area adjacent to the Town (i.e., the Loyola and San Antonio Hills areas through a contract with the Santa Clara County Central Fire Protection District (CCFD). LAFCO reports that the district is nearly built out and contains lands permanently preserved as open space or parklands.

**Santa Clara County Fire Marshal**

The County Fire Marshal's Office is responsible for reviewing plans submitted to the County Planning Office for site approval or use permit for the purpose of setting conditions for development or use. County Fire Marshal Standards have been developed

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88 Ibid.
89 Ibid.
90 Ibid.
which give the property owner reasonable alternatives to providing both fire protection water and fire department access to the site.

New development in the areas designated as Wildland Urban Interface (see Figure 4.9-1) are required to meet stricter building and access requirements (as listed in Chapter 7A of the County Building Code.

**CAL FIRE**

The California Department of Forestry and Fire Protection (CAL FIRE) provides fire response to lands located within the designated State Responsibility Area (SRA) in the County, for which the CAL FIRE is primarily responsible for addressing wildfires. CAL FIRE serves the Study Area from three battalions: Battalion 1 (Morgan Hill), Battalion 2 (San José), and Battalion 7 (South Santa Clara County). In the County, CAL FIRE maintains fire stations at Alma, Almaden, Masten, Morgan Hill, Pacheco, Smith Creek, Stevens Creek, Sweetwater, and Treehaven, and an air attack-Helitack station at Alma. The stations have fulltime firefighters and volunteers. For example, Battalion three (Los Gatos) is staffed with one battalion chief, seven permanent and two seasonal (May through October) fire captains, two fire pilots, two seasonal fire apparatus engineers, and 25 seasonal volunteers. Equipment for Battalion Three includes one utility, two fire engines, one helicopter, and one helicopter service unit.  

The California Fire Plan is the State’s road map for reducing the risk of wildfire (California Department of Forestry and Fire Protection, 2010a). The Fire Plan is a cooperative effort between Cal Fire and the State Board of Forestry and Fire Protection. In addition to the statewide fire plan, Individual Unit Fire Management Plans have been prepared to document assessments of the fire situations within smaller management areas. The County is included in the Santa Clara Fire Management Plan, which covers the Santa Clara Unit, located between the east side of the San Francisco Bay and the western San Joaquin Valley. There are a total of 1.3 million acres under CAL FIRE protection within the unit, and a combined population of 5.4 million people. The Santa Clara Unit Fire Management Plan documents the assessment of the fire situation, includes stakeholder contributions and priorities, and identifies strategic targets for pre-fire solutions as defined by the people who live and work with the local fire problem.  

CAL FIRE prepared and adopted a Fire Hazard Severity Zones in State Responsibilities Area Map for the County (adopted by CAL FIRE on November 7, 2007). This map was used to develop the County’s Wildland Urban Interface map (Figure 4.9-1).

**Volunteer Fire Companies**

Of the 1,315 square miles in Santa Clara County, 627 are unincorporated and not protected by a legal fire protection district. That area has a population of less than 7,000 individuals. Fire and EMS are currently provided to these areas by one of the five volunteer fire companies and by adjacent fire departments. American Medical Response (AMR) provides ambulance transport. The five companies and the area they serve are shown in Table 4.9-1.  

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91 Lehigh Permanente Quarry Reclamation Plan Amendment Draft EIR, 2011,  
93 Ibid.
Table 4.9-1
Volunteer Fire Companies Serving Santa Clara County

<table>
<thead>
<tr>
<th>Company</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ormsby Fire Brigade</td>
<td>North of Mt. Madonna Park</td>
</tr>
<tr>
<td>Casa Loma Volunteers</td>
<td>West of Uvas Road and south of Mt. Umunhum</td>
</tr>
<tr>
<td>Stevens Creek Volunteers</td>
<td>West of Cupertino</td>
</tr>
<tr>
<td>Spring Valley Volunteers</td>
<td>East of Milpitas</td>
</tr>
<tr>
<td>Uvas Volunteers</td>
<td>Croy and Uvas Road areas</td>
</tr>
</tbody>
</table>

2. Police Protection

The Santa Clara County Office of the Sheriff (SCCOS) provides law enforcement services to Cupertino, Los Altos Hills, Saratoga, and unincorporated areas of the County. In 2008, SCCOS was staffed by 586 sworn police officers and 223 non-sworn civilian staff; currently SCCOS is staffed by 1,429 sworn and 312 non-sworn personnel serving a service population of approximately 197,000 (SCCOS, 2011).94

3. Water

A variety of public and private water retailers provide potable water to the unincorporated portion of the County. The following summarizes information about the principal retailers.

The Santa Clara Valley Water District (SCVWD) is the primary water resources agency for Santa Clara County. First formed as the Santa Clara Valley Water Conservation District in 1929, it now acts not only as the County's water wholesaler, but also as its flood protection agency and is the steward for its streams and creeks, underground aquifers and district-built reservoirs. The District provides services to other agencies under contracts. SCVWD has 70-year contracts dating from 1981 to provide treated drinking water to eight retail agencies in the northern part of Santa Clara County, including the Cities of Mountain View, Sunnyvale, Santa Clara, San José, Cupertino, Milpitas, the San José Water Company, and the California Water Service Company.

The District provides integrated services related to water management, including water wholesaling, flood control, groundwater management, and watershed stewardship. The LAFCO countywide water service review concluded that this district could supply water to meet projected demand.

The San Martin County Water District (SMCWD) was formed in 1988 as an independent special district when the former private water company that served the area entered into receivership. The District provides water services to the unincorporated community of San Martin between Morgan Hill and Gilroy. SMCWD provides water services to a portion of the unincorporated San Martin community, east of Monterey Road and centered along San Martin Avenue. The District provides potable water for a variety of uses, including residential, commercial, and industrial.

94 Lehigh Permanente Quarry Reclamation Plan Amendment Draft EIR, 2011
Figure 4.9-1

Wildland Urban Interface

- Very High Zone, Wildland Urban Interface
- Wildland Urban Interface
- Non-Wildland/Non-Urban; Urban Unzoned
The Aldercroft Heights County Water District (AHCWD) was formed in 1958 as an independent special district. It provides retail water services to residents of a rural unincorporated area within the Santa Cruz Mountains. The present bounds encompass approximately 2.5 square miles on the western edge of Santa Clara County in the vicinity of the Lexington Reservoir. The LAFCO countywide water service review stated that this company (supplied by the San José Water Company) could meet projected demand.

The Purissima Hills Water District (PHWD) was formed in 1955 as an independent special district. It provides water services in the northern portion of Santa Clara County. The District was originally formed as Purissima Hills County Water District, but formally dropped the word “County” from its name in 1981. The District’s boundary is entirely within Santa Clara County. The present boundary encompass approximately 13.4 square miles. The District’s boundary encompasses about two-thirds of the town of Los Altos Hills and an unincorporated area to the south. The California Water Service Company (Cal Water) serves the remaining eastern and southeastern portions of Los Altos Hills. PHWD believes that an additional water supply may need to be developed or purchased to ensure water delivery for both the near and long term future, and especially in time of drought.

“Small Water Systems” are mutual water companies (MWCs) and privately-owned water systems providing service within the County. There are 100 water systems that serve non-transient residential communities of five or greater connections. This excludes institutional systems and RV Parks. Of these systems, 60 have five to 14 connections, 36 with 15 or more connections and 4 with over 50 connections.\(^95\)

A private water company that could provide water to lands that could be developed under the proposed Ordinance is the San José Water Company (SJWC) serving an area that encompasses 139 square miles. SJWC provides potable water service to portions of Cupertino and San José; all of Campbell, Los Gatos, Saratoga, and Monte Sereno; and contiguous territory in the County. The Company also wholesales water to 39 mutual water companies and other small water systems. It sells raw untreated water to the Aldercroft Heights County Water District directly from Los Gatos Creek, where the Company holds water rights.\(^96\)

The West San Martin Water Works that serves 297 connections could also provide water to new development allowed under the proposed Ordinance.

4. Schools

Santa Clara County is served by 37 school districts. Of this total, 33 are K-12 (Kindergarten through 12th grade) school districts or portions thereof, and 4 are Community College Districts. These public school districts encompass 229 elementary schools, 52 middle schools, 46 high schools, and 8 community colleges. San Jose State, Stanford, and Santa Clara Universities are also located in the County, as are a number

\(^95\) Data on water systems is from LAFCO of Santa Clara County, 2011 countywide Water Service Review, at: http://www.santaclara.lafco.ca.gov/adptd_svce_reviews_water_2011.html

\(^96\) Ibid.
of smaller private schools.

5. **Solid Waste Collection and Disposal**

Solid waste generated in unincorporated areas of the County is sent to several different landfills. In 2007, unincorporated Santa Clara County disposed of 54,419 tons of solid waste. This was down from 76,341 tons in 2000. There were 21 disposal facilities used by unincorporated Santa Clara County in 2009, of which four received 90 percent of the waste stream. The John Smith Road Class III Landfill (San Benito County) received 26,877 tons of this waste, followed by the Johnson Canyon Sanitary Landfill (Monterey County) with 12,935 tons, the Crazy Horse Sanitary Landfill (Monterey County) with 8,675 tons, and the Newby Island Sanitary Landfill (City of San José) with 7,873 tons. The John Smith Road landfill has 77 percent of its capacity remaining, and an estimated closure date of 2024. The Johnson Canyon Sanitary Landfill has 50 percent of its capacity remaining, and an estimated closure date of 2040. The Newby Island landfill has 36 percent of its capacity remaining, and an estimated closure date of 2025. The Crazy Horse Sanitary Landfill is closing.

6. **Parks and Recreation**

The Santa Clara County Parks and Recreation Department (SCCPRD) oversees 28 parks and approximately 45,000 acres of publicly accessible recreation areas. Regional parks in the County typically are 200 acres or more.

The Mid-Peninsula Regional Open Space District (MROSD) was established by voter initiative in 1972 for the purpose of acquiring and administering open space lands. Over 50,000 acres of mountainous, foothill, and bayland open space is protected within the MROSD, which includes 25 open space preserves and covers an area of 550 square miles.

The Peninsula Open Space Trust (POST) was founded in 1977 as a private, non-profit organization, and since then has protected more than 70,000 acres in Santa Clara, Santa Cruz, and San Mateo counties by working directly with willing landowners.

7. **Regulatory Setting**

**County of Santa Clara**

*General Plan*

The County general Plan contains policies aimed at ensuring that adequate public services and utilities are available to serve existing and future development allowed under the General Plan. The Health and Safety Chapter contains policies regarding emergency preparedness, health services, fire and other hazards, and wastewater disposal. The Parks and Recreation chapter addresses parks and recreational needs.

**County Fire Requirements**

As mentioned previously, new development must comply with the County Fire Marshal’s Standards, including the standards for new development in the Wildland Urban Interface.
Building Site Approval

The County’s Building Site Approval (BSA) process includes requirements pertinent to utilities and public services. It requires review for adequate water and wastewater systems; review by the Fire Marshal for compliance with BSA fire requirements; and review for effects on flood-control channels. The Santa Clara Valley Water District reviews applications to ensure that the new development would not create substantial flooding. The County Surveyor reviews applications for adequate drainage and erosion control.

B. Potential Impacts and Mitigations

1. Criteria Used to Determine Impact Significance

The project would have a significant impact if it would:

1. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire, police, schools, parks, or other public facilities.
2. 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.
3. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
4. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments
5. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
6. 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.
7. There are insufficient water supplies available to serve the project from existing entitlement and resources, or are new or expanded entitlements needed.
8. Be served by a landfill with insufficient permitted capacity to accommodate the project’s solid waste disposal needs; or
9. Not comply with federal, State, and local statutes and regulations related to solid waste.
10. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
11. Be on, within or near a public or private park, wildlife reserve, or trail or affect existing or future recreational opportunities.
12. Result in loss of open space rated as high priority for acquisition in the “Preservation 20/20” report.

2. Direct Impacts

**Less-than-Significant Impacts Not Requiring Further Analysis**

The new OWTS allowed under the proposed Ordinance would have no or less than significant impacts on public services and utilities. The discussion below provides the supporting evidence for this conclusion. See the subsequent discussion of indirect impacts for the analysis of the effects of residential development of the lots where the new OWTS would be installed on public services and utilities.

**Criterion 1 – Construction of New Facilities Needed to Serve the Project.** Constructing or operating a new OWTS would not require response from providers of fire protection or the Sheriff’s Department. The OWTS themselves do not affect schools or parks. It is not expected that installation of these systems would generate any substantial amount of solid waste. Therefore, new utility or public service facilities would not need to be constructed to allow construction or operation of these systems.

**Criterion 2 – Wildland Fire Hazard.** The new OWTS do not expose people to any fire hazard.

**Criteria 3 and 4 – Wastewater.** These criteria do not apply as the proposed Ordinance addresses properties not served by municipal wastewater systems.

**Criterion 5 – Water and Wastewater Facilities.** New OWTS would treat and dispose of water that would be generated by on-site wells. These new OWTS would not require any additional water source nor development of new municipal water sources. The new OWTS also would not require new municipal wastewater facilities. The impacts of installing and operating new OWTS are assessed in this EIR.

**Criterion 6 – Storm Water Drains.** The installation of new OWTS would include appropriate grading to meet the proposed Ordinance standards for drainage. New off-site storm water drains would not be required.

**Criterion 7 – Water Supply.** Any new OWTS would not require a water supply. The OWTS treats water that would come from the new residence or other ancillary structures on the lot.

**Criteria 8 and 9 – Solid Waste.** It is expected that installation of new OWTS would generate very little if any waste that would need to be landfilled. There could be small amounts of lumber or piping that would need to be disposed of, but it would have a less-than-significant effect on the solid waste disposal infrastructure.

**Criteria 10 through 12 – Parks and Open Space.** The installation and use of the new OWTS would have no effect on parks or open space lands.
3. **Indirect Impacts**

As described in the Introduction to Chapter 4, additional development could occur if the proposed Ordinance is adopted. The certified EIR for the County’s General Plan concluded that development under that plan, which would include this additional development, would have less-than-significant impacts on public services. The following discussions revisit that EIR analysis and at a program level review the indirect public service impacts associated with increased development activities given current regulatory requirements and environmental conditions. The level of analytic detail provided below is general, as it is unknown if and when any particular parcel would be developed.

**Less-than-Significant Impacts Not Requiring Further Analysis**

Construction of additional development that could be induced by implementation of the proposed Ordinance would have no impact or less-than-significant impacts for several significance criteria as regards public services and utilities. This conclusion is based on the following:

**Criteria 3 and 4 – Wastewater.** Future new development would not include connection to municipal wastewater systems, so there would be no impact on those systems.

**Criterion 5 – Water and Wastewater Facilities.** New development would be served by on-site wells and OWTS. There would be no need to construct new municipal water or wastewater systems. The effects of installing and operating OWTS on individual lots are assessed in this EIR. The effects of drilling single wells for each new residence would be less-than-significant given County requirements to show proof of adequate water prior to BSA approval.

It is noted that the EIR adopted for the County’s General Plan concluded that development under the General Plan would have no or less-than-significant impacts on all public services and utility systems except for schools operating at or near capacity. Subsequent to the adoption of that EIR, the State determined that developer mitigation fees adequately mitigate impacts regarding new school construction or addition of portable units. The impact discussions provided below expand on that conclusion given the current regulatory environment and environmental conditions.

**Need for New or Altered Governmental Facilities**

**Impact 4.9-A** Potential new development could increase the demand for public services to a level where new or altered governmental facilities would be needed.

Additional development over approximately the next 23 years spread across the County would be expected to add about 1,980 people, or about a 0.15 percent increase in the 2010 County’s population (Incorporated and unincorporated portions). Again, this amount of development is very speculative, since as was shown in the more detailed

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87 Based on 2.87 people per household as reported for the County by the U.S. Census Bureau, 2011.
assessment of the Lexington Basin area, other development constraints would likely reduce maximum development potential by over 50 percent. The expected development would add about 20 new students annually. This small number of new students spread across up to 37 school districts would not be expected to result in the need for new or altered schools. In addition, school developer mitigation fees would reduce the impact to any affected school to a less-than-significant level.

The potential addition of 85 new residents per year over 23 years would not substantially increase the use of park and recreational facilities, and would, therefore, not require new or altered park facilities or equipment.

The new residents would increase demand for police, fire, and emergency medical response. However, the relatively small percentage increase in population spread across the unincorporated part of the County would not be expected to require the construction of new fire stations nor Sheriff’s Department substations.

The new residential units would be supplied water by on-site wells and wastewater treatment and disposal by on-site wastewater treatment and disposal systems, so there would be no impact on municipal water or wastewater facilities.

To conclude, the proposed Ordinance would result in less-than-significant impacts resulting from the construction of new governmental facilities needed to serve the population increase, and no mitigation is required.

**Wildland Fire**

**Impact 4.9-B** Potential new development could occur in areas designated as high fire hazard zones and increase the risk of wildland fires.

As shown on Figure 4.9-1, most of the hilly parts of the County east and west of the Santa Clara Valley are designated as High or Very High Fire Hazard. Comparing watershed buildout to the fire hazard zones shown on Figure 4.9-1, it is estimated that there are up to 700 vacant lots in High or Very High Fire Hazard Zones (again remembering that site constraints other than suitability for a conventional OWTS would be expected to reduce maximum development potential of these lots by over 50 percent). As described in the Setting section, the County requires that new development in these zones comply with the County’s standards for new development in the Wildland Urban Interface. The County’s Building Site Approval (BSA) process requires review for adequate water systems and review by the Fire Marshal for compliance with pertinent fire requirements. This BSA process does not apply to many lots that could be developed in the eastern portion of the County, though new development there still needs to comply with County standards for development in the Wildland Urban Interface. At a program level, given existing County oversight of newer development in high fire hazard areas, this impact would be less than significant, and no mitigation is required.
**New Storm Drains**

**Impact 4.9-C**  
Potential new development could require construction of new public storm drains.

New residential development would increase the amount of impervious surface in the area where the residence is built. Increased runoff from each lot could potentially drain to a manmade storm drain along a road edge or elsewhere. Because these new residences would be on large lots and spread out across the County, it is not expected that the increased runoff would require substantial upgrading of existing storm drains or construction of new drains. In addition, the County’s BSA process allows the County to require adequate site drainage and to determine whether increased runoff would cause downstream flooding (except for lots in the eastern part of the County). It is not expected that this scattered new development would require the need to construct substantive storm drains that might result in environmental damage. In addition, existing County review requirements ensure that new development would construct any storm drain improvements needed to serve the residence. If such improvements are needed and therefore required by the County, the County would conduct CEQA review of any substantive off-site improvements to the storm drain system to ensure compliance with all NPDES and other requirements. At a program level, the impact is expected to be **less than significant**, and no mitigation is required. If there is a potential for an impact from one of these future developments, the off-site impacts would be addressed through the permits issued by the County Planning Office.

**Water Availability**

**Impact 4.9-D**  
Potential new development could require additional water.

New development would be served by water from private wells drilled on each lot or possibly be served by one of the public water systems or private water companies listed in the Setting section. The small amount of growth in any one water district over 23 years would not be expected to result in the need for additional water entitlements with the exception of the Purissima Hills Water District, which has already identified the need for additional water supplies based on existing and projected development. The proposed Ordinance would not cause or substantially change this existing supply shortfall. The LAFCO review of water providers indicated that other than Purissima Hills Water District, other providers had sufficient resources to meet projected increases in demand. Much of the potential new development would be supplied by private wells tapping local aquifers. These development applications need to prove adequate water availability prior to County approval. It is expected that adequate water can be provided to new residences, and, if this supply cannot be proved, then the application would not be approved. In addition, the Santa Clara Valley Water District reviews BSA applications for conformity to its prescribed standards. At a program level, the impact would be **less than significant**, and no mitigation is required.
**Solid Waste**

**Impact 4.9-E  Potential new development would generate solid waste.**

Construction and occupancy of new residential units would generate solid waste that would need to be collected and disposed of. The small amount of solid waste generated by up to 30 new residences per year would not measurably affect solid waste collectors or disposal sites. This impact would be *less than significant*, and no mitigation is required.

**Parks**

**Impact 4.9-F  Potential new development would increase the use of parks.**

The addition of up to 85 new residents per year would slightly increase the use of parks. This increase in usage on a countywide basis would not be substantial, and the effect would be *less than significant*. Some new residences could be near an existing park or trail, but the effect of constructing one single-family residence on a relatively large lot would not be expected to significantly affect parks or trails. This impact would be *less than significant*, and no mitigation is required.

**Open Space**

**Impact 4.9-G  Potential new development could hinder acquisition of high priority lots as described in the “Preservation 20/20” report.**

A review of the update to the Preservation 20/20 Plan (i.e., *County of Santa Clara Parkland Acquisition Plan 2011 Update*, County of Santa Clara Parks and Recreation Department, 2011) shows that there are few vacant parcels that could possibly be developed with alternative OWTS that are designated as either “proposed parks from the County General Plan’ or “high suitability for regional park and trail acquisition” in that plan update. It is speculative whether or not these lots could be developed with conventional OWTS. In addition, the number of lots is quite small. At a program level of analysis, this impact would be *less than significant*, and no mitigation is required.
4.10 HAZARDS AND HAZARDOUS MATERIALS

A. Setting

1. Hazardous Materials

Hazardous materials are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous materials are grouped into the following four categories, based on their properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases). Hazardous materials have been and are commonly used in industrial applications.

2. Regulatory Framework

Hazardous Materials

Numerous local, State, and federal laws and regulations regulate the use, storage, and disposal of hazardous materials, including management of contaminated soils and groundwater. In addition to the State regulations governing the transport, storage, and use of explosives listed previously, the following agencies have some responsibility regarding hazardous materials. The U.S. Environmental Protection Agency (U.S. EPA), Cal-EPA, DTSC, RWQCB, and the Bay Area Air Quality Management District (BAAQMD) are the major federal, State, and regional agencies that enforce these regulations. The main focus of the federal and California Occupational Safety and Health Administration (OSHA) is to prevent work-related injuries and illnesses, including from exposures to hazardous materials; CAL FIRE implements fire safety regulations. In accordance with Chapter 6.11 of the California Health and Safety Code (§25404, et seq.), local regulatory agencies enforce many federal and State regulatory programs through the Certified Unified Program Agency (CUPA) program.

The County General Plan contains a number of policies in the Health and Safety Chapter aimed at ensuring that hazardous waste is properly and safely transported, stored, and used. The County Department of Environmental Health is the Certified Unified Program Agency (CUPA) and manages the County’s Hazardous Materials Program

Emergency Response

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local governments and private agencies. Responding to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services (OES), which coordinates the responses of other agencies. The County Office of Emergency Services coordinates response to emergencies in the County. Emergency Response Team members respond and work with local fire and police agencies, emergency medical providers, California Highway Patrol (CHP), California Department of Fish and Wildlife (CDFW), and California Department of Transportation (Caltrans).
B. Potential Impacts and Mitigation Measures

1. Criteria Used For Determining Impact Significance

A project would have a significant impact if it meets any of the following criteria.

1. Creates a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

2. Creates 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.

3. Emits hazardous emissions or handles hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

4. 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 create a significant hazard to the public or the environment.

5. For a project located within an airport land use plan referral area or, where such a plan has not been adopted, within two miles of a public airport or public use airport, or in the vicinity of a private airstrip, the project results in a safety hazard for people residing or working in the project area.

6. Impairs implementation of or physically interferes with an adopted emergency response plan or emergency evacuation plan.

7. Provides breeding grounds for vectors.

8. The proposed site plan results in a safety hazard (i.e., parking layout, access, closed community, etc.).

9. Involves construction of a building or road on a slope of 30 percent or greater.

10. Involves construction of a roadway greater than 20 percent slope for a distance of 500 feet or more.

2. Direct Impacts

**Less-than-Significant Impacts Not Requiring Further Analysis**

The proposed Ordinance and installation of alternative OWTS would have no impact or a less-than-significant impact per all the significance criteria listed above. This conclusion is based on the following:

*Criteria 1 and 2 - Transport and Use of Hazardous Materials.* As regards transport, use, and disposal of hazardous materials, installation of new OWTS would involve the routine transport and use of gasoline and diesel. Use of these types of substances would not
occur in significant (that is, regulatory) amounts or frequencies to constitute a potential hazard to the public or environment, including students at schools. See Section 4.2, Hydrology and Water Quality regarding potential indirect health hazards from new OWTS and hauling septage.

**Criterion 3 – Emissions Near Schools.** Installation of alternative OWTS does not require the use of hazardous chemicals or materials, so there would be no potential for emission of such materials near schools.

**Criterion 4 – Hazardous Materials Site.** It is not expected that new OWTS would be installed on a hazardous materials site, and this would be confirmed when proposed new residences undergo the County BSA or obtain a building permit.

**Criterion 5 – Air Safety.** New OWTS do not extend into the air and would not pose a safety hazard as regards airports.

**Criterion 6 - Interference with Emergency Response or Evacuation.** These below-ground systems would not interfere with emergency response or evacuation.

**Criterion 7 – Nuisance Vectors.** Disposal of treated wastewater from new OWTS would be below the ground and would not provide a breeding ground for vectors. See Section 4.2, Hydrology and Water Quality regarding potential indirect health hazards from new OWTS.

**Criterion 8 – On-site Safety Hazard.** The new OWTS would not pose on-site hazards as they would be small and be belowground level.

**Criterion 9 – Steep Slopes.** This criterion does not apply to OWTS. The proposed Ordinance does permit alternative OWTS on sites exceeding 30 percent so long as all other requirements of the proposed Ordinance are followed to ensure safe disposal of treated wastewater.

**Criterion 10 – Steep Roadways.** Construction of new OWTS would not involve new road construction.

3. **Indirect Impacts**

**Less-than-Significant Impacts Not Requiring Further Analysis**

At a program level, construction of additional units that could be induced by the proposed Ordinance would have no impact or a less-than-significant impact as regards hazards and hazardous materials. This conclusion is based on the following:

**Criteria 1 and 2 - Transport and Use of Hazardous Materials.** As regards transport, use, and disposal of hazardous materials, construction of new development would involve the routine transport and use of gasoline, diesel, and lubricants. Use of these types of substances would not occur in significant (that is, regulatory) amounts or frequencies to constitute a potential hazard to the public or environment, including students at schools. It is speculative whether future residents would use pesticides or any other hazardous
material in significant (that is, regulatory) amounts or frequencies to constitute a potential hazard to the public or environment.

Criterion 3 – Emissions Near Schools. Construction of new development does not require the use of regulatory amounts of hazardous chemicals or materials, so there would be no potential for emission of such materials. It is speculative whether future residents would use pesticides or any other hazardous material in significant (that is, regulatory) amounts or frequencies to constitute a potential hazard to the public or environment.

Criterion 4 – Hazardous Materials Site. It is not expected that new development would be constructed on a hazardous materials site, and this would be confirmed when proposed new residences undergo the County Building Site Approval or obtain a building permit.

Criterion 5 – Air Safety. New development allowed by the proposed Ordinance would generally be located in rural areas not near airports. Any proposal for a new residence within the airport land use plan referral area would need to comply with the plan’s requirements.

Criterion 6 - Interference with Emergency Response or Evacuation. New development would be constructed on private lots and would not directly interfere with emergency response or evacuation. The development would generate additional traffic on the County roadway system. However the amount of new traffic (approximately 11,000 daily trips at full buildout) would be relatively small when spread across the County. It is not expected that the projected increase in traffic would substantially interfere with either emergency response or evacuation.

Criterion 7 – Nuisance Vectors. New development can create standing water or other conditions that provide breeding grounds for vectors. However, it is speculative to what level this would occur. It is likely to affect mainly residents of the new unit and possibly nearby neighbors, but would not be expected to have a substantial areawide impact.

Criterion 8 – On-site Safety Hazard. New development on private lots would not result in a safety hazard. See the discussion in Section 4.5, Traffic regarding the indirect safety impacts of increased traffic on roadways.

Criterion 9 – Steep Slopes. It is unknown (speculative) whether any future application for new development would include development of a building or road on a slope exceeding 30 percent. If that were the case, the application would be reviewed by the County to determine whether such construction is safe and has less-than-significant environmental impacts prior to approving it.

Criterion 10 – Steep Roadways. It is unknown (speculative) whether any future application for new development would include development of a 500+ foot long road on a slope exceeding 20 percent. If that were the case, the application would be reviewed by the County to determine whether such construction is safe and has less-than-significant environmental impacts prior to approving it.
4.11 LAND USE, AGRICULTURE, AND PLAN CONSISTENCY

A. Setting

1. Land Use in the Planning Area

Prior to 1950, Santa Clara County was predominantly rural. Today, the northern Santa Clara Valley is a vast urban metropolis with an economy dominated by high technology industries. With the supply of undeveloped residential land in the northern valley virtually depleted, development in recent years has occurred through a combination of redevelopment and urban expansion. Urban development, accompanied by high land costs and policies intended to alleviate housing and transportation problems has brought increasing densities of development. Consequently, the sprawling suburban character of the northern valley is changing, with multistory office buildings, hotels, apartments, and condominiums rising visibly across the valley's flat landscape.

The southern portion of the valley remains predominantly rural in character. The exceptions are two cities (Gilroy and Morgan Hill), the unincorporated community of San Martin, and scattered areas of rural residential development. In contrast to the densification of the north valley, the south valley cities are experiencing growth pressures that involve conversion of farmland and open space to suburban densities. To accommodate this growth, Gilroy has expanded its Urban Service Area since the 1980 County General Plan was adopted. Outside these areas, the County has curtailed the development of new urban enclaves.

Santa Clara County's 832,000 acres may be grouped into four main categories:

- Rural unincorporated areas, approximately 560,000 acres. The rural areas of the County are lands outside of cities and the urban service area of cities. This is the predominant type of land for which the County has direct control over land use decisions.

- Cities (urban incorporated areas). There are 15 cities in Santa Clara County, including San José, the County seat. Urbanized areas of the County are located predominantly in the northern section where the cities of Cupertino, Los Gatos, Mountain View, Palo Alto, Santa Clara, San José, Saratoga, Campbell, Los Altos, Los Altos Hills, Milpitas, Monte Sereno, and Sunnyvale can be found. Incorporated cities in south County include Gilroy and Morgan Hill. Each incorporated city has its own General Plan and land use policies.

- Urban unincorporated areas. The urban unincorporated area consists of lands that lie within the Urban Service Areas of a city. This includes lands on the periphery of cities as well as "County islands" (i.e., unincorporated areas surrounded by a city). The County generally defers to the cities in establishing land use and zoning policies for these areas. Islands of unincorporated territory are scattered throughout many of Santa Clara County's 15 cities.

- Urban Service Areas (USAs). There are 272,000 acres within urban service areas (USAs), representing one-third of the County. This includes the
unincorporated areas and the incorporated lands of the cities themselves. USAs are planned for annexation and urban services within a five-year period. Their boundaries may be reviewed annually by LAFCO, which approves or denies expansion boundaries according to criteria aimed at fostering rational growth patterns. The USA policies have been in effect since the mid-seventies. Some cities, such as Gilroy, have significantly expanded their USA boundary, while others in the north County are essentially land-locked in that they abut other cities. These USA's have been filled out and will not expand any further.

2. Population and Regional Growth

According to ABAG data, the County is the most populous among the nine-County Bay Area region, followed by Alameda and Contra Costa counties. Between 1980 and 1990, Santa Clara County grew by 202,506 people. This growth represented a 16 percent increase in population. Similarly, between 1990 and 2000, the County grew by an additional 185,008, which accounted for a 12 percent change in population. The County’s population was estimated to be approximately 1,822,000 in 2010. It is predicted that the County's population will continue to grow, but at a slower rate. Moderate rates of growth in employment and housing development may account for this slow down in population growth. The population of the County was 1,692,500 in 2000. ABAG projects the overall County population to increase to 2,431,400 by 2035. In the unincorporated part of the County the population in 2000 was 103,000, and ABAG projects a 2035 population of 122,400.

Table 4.11-1 summarizes population trends within the County, while Table 4.11-2 describes ABAG population projections for the unincorporated part of the County. Further analysis of this projection shows that the projection includes the population added from the development of vacant lots that are located in the spheres of influence of cities where sanitary sewer service is available. For the unsewered areas that could be affected by the proposed Ordinance, the projected population increase would be 4,000 people, which correlates to approximately 1,700 new residential units.

3. Agriculture

Agriculture was once the predominant economic enterprise in the County. The valley areas of south County, especially south and east of Gilroy, continue to be an important source of cut flowers, vegetables and grains, fruits, nuts, berries, and other crops. Although industrialized uses rather than agricultural ones now dominate the region’s economy, approximately 56 percent of the unincorporated area of the County remains subject to agreements called “Williamson Act contracts” that have been entered into pursuant to the California Land Conservation Act of 1965. Much of the land under Williamson Act contract is grazing land in the foothills and mountains east and west of the Santa Clara Valley. Commercial farming occurs principally in the central and southern portion of the valley. The Draft EIR/EIS prepared for the proposed Santa Clara Valley HCP states that there are 35,528 acres of farmland in this southern valley area.

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98 ABAG Projections 2009
99 County review of ABAG projections provided by David Rader, 7/5/12.
100 Data from http://www.buttegeneralplan.net/products/SettingandTrends/18_Agriculture.pdf
Table 4.11-1
Population and Jobs Growth in Santa Clara County

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Total Population</td>
<td>1,682,585</td>
<td>1,763,000</td>
<td>1,822,000</td>
<td>1,945,300</td>
<td>2,063,100</td>
<td>2,185,800</td>
<td>2,310,800</td>
<td>2,431,400</td>
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<td>Household Population</td>
<td>1,652,871</td>
<td>1,732,900</td>
<td>1,791,100</td>
<td>1,914,100</td>
<td>2,031,600</td>
<td>2,154,300</td>
<td>2,279,300</td>
<td>2,399,900</td>
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<tr>
<td>Households</td>
<td>565,863</td>
<td>595,700</td>
<td>614,000</td>
<td>653,810</td>
<td>696,530</td>
<td>739,820</td>
<td>785,090</td>
<td>827,330</td>
</tr>
<tr>
<td>Mean Household Income</td>
<td>118,400</td>
<td>97,900</td>
<td>108,700</td>
<td>114,600</td>
<td>120,900</td>
<td>127,600</td>
<td>134,600</td>
<td>142,000</td>
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<tr>
<td>Employed Residents</td>
<td>863,432</td>
<td>734,000</td>
<td>815,800</td>
<td>899,900</td>
<td>985,400</td>
<td>1,074,500</td>
<td>1,164,500</td>
<td>1,252,500</td>
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<td>Total Jobs</td>
<td>1,044,130</td>
<td>872,860</td>
<td>906,270</td>
<td>981</td>
<td>230</td>
<td>1,071,980</td>
<td>1,177,520</td>
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<td>Agriculture and Natural Resources Jobs</td>
<td>4,560</td>
<td>4,500</td>
<td>4,500</td>
<td>4,500</td>
<td>4,500</td>
<td>4,500</td>
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</tr>
<tr>
<td>Manufacturing, Wholesale, and Transportation Jobs</td>
<td>346,520</td>
<td>265,550</td>
<td>272,920</td>
<td>290,510</td>
<td>312,290</td>
<td>327,040</td>
<td>349,190</td>
<td>372,850</td>
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<td>Retail Jobs</td>
<td>100,570</td>
<td>87,660</td>
<td>83,620</td>
<td>89,170</td>
<td>97,420</td>
<td>114,670</td>
<td>126,820</td>
<td>139,530</td>
</tr>
<tr>
<td>Financial and Professional Service Jobs</td>
<td>211,250</td>
<td>166,460</td>
<td>165,360</td>
<td>180,560</td>
<td>200,440</td>
<td>230,040</td>
<td>255,930</td>
<td>282,920</td>
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<td>Health, Educational, and Recreational Service Jobs</td>
<td>247,530</td>
<td>241,850</td>
<td>269,520</td>
<td>295,630</td>
<td>324,360</td>
<td>349,290</td>
<td>388,070</td>
<td>428,250</td>
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<tr>
<td>Other Jobs</td>
<td>133,700</td>
<td>106,840</td>
<td>110,350</td>
<td>120,860</td>
<td>132,970</td>
<td>151,980</td>
<td>167,980</td>
<td>184,570</td>
</tr>
<tr>
<td>Persons per Household</td>
<td>2.92</td>
<td>2.91</td>
<td>2.92</td>
<td>2.93</td>
<td>2.92</td>
<td>2.91</td>
<td>2.90</td>
<td>2.90</td>
</tr>
</tbody>
</table>

Source: ABAG, 2009
Table 4.11-2
ABAG Projections of Population Growth for Unincorporated Part of the County

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>100,300</td>
<td>103,400</td>
<td>103,100</td>
<td>111,900</td>
<td>116,200</td>
<td>120,100</td>
<td>122,400</td>
</tr>
<tr>
<td>Households</td>
<td>30,920</td>
<td>31,810</td>
<td>31,600</td>
<td>34,600</td>
<td>36,020</td>
<td>37,190</td>
<td>37,960</td>
</tr>
<tr>
<td>Total Jobs</td>
<td>51,900</td>
<td>48,660</td>
<td>50,400</td>
<td>56,670</td>
<td>59,690</td>
<td>62,620</td>
<td>64,710</td>
</tr>
</tbody>
</table>

Source: ABAG, 2009

The majority of what are defined as important Farmlands (see subsequent discussion of how the State defines Farmlands and its mapping of these Farmlands). According to The State’s Farmland Mapping and Monitoring Program data, there are approximately 17,270 acres of Prime Farmlands, 3,630 of Farmland of Statewide Importance, 2,523 acres of Unique Farmland, and 4,328 acres of Farmland of Local Importance. Virtually all these Farmlands are in the valley south of San José. There are 392,777 acres mapped as grazing land. The County contains about 200,000 acres of timberland.

4. Regulatory Setting

State of California

California Important Farmland Inventory System and Farmland Mapping and Monitoring Program

The California Department of Conservation (DOC), under the Division of Land Resource Protection, has established the Farmland Mapping and Monitoring Program (FMMP). The FMMP monitors the conversion of the State’s farmland to and from agricultural use. The FMMP publishes this information in its Important Farmland map series. The five agricultural land classifications (“Farmland”) include Prime Farmland, which consists of the land best able to sustain long-term crop production; Farmland of Statewide Importance, which are lands with similar land use, irrigation system and physical characteristics as prime farmland but with minor shortcomings such as steeper slopes; Unique Farmland, which consists of lands with lesser quality soils but that are used to produce California’s leading agricultural cash crops; Farmland of Local Importance, which are designated by individual counties; and Grazing Land, which consists of lands most suited for livestock grazing.

California Land Conservation Act of 1965 (Williamson Act)

The Williamson Act (Government Code §51200 et seq.) authorizes local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use in exchange for beneficial tax treatment. Its intent is to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to the potential market value. et seq.).

California Public Resource Code

The California Public Resources Code governs forestry, forests, and forest resources, as well as range and forage lands, within the state. “Forest land” is defined by Public
Resources Code §12220(g) as “land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.” Similarly, “timberland” is defined by Public Resources Code §4526 as, “land, other than land owned by the federal government…, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products.

**California Government Code**
Chapter 6.7 of the California Government Code (§51100-51155) regulates timberlands within the state. “Timberland production zone” is defined in §51104(g) as an area that has been zoned pursuant to Government Code §51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses.

**County of Santa Clara General Plan**
The Resource Conservation Chapter of the County General Plan addresses agriculture and agricultural resources. It recognizes the importance of agricultural uses, products, and jobs to the region’s economy, identifies agricultural preservation as a challenge, and outlines proactive strategies and policies to preserve agricultural lands and the rural character of agricultural areas in the County. The General Plan permits residential development in all land use designations that would be affected by the proposed Ordinance.

**B. Potential Impacts and Mitigations**

1. **Criteria Used to Determine Impact Significance**

A project would typically have a significant impact if it meets any of the following criteria:

1. Physically divides an established community.

2. Conflicts 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.

3. Conflicts with special policies, including:
   - San Martin and/or south County
   - Los Gatos Specific Plan or Lexington Watershed
   - Guadalupe Watershed
   - Stanford
   - City of Morgan Hill Urban Growth Boundary Area
   - West Valley Hillsides Preservation Area
   - Water Collaborative (Guidelines and Standards for Land Use Near Streams)
4. Conflicts with existing zoning for agricultural use.

5. Conflicts with an existing Williamson Act Contract or the County’s Williamson Act Ordinance (Section C13 of County Ordinance Code).

6. Converts 10 or more acres of farmland classified as prime in the report Soils of Santa Clara County (Class I, II) to non-agricultural use.

7. Conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).

8. Results in the loss of forest land or conversion of forest land to non-forest use.

9. Involves other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

10. Displaces substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere.

2. Direct Impacts

*Less-than-Significant Impacts Not Requiring Further Analysis*

The proposed Ordinance and the alternative OWTS that could be installed if the Ordinance is adopted would have no impact or a less-than-significant impact per the following Significance Criteria:

*Criterion 1 – Community Division.* Installation of new OWTS would be done on a small part of a private lot and would not physically divide a community.

*Criterion 3 - Special Policy Conflicts.* Neither the proposed Ordinance nor installation of alternative OWTS would be inconsistent with the special policies of any other cited documents.

*Criterion 4 – Agricultural Zoning Conflicts.* Installation of OWTS would be consistent with zoning for any parcels where the installation of these systems is possible.

*Criterion 5 – Williamson Act Contract Conflicts.* Installation of an OWTS to allow residential development of a legal parcel would be consistent with any Williamson Act contract.

*Criterion 6 – Conversion of Farmland.* No OWTS would be larger than a fraction of an acre, so there would be no impact per this criterion which sets a threshold of 10 acres.

*Criterion 7 – Forest Land Zoning Conflicts.* Installation of an OWTS would be consistent with County zoning, including zoning of forest land, so there would be no impact per this criterion.
Criteria 8 and 9 – Forest and Farm Land Conversion. Alternative OWTS would less than a fraction of an acre and therefore would not directly result in loss or conversion of forest land or Farmland, so there would be no impact per this criterion (see subsequent discussion of Indirect Impact regarding residential development of forest land and Farmland).

Criterion 10 - Displacement of People or Housing. Installation of alternative OWTS would not result in loss of housing.

Plan Consistency

Impact 4.11-A The proposed Ordinance could be inconsistent with the County General Plan.

The County General Plan contains several policies that directly reference the use of OWTS. These policies reflect the County’s 1994 position on the types of OWTS that protected public safety and the environment. The proposed Ordinance provides updated information and guidance on installing and operating OWTS that would meet the same objectives of these General Plan policies as regards protection of human health and environmental quality. Therefore, the proposed Ordinance would be consistent with the goals and objectives of the General Plan.

Nevertheless, there may be a conflict between what would be allowed under the proposed Ordinance and the specific language of the two policies that are listed below. No mitigation is required since plan inconsistency is not an impact on the physical environment. If the County determines there is an inconsistency, then it would need to amend the General Plan language to the conflicting references. The two policies containing possible conflicting language include:

R-HS 43 Septic systems shall not be allowed where site characteristics impede their operation, including:
   a. high groundwater conditions;
   b. soils with waste water percolation rates in excess of one minute per inch or less than 120 minutes per inch;
   c. limited depth to bedrock; or
   d. gradients in excess of 20% without appropriate studies.

The proposed Ordinance does not conflict with the basic policy requirement to not allow OWTS where site characteristics impede their operation. With respect to the four site characteristics listed under R-HS 43, there would be no conflict with either items (b) or (d), where the same limitations regarding percolation rates and slope gradients would continue to apply to conventional and alternative OWTS as they do under the current Ordinance; there would be no change to the percolation rate requirements. Regarding (a) and (c), the same (current) limitations would continue to apply to conventional septic systems. The proposed Ordinance, however, would allow lesser depths to groundwater and to bedrock when certain types of alternative treatment and/or dispersal methods are used in accordance with specified design and operational requirements. The language regarding high groundwater and depth to bedrock are not quantified in the policy. As such, the proposed Ordinance would provide more specificity to items (a) and
(c), by defining high groundwater and depth to bedrock limitations related to each particular type of OWTS design that may be used. Accordingly, the proposed Ordinance would not be inconsistent with this policy.

**R-HS 45** Alternative waste water treatment and disposal systems may be allowed for individual residential development only if:

a. a traditional septic system adequate to serve the proposed development could be constructed, if needed;
b. it can be shown that the alternative system will function more effectively than a septic tank system and be beneficial to the environment;
c. the density of the proposed residential development is consistent with the density normally allowed within that property’s General Plan land use designation;
d. the proposed system has a track record of safe and effective long term operation under conditions similar to those in Santa Clara County;
e. the proposed system is in compliance with all other pertinent County policies and regulations;
f. the system is appropriate to the site for which it is proposed;
g. the proposed system includes adequate measures to prevent environmental damage in the event of system failure, such as discharge of inadequately treated effluent to the land (e.g., surface, lakes, streams, etc.);
h. the proposed system will operate in full compliance with Regional Water Quality Control Board waste water discharge requirements; and
i. the County has approved a program which ensures that the system's long term maintenance, operating, monitoring and liability costs are provided for by the owner of the facility. Such a program may include, but is not limited to, recorded contractual obligations, permit fees or insurance policies; special permit conditions; and, performance bonds for system replacement.

The proposed project includes proposed amendment of this policy to allow alternative OWTS consistent with the proposed Ordinance. The amendment of the plan would remove any policy inconsistency.

Other than the latter policy that specifically addresses alternative OWTS, a review of the General Plan policies concluded that the project is consistent with all other General Plan policies (see Appendix D, Tables 1 and 2, for additional details). The project includes revisions to regulations addressing OWTS that are needed to serve land uses in unincorporated portions of the County that are not served by municipal wastewater systems. The direct impacts of installing and operating these future alternative OWTS were assessed in previous sections of this EIR and were all found to be less than significant. Accordingly, the direct impacts of the proposed project would be consistent with General Plan policies intended to protect the County’s natural resources, including soil, biological, cultural, hydrologic, agricultural, forest, and visual resources; protect residents from unhealthy noise, hazards, and air pollution; and maintain an adequate circulation system.

This EIR also assesses the indirect impacts resulting from new development that may be accommodated by the proposed project. All future development of vacant parcels would be consistent with the General Plan land use designation and zoning of said parcel. The project would not allow potential development beyond what the County approved when
adopting its General Plan and Zoning Ordinance. The County approved these land use
designations at the same time it approved the General Plan policies. Accordingly, the
project would not accommodate land uses not foreseen when the County adopted the
General Plan nor when it certified the EIR for that plan. Additionally, all future
applications for new development that would be served by an alternative OWTS would
undergo the normal County development review process (see the summary of that
process in the introduction to Chapter 4 of this EIR), and this review includes an
assessment of the project’s consistency with the General Plan. Projects that are not
consistent with the General Plan and Zoning Ordinance would not be approved.
Therefore, all new development potentially accommodated by the proposed project
would be consistent with General Plan policies. The inconsistencies are limited to the
one policy discussed previously.

3. Indirect Impacts

Less-than-Significant Impacts Not Requiring Further Analysis

The certified EIR for the County’s General Plan concluded that development under that
plan would have less-than-significant impacts on land use and agriculture. The following
discussions revisit that analysis and review the indirect land use impacts associated with
increased development activities that could accompany changes in on-site wastewater
system requirements given current regulatory requirements and environmental
conditions.

Criterion 1 – Community Division. New residential development would be on rural lots in
unincorporated parts of the County. This development would not divide any existing
community in the County.

Criterion 2 – General Plan Consistency. The residential development would be
consistent with County General Plan land use designations, which allow residential
development on all parcels where alternative OWTS might be installed.

Criterion 3 - Special Policy Conflicts. All future residential development would be
required to be consistent with the special policies of all cited documents.

Criterion 4 – Agricultural Zoning Conflicts. The additional residential development would
be consistent with zoning which allows residential development on all parcels where
alternative OWTS might be installed.

Criterion 5 – Williamson Act Contract Conflicts. Construction of additional residential
development on a legal parcel would be required to be consistent with all Williamson Act
contract requirements.

Criterion 7 - Forest Land Zoning Conflict. Construction of additional residential
development on a legal parcel would be consistent with County zoning, including zoning
of forest land.

Criterion 10 - Displacement of People or Housing. Construction of new housing would
not result in loss of housing or displacement of residents.
**Conversion of Farmland**

**Impact 4.11-B**  
Potential new development could result in the conversion of Farmland to non-agricultural uses.

It is likely that some lots in the central and southern portion of the Santa Clara Valley where new residential development could be constructed contain Farmland. The County Planning Office does not consider constructing new single-family residences on these lands as Farmland conversion; rather a single residence or employee housing are compatible uses since farms often have a residence for the owner/operator as well as housing for agricultural workers. This is consistent with the language in the portion of the County’s Williamson Act ordinance addressing use and development of contracted lands. So although a small amount (up to 10,000 square feet) of Farmland (as mapped by the Farmland Mapping and Monitoring Program) may be covered by the footprint of structures, the County does not deem it a conversion because these types of projects do not preclude agricultural operations on the property as a whole. The impact is therefore *less than significant*, and no mitigation is required.

It is noted that the proposed Ordinance potentially benefits agricultural uses by allowing development of employee housing that supports agricultural operations through: (1) no longer automatically requiring a separate OWTS for detached dwellings; (2) reducing the size of dispersal areas (which also would tend to minimize encroachment on farm land); and (3) allowing alternative technologies (e.g., raised sand filter bed) that can overcome depth-to-groundwater constraints. This is a *beneficial impact* of the project.

**Forest Lands**

**Impact 4.11-C**  
Potential new development could result in the loss of forest lands.

Development of the additional residences would potentially result in loss of forest lands. The lots that could be developed under the proposed Ordinance would typically be small or have soil, slope, and/or groundwater constraints that limit the development of a standard OWTS. It is not expected that such parcels would be located on soils or in areas where commercial timber operations do or could occur. The impacts to oak woodlands (which are a type of forest land) were addressed in Impact 4.3-I in Section 4.3, Biological Resources. It is not expected at a program level that additional development would have a substantial impact on forest lands. The impact is *less than significant*, and at a program level no mitigation is required.
4.12 ENERGY

This section was prepared pursuant to CEQA Guidelines Section 15126(c) and Appendix G (Energy Conservation of the Guidelines), which require that EIRs include a discussion of the potential energy impacts of proposed projects with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The information in this section is based largely on data and reports produced by the California Energy Commission and the Energy Information Administration of the U.S. Department of Energy as reported in the Draft EIR prepared for the San Jose Downtown Health Center.

A. Setting

Regulatory Framework

Many federal, State, and local statutes and policies address energy conservation. At the federal level, energy standards apply to numerous products (e.g., the EnergyStar™ program) and transportation (fuel efficiency standards). At the State level, Title 24 of the California Administrative Code sets forth energy standards for buildings; rebates/tax credits are provided for installation of renewable energy systems; and the Flex Your Power program promotes conservation in multiple areas. In addition, in January 2010, the State of California adopted the California Green Building Standards Code (CALGreen) that establishes mandatory green building standards for all buildings in California.

The code covers five categories: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and indoor environmental quality. These standards include a mandatory set of minimum guidelines, as well as more rigorous voluntary measures, for new construction projects to achieve specific green building performance levels. This Code went into effect as part of local jurisdictions’ building codes on January 1, 2011.

The County has a Green Building Policy for County Government Buildings. “Green building” is the practice of siting, designing, constructing, operating, maintaining, and removing buildings in such a way as to increase the efficiency of resource use – energy, water, and materials – while reducing building impacts on human health and the environment.

Background Information

Energy consumption is analyzed in an EIR because of the environmental impacts associated with its production and usage. Such impacts include the depletion of nonrenewable resources (oil, natural gas, coal, etc.) and emissions of pollutants during both the production and consumption phases.
Existing Conditions

Given the nature of the proposed project (i.e., construction and operation of new alternative OWTS and the indirect development of new rural residences) the following discussion focuses on the three most relevant sources of energy for the proposed project: electricity, propane, and gasoline for vehicle trips. In addition, some development may be served by natural gas.

Electricity, Natural Gas, and Propane

Pacific Gas and Electric Company (PG&E) transmits and delivers electricity to residents within the County and natural gas to some of these residents. It provides natural gas and electric service to approximately 15 million people throughout a 70,000 square mile service area in northern and central California. PG&E’s operations are regulated by the California Public Utilities Commission. Electricity and natural gas supplies, including those supplied to San José by PG&E are regulated by the California Energy Commission (CEC).

The California Independent System Operator (ISO), a non-profit public benefit corporation, operates the majority of California’s high-voltage wholesale power grid and is responsible for balancing the demand for electricity with an equal supply on a daily and long-term basis. In 2010, the state’s total electricity system generation (in-state and imported power) was approximately 290,187 GWh (Gigawatt hours). Electricity is delivered to consumers in San José via an electrical grid using high voltage transmission lines (110 kV or above) to reduce the energy lost in long distance transmission and lower voltage distribution lines. Electricity is generated from various sources, including natural gas, nuclear, coal, and wind and hydroelectric generation resources. In addition to power supplied by PG&E, there was over 15 MW (megawatts) of solar power generation capacity in the City of San José.

Electricity consumption in California is projected to grow at a rate of 1.2 percent per year from 2010-2020, with demand during peak use periods (i.e., hottest days of the year during the afternoon) growing at a rate of 1.3 percent per year. In 2010, approximately 275,000 kWh (kilowatt hours) of electricity was consumed in the state. Electricity consumption in the state is projected to increase to 316,280 GWh by the year 2020. PG&E estimates that electricity consumption for its service areas throughout the state will grow at a rate of 1.2 percent per year from 2010-2020, with peak demand projected to grow at a rate of 1.4 percent per year. Specifically for PG&E Zone 5 (San Francisco Region), it is estimated that electricity consumption would increase by 0.95 percent per year from 2008-2016, with peak demand estimated to increase 0.71 percent per year.

Under the State of California Energy Action Plan, a “loading order” has been established for providing for future electricity needs. The State and its electricity providers would invest first in energy efficiency and demand-side resources, followed by renewable resources, and only then in clean conventional electricity supply to meet its energy needs. The Energy Action Plan is an ongoing process, subject to change and updating over time. The most recent update to the Energy Action Plan was in 2008.

Data on energy supplies and use were taken from the Draft EIR for the San Jose Downtown Health Center, County of Santa Clara, 2012.
With the adoption of SB 1078, California established its Renewable Portfolio Standard (RPS) program, with the goal of increasing the percentage of renewable energy in the state’s electricity mix by at least one to 20 percent per year by 2017. The RPS program aims to ensure that a minimum amount of renewable energy is included in the portfolio of electricity resources.

The natural gas is provided via natural gas lines stretching from Oregon to Arizona. Gas is delivered from basins in California, Canada and the Western United States by transmission mains. Natural gas consumption in California is projected to grow at a rate of 0.7 percent per year from 2010-2018. PG&E estimates that natural gas consumption for its service areas (which includes San José) will grow at a rate of 0.5 percent per year from 2010-2018. In 2008, natural gas users in San José consumed approximately 217 million therms of natural gas (124 million therms for residential uses; 89 million therms for commercial uses; and four million therms for industrial uses).

Propane is provided to rural residential properties that are not served by PG&E. Propane is delivered from out-of-County sources to bulk storage tanks in various parts of the County, and then delivered by private companies to individual customers. There is no data base for the amount of propane consumed within the County.

**Fuels**

Transportation fuels, including gasoline and diesel fuels, are produced by refining crude oil. Approximately 38 percent of crude oil used in California is produced in-state, the remaining percent comes from Alaska (14 percent) and foreign sources (48 percent). All imported crude supplies and products arrive to California by ship through marine terminals. In recent years, Californians consumed approximately 40 million gallons of gasoline a day and about eight million gallons of diesel a day. Overall, California is experiencing a downward trend in sales for gasoline, diesel, and jet fuel. It is anticipated that this downward trend will continue due to high fuel prices, efficiency gains, competing fuel technologies, and mandated increases of alternative fuel use.

### B. Potential Impacts and Mitigations

#### 1. Criteria Used to Determine Impact Significance

An energy impact is considered significant if the project would:

1. Result in a wasteful, inefficient, and unnecessary consumption of energy;
2. Result in a substantial increase in demand upon energy resources in relation to projected supplies; or
3. Result in longer overall distances between jobs and housing.
2. Direct Impacts

*Less-than-Significant Impacts Not Requiring Further Analysis*

Some of the alternative OWTS would use pumps to operate the systems. But the number of new OWTS requiring electricity and the small amount of electricity that would be used would be a less-than-significant impact. Otherwise alternative OWTS would not use energy except during the 2-3 day construction process.

3. Indirect Impacts

*Energy Use*

Impact 4.12-A Potential new development would not result in wasteful, inefficient, or unnecessary consumption of energy or significant energy impacts.

New residential development would be constructed in compliance with the County’s Green Building Policy (which it is expected could be strengthened over time if global warming becomes a more serious problem). Compliance with these standards would ensure that energy would not be used in a wasteful manner. Rural residences could be located at some distance from jobs, but this is speculative. It is as likely that people working in the County who moved to a new residence allowed under the proposed Ordinance could be nearer his or her job if they currently live out of the County. At a program level, the impact would be *less than significant*, and no mitigation is required.
5.0 TOPICAL ISSUES AND IMPACT SUMMARIES CHAPTER

5.1 GROWTH-INDUCING IMPACTS

CEQA mandates that an EIR assess potential growth-inducing impacts of a project. The CEQA Guidelines describe the required assessment in the following way:

*Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment (CEQA Guidelines, Section 15126.2(d)).*

Growth-inducing impacts typically arise when a project would provide new infrastructure or public services that can be used to serve other future projects. The current Ordinance only allows construction of traditional, gravity-based septic systems. By modifying some of the siting requirements for traditional systems and allowing use of alternative systems in some situations, the proposed Ordinance would remove septic system-related constraints on development of a portion of the existing undeveloped legal parcels. The Ordinance would, therefore, indirectly induce development of vacant lots in the unincorporated part of the County beyond levels that would occur under existing regulations. See the Introduction to Chapter 4 where the amount of induced growth is described. These induced impacts were assessed as “indirect impacts” for each resource in Chapter 4 above.

It is not expected that the proposed Ordinance would induce additional development beyond the level assessed as indirect impacts in Chapter 4. The proposed Ordinance would not induce further development of other vacant parcels within the County nor any of its cities. The project would not result in any increase in the development potential in the unincorporated areas over what is currently allowed under the General Plan and Zoning Ordinance.

5.2 CUMULATIVE IMPACTS

1. Introduction

According to the CEQA Guidelines, cumulative impacts from several projects are the changes in the environment that result from the incremental impacts of the proposed project when added to the other closely related past, present, and reasonably foreseeable future projects. As defined in Section 15355 of the CEQA Guidelines, an EIR should not discuss impacts that do not result in part from the project evaluated in the EIR. As such, the discussion in this section focuses specifically on those impacts of the
project that would result in cumulative effects, and does not consider cumulative impacts to which the project would not contribute.

The 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. The list of projects approach is used here because the County’s General Plan was adopted in December 1994 and is out of date as regards development projections.

A two-step approach was used to analyze cumulative impacts. The first step was to determine whether the combined effects from the proposed project and other projects would be cumulatively significant. Where the combined effect of the projects was determined to result in a significant cumulative effect, the second step was to evaluate whether the proposed project’s incremental contribution to the combined significant cumulative impact would be cumulatively considerable as required in Section 15064(h)(1) of the CEQA Guidelines.

For each environmental issue, cumulative impacts may occur over different geographic areas. Table 5.2-1 provides a summary of different geographic areas used to evaluate potential cumulative impacts.

### Table 5.2-1
Geographic Considerations in Cumulative Analysis

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Geographic Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geology/Soils</td>
<td>Vicinity of a site-specific development</td>
</tr>
<tr>
<td>Hydrology/Water Quality</td>
<td>Watershed</td>
</tr>
<tr>
<td>Biological Resources</td>
<td>County of Santa Clara</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>County of Santa Clara</td>
</tr>
<tr>
<td>Traffic and Circulation</td>
<td>County of Santa Clara</td>
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<tr>
<td>Air Quality/Greenhouse Gas</td>
<td>Air basin/state/global</td>
</tr>
<tr>
<td>Noise</td>
<td>County of Santa Clara General Plan noise contours</td>
</tr>
<tr>
<td>Aesthetic Resources</td>
<td>Viewshed</td>
</tr>
<tr>
<td>Utilities and Public Service Systems</td>
<td>Service district</td>
</tr>
<tr>
<td>Hazards and Hazardous Materials</td>
<td>Vicinity of a site-specific development</td>
</tr>
<tr>
<td>Land Use, Agriculture, and Plan Consistency</td>
<td>County of Santa Clara</td>
</tr>
<tr>
<td>Energy</td>
<td>County of Santa Clara, State of California</td>
</tr>
</tbody>
</table>

2. **List of Projects and Regional Planning Environment**

There are currently three large project applications on file with the County that the County determined should be assessed for possible cumulative impacts. They are listed below.
• The Permanente Quarry Reclamation Plan Amendment would allow an extension of mining at this existing quarry located west of the City of Cupertino, approximately 2 miles west of the intersection of Interstate 280 and Highway 85.102

• The San José Downtown Health Center includes proposed construction of a 60,000-square foot-primary health care center in a portion of the site of the San Jose Medical Center that was demolished. The center is located at the northwest corner of Santa Clara Street and North 17th Street in San Jose. The Draft EIR prepared for this project found that it would not result in any significant cumulative impacts.103

• The Coyote Highlands Cluster Subdivision is a proposed 25-lot-subdivision on a 507-acre-site in the east foothill near the border of Morgan Hill and northwest of Coyote Reservoir. An EIR is being prepared on this project.

Other projects affecting biological resources in the unincorporated County are the three Habitat Conservation Plans (HCP) being considered for adoption: the Santa Clara Valley HCP, the Alameda Watershed HCP, and the Three Creeks HCP. See the Setting section of Section 4.3, Biological Resources for further description of these HCPs.

At a more general level, by 2035 there will be additional residential development of vacant lots that can be developed with conventional OWTS. As described previously in Section 4.11, Land Use, Agriculture, and Plan Consistency, ABAG projects an additional 19,400 people will be added to the population in the unincorporated part of the County, or an additional 8,083 residential units, most of which would be constructed within the spheres of influence of the various cities. In addition, there would be additional residential and non-residential development within the cities with the overall population within the County increasing by about 600,000 people.

3. Cumulative Impacts

The following discusses whether the project plus the other projects assessed as the cumulative scenario would result in a cumulative impact and, if so, whether the project would make a considerable contribution to the impact.

Geology and Soils

As described in Section 4.1, Geology and Soils, new alternative OWTS would only be installed if DEH determines that soil and geologic conditions are such that the improvements would not fail or be substantially affected by landsliding or seismic activity. Additional possible residential development would be subject to County review to require that development be constructed to meet current seismic building requirements, avoid unstable slopes, and comply with building code requirements as regards expansive and liquefiable soils. Soil erosion BMPs would be required by the

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102 See at: http://www.sccgov.org/sites/planning/Plans - Programs/Surface Mining (SMARA)/Permanente Quarry/Pages/default.aspx
103 See at: http://www.sccgov.org/sites/planning/Permits - Development/Environmental Protection/Active Environmental Documents/Documents/SJ_Health_Cntr_Draft_EIR.pdf
County when reviewing residential development applications, and therefore no additive effect would result and no cumulatively considerable impact related to seismic or soil hazards would occur. Implementation of the proposed project would not create additional facilities under increased risk of hazards and would not result in a considerable contribution to a significant cumulative impact related to geology and soils.

**Hydrology and Water Quality**

Runoff from additional development could combine with runoff from the other projects to adversely affect water quality. Runoff from the combined future development could transport sediment and chemical pollutants (e.g. petrochemical residues, pesticides, and residues of the manmade materials) to receiving waterways, thereby adversely affecting water quality of the receiving streams, as well as to groundwater aquifers. As described in *Section 4.2, Hydrology and Water Quality*, the direct impacts from installation and operation of alternative OWTS would not adversely affect water quality. In fact, the new regulations would likely have a long-term beneficial impact on water quality. The indirect impacts on water quality from possible additional development would be reduced to a less-than-significant level by enforcement of existing County regulations governing new residential development. Therefore no additive effect would result and no cumulatively considerable impact related to hydrologic or water quality would occur. Additional development plus the project could reduce aquifer recharge and increase demand for groundwater thereby adversely affecting groundwater supplies. This project’s contribution to water quality would be small and therefore less than significant. It is not expected there would be a significant cumulative hydrologic or water quality impact. In addition, when considered in combination with the impacts of other projects in the cumulative scenario as well as future growth in the cities, the project’s contribution to any hydrologic or water quality impacts would not be considerable.

By preserving land as open space, the HCPs would have a long-term beneficial effect on water quality that would outweigh the potential combined water quality impacts of the other projects being assessed in the cumulative scenario.

**Biological Resources**

As was described in *Section 4.3, Biological Resources*, future installation of alternative OWTS as well as construction of additional residences could adversely affect special status species, their habitat, and other sensitive biologic communities/habitats. Additional development could also interfere with wildlife travel. However, these impacts would likely be reduced to a less-than-significant level after future CEQA review and mitigation. Therefore, development of other vacant parcels in the area would not combine with indirect impacts from the proposed project except as regards a possible countywide reduction in habitat needed to support special status species.

On a countywide basis, the adoption and implementation of the HCPs discussed above would result in long-term preservation of habitat for special status species and their habitat and would thereby reduce the countywide cumulative impact to these resources to a less-than-significant level. In addition, site-specific CEQA review of future development would ensure that the project would make a less-than-considerable contribution to any countywide loss of habitat.
Cultural and Paleontological Resources

As discussed in Section 4.4, Cultural and Paleontological Resources, it is possible that currently unknown cultural and/or paleontological resources could be damaged when installing new alternative OWTS as well as additional residences. The other projects could likewise damage such resources. The Draft EIR for the Permanente Quarry project identifies several historic mining-related resources that would be lost at that site. It is unknown whether the Coyote Highlands Cluster Subdivision site has cultural resources. New OWTS and residences would need to receive approval by the County. The County would review sites for the presence of cultural and paleontological resources and require avoidance or, if avoidance is not feasible, mitigation for damage to these resources. Hence, the project would not lead to a regional cumulative impact to these resources. Therefore, when considered in combination with the impacts of other projects in the cumulative scenario as well as future growth in the cities, the project’s incremental contribution to cultural and paleontological impacts would not be considerable.

Traffic and Circulation

As described in Section 4.5, Traffic and Circulation, installation of new alternative OWTS would have less-than-significant impacts on roadway congestion, level of service, and traffic safety. The additional traffic generated by future occupancy of additional residences would increase traffic on the countywide roadway system resulting in additional congestion at certain intersections and on certain roadways and increased risk of traffic collisions. The other projects being assessed for cumulative impact would also add traffic to the roadway system causing a potential significant cumulative impact as regards to maintaining acceptable levels of service. This increased traffic could also result in increased cumulative risk of collisions, especially on roads that do not meet County road standards.

As discussed under Impact 4.5-B, there are intersections with certain highways in the State highway system that are currently or expected to operate at unacceptable levels by 2035.

The one intersection where the cumulative impact can be more definitively identified is at the aforementioned intersection of Old Santa Cruz Highway with the SR 17 northbound off ramp, which currently operates at LOS F (this road is the eastern portion of the Bear Creek Road interchange). As discussed previously in Impact 4.5-B, traffic generated by the additional development in the Lexington Basin area would add a maximum of 14 p.m. peak hour trips to this interchange, which would be less than one percent of the interchange’s capacity. Accordingly, the project would not make a considerable contribution to cumulative impacts at this interchange.

In addition, VTA has identified an existing LOS F condition on the SR 17 northbound segment between Summit and Bear Creek (LOS F during existing a.m. peak hour). As described in Impact 4.5-B, future development in the Lexington Basin watershed would add less than one percent to SR 17 capacity, indicating a less than significant impact on the SR 17 freeway mainline. To conclude, the project would make a less-than-considerable contribution to impacts on SR 17. It would be expected that it would also
make a less-than-considerable contribution to other highways and intersections with those highways in other parts of the County.

**Air Quality**

As described in Section 4.6, Air Quality, installation of new alternative OWTS would have less-than-significant impacts on air quality. Possible additional residential development would have a less-than-significant impact as regards violating an air quality standard, exposing people to substantial pollutant concentrations, exposing people to objectionable odors, and emitting substantial amounts of GHGs. The emissions from other development within the County and the cities would generate emissions of all criteria pollutants and GHGs. The potential additional development accommodated by the project, and therefore the emissions from that development, are consistent with the County’s General Plan and the Clean Air Plan. Therefore, when considered in combination with the impacts of other projects assessed in the cumulative scenario as well as future growth in the cities, the project’s incremental contribution to air quality and greenhouse gas impacts would not be considerable. In addition, by providing additional housing opportunities, the project would indirectly improve the jobs-housing balance in the County, which would reduce pollutant emissions from workers commuting in and out of the County.

**Noise**

As described in Section 4.7, Noise, installation of new alternative OWTS would have less-than-significant impacts on noise. The increased traffic generated by additional development could combine with traffic generated by the other projects to produce additional noise along the roadway system. The additional traffic potentially generated by the project would be small. When considered in combination with the impacts of other projects assessed in the cumulative scenario, the project’s incremental contribution to noise impacts would not be considerable.

**Aesthetic Resources**

As described in Section 4.8, Aesthetic Resources, installation of new alternative OWTS would have less-than-significant impacts on aesthetic resources. Impacts on views and scenic resources from additional development would be reduced to a less-than-significant level by conditions established during the County review of development applications. In any case, when considered in combination with the impacts of other projects assessed in the cumulative scenario as well as future growth in the cities, the project’s incremental contribution to visual impacts would not be considerable.

**Utilities and Public Services**

As described in Section 4.9, Utilities and Public Services, installation of new alternative OWTS would have less-than-significant impacts on utilities and public services. Future development in Santa Clara County would increase the demand for utilities and public services in the region. In terms of cumulative impacts, the appropriate service providers are responsible for ensuring adequate provision of public utilities within their jurisdictional boundaries. The principal cumulative impacts on utilities and public
services would be from the indirect development from the proposed project. These impacts were all determined to be less than significant and would be less than significant at a cumulative level. There would be no new or substantially increased cumulative impact beyond what was assessed as indirect impacts for the proposed project.

**Hazards and Hazardous Materials**

None of the new alternative OWTS or additional development would be within the immediate vicinity of the other projects assessed under the cumulative scenario. There would be no significant cumulative impact as regards hazards or hazardous materials.

**Land Use**

The other projects assessed under the cumulative scenario within the unincorporated part of the County would not result in Farmland conversion. The other projects also would not be expected to convert forest lands. It is not expected that there would be a cumulative significant land use impact. In any case, the project would have less-than-significant impacts on Farmlands and forest lands. Therefore, the project’s incremental contribution to any land use impacts would not be considerable.

**Energy**

The other projects plus the proposed project would increase the demand for energy. There would be a cumulative impact on energy resources. As described in Section 4.12-A, Energy, the energy used to install and operate alternative OWTS plus the energy demands from additional residential development would be a less-than-significant impact. Therefore, when considered in combination with the impacts of other projects assessed in the cumulative scenario, the project’s incremental contribution to energy use would not be considerable.

**5.3 IRREVERSIBLE ENVIRONMENTAL CHANGES**

Section 15126.2(c) of the CEQA Guidelines requires a discussion of the extent to which a proposed project would commit nonrenewable resources to uses that future generations would be unable or unlikely to reverse. An example of such an irreversible commitment is the construction of highway improvements that would provide public access to previously inaccessible areas. A project would generally result in a significant irreversible impact if:

1. Primary and secondary impacts would commit future generations to similar uses.
2. The project would involve a large commitment of nonrenewable resources.
3. The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project.

**Changes in Land Use That Commit Future Generations**

Development under the proposed Ordinance would result in currently vacant parcels being developed and used for residential uses. This development would constitute a
long-term commitment (i.e., likely to exist for the next 50 to 100 years) to residential uses.

**Commitment of Resources**

Development allowed under the proposed Ordinance would commit nonrenewable resources to the construction and maintenance of buildings, infrastructure and roadways. These non-renewable resources include mining resources such as sand, gravel, iron, lead, copper and other metals and fabrication of other building materials, such as steel. Potential induced development under the proposed Ordinance also represents a long-term commitment to the consumption of fossil fuels, natural gas and gasoline. Increased energy demands would be used for construction, lighting, heating, and cooling of residences, and transportation of people within, to, and from the County.

Development related to the proposed Ordinance would also result in an irreversible commitment of limited, renewable resources such as lumber and water.

### 5.4 PROJECT ALTERNATIVES

**Introduction**

CEQA requires that the EIR assess alternatives to the project if the project would have significant environmental impacts, even if these impacts can be mitigated to a level that is less-than-significant. As noted in Chapter 4 of this EIR, the project would have one potentially significant impact, namely the project would make a considerable contribution to the cumulative traffic impact on some intersections with State highways.

The CEQA Guidelines offer a number of requirements and recommendations regarding the alternatives analysis. The more pertinent issues are summarized as follows:

- A range of reasonable alternatives must be assessed. The range must be sufficient to permit a reasonable choice of alternatives so far as environmental aspects are concerned. The EIR need not assess multiple variations of alternatives. The range of alternatives to be assessed is governed by the rule of reason.

- Alternatives must be ones that could feasibly attain most of the basic objectives of the proposed project and could avoid or substantially lessen one or more of the significant effects of the project. While alternatives can impede the attainment of the objectives, they should not substantially impede those objectives. Alternatives that fundamentally change the nature of the project do not meet the basic objectives of the project.

- The alternatives must be feasible. Feasibility takes into account factors such as site suitability, economic viability, availability of infrastructure, consistency with the Santa Clara County General Plan, other plans and regulatory limitations, jurisdictional boundaries, and ability to acquire, control, or gain access to alternative sites.
• The analysis of the alternative must determine whether the alternative reduces the significant impacts identified for the project. If the alternative would generate additional significant impacts, those must also be identified and discussed.

• One of the alternatives to be assessed must be the “no project” alternative. (See discussion below under that heading.)

• The EIR must assess the identified alternatives and determine which among them is environmentally superior. If the no project alternative is identified as the environmentally option, then one of the other remaining must be identified as environmentally superior.

Using the guidelines listed above, this EIR has identified the following alternatives to the project as proposed:

A. Alternative 1 – No Project - Continuation of Existing County Regulations; this alternative would not make any changes to existing County OWTS regulations.

B. Alternative 2 – Limited Use of Alternative OWTS; this alternative includes the proposed changes regulating conventional OWTS but allows alternative OWTS to mainly be used only for repairing failing systems.

C. Alternative 3 – Maintain Lexington Basin 1-acre Minimum Lot Size Restriction; under this alternative the existing ban on installing new OWTS on lots smaller than one acre in the Lexington Basin watershed would be maintained.

Possible Alternatives Not Selected for Analysis

The alternative of an Alternative Project Location is not addressed in this EIR since the proposed Ordinance regulates OWTS countywide and cannot apply to any jurisdiction outside of Santa Clara County.

The Lead Agency considered an alternative that maintained the current development restrictions in the San Martin area. These development restrictions were based on water quality concerns in this area. The hydrologic analysis done for this EIR shows that with implementation of the regulations included in the proposed Ordinance, there are no water quality or other environmental reasons to continue these restrictions. Therefore, this alternative would not reduce significant impacts and was not included for further analysis.

Analysis of the Alternatives

A. Alternative 1 – No Project - Continuation of Existing County Regulations;

1. Description

The No Project Alternative describes the environmental effects of not approving the proposed project. The proposed amendment of the General Plan and Zoning Ordinance would not be required for this alternative. This would mean that future OWTS on as
many as 1,700 currently undeveloped lots would be designed, installed, and operated under existing County regulations. The additional residential units that could be developed if the proposed Ordinance were approved would remain vacant since they could not be developed using conventional OWTS. The No Project Alternative would eliminate all direct and indirect impacts that would result from the construction of additional OWTS and residences.

The proposed Ordinance includes many new requirements that would apply to conventional OWTS. These changes include: updated technical requirements affecting dispersal system sizing and construction; more restrictive slope limitations for gravity dispersal fields; elimination of lot size limitations (existing parcels) in the Lexington Basin; new code requirements for completion of a basic operational inspection at the time of septic tank pumping; qualifications and training requirements for on-site system maintenance providers; elimination of code inconsistencies; and simplification of the regulations. Under the No Project Alternative, these changes would not be made. In the near future, in order to continue permitting new OWTS the County may be required by the State and Regional Water Boards to make some changes to the existing ordinance to conform to new statewide requirements expected to be implemented within the next few years (see additional discussion of these requirements below under Hydrology).

An analysis by issue area of the potential environmental impacts of the No Project Alternative, as compared to the proposed project, is provided below. At the end of each discussion section, a determination is made whether the alternative would have a greater, similar, or lesser impact than the proposed.

2. **Impacts**

**Geology and Soils**

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.1, Geology and Soils would not occur under the No Project Alternative. The lots would remain undeveloped. The impacts from alternative OWTS or additional development failing due to seismic activity, unstable slopes, or soil constraints would be eliminated. There would be no increased risk from topographic changes or soil erosion on the lots where alternative OWTS would be permitted under the proposed project. These lots would remain available for other uses (e.g. grazing, agriculture, timber operations, open space, etc.).

New conventional OWTS installed in the future under this alternative would have approximately the same direct and indirect impacts as described for the proposed project. Current regulations pose greater risk of system failure or stability problems on steep slopes, as they allow new OWTS with conventional gravity dispersal trenches on slopes up to 50 percent. In comparison, the proposed Ordinance would restrict the use of gravity dispersal trenches to slopes of 30 percent or less and require the use of pressure distribution or drip dispersal for slopes between 30 percent and 50 percent. Soil erosion potential is greater under the existing regulations since, unlike the proposed Ordinance, there are no current requirements to implement erosion control BMPs in connection with the excavation, grading and soil disturbance associated with OWTS installation. Additionally, the amount of land area disturbed for an individual OWTS
installation under the existing regulations is considerably greater than would be required under the revised sizing criteria contained in the proposed Ordinance. Existing regulations do not contain specific soil evaluation requirements, such as wet weather percolation testing, for areas of high shrink-swell soils that could help to identify and avoid or mitigate for expansive soil conditions. As a result, OWTS systems installed in such areas are more likely to fail. Additionally, since few design options are provided in existing regulations to address problematic soils, OWTS installations that have occurred in the past in unsuitable locations have limited available alternatives to address system failures when they occur. To summarize, new OWTS installed under existing regulations are more likely to fail or operate improperly due to soil and slope constraints, and soil erosion is potentially more significant under these regulations. Direct geology and soils impacts would be greater under the No Project Alternative than under the proposed project. While the No Project Alternative would have less indirect impacts, all these indirect geologic impacts potentially resulting from the project can be reduced to a less-than-significant level by conditions typically required by the existing County project review process (site-specific review, that is, BSA review or another type of County review as described in Section 4.0,E). Because the alternative would have more direct impacts on geology and soil resources than the proposed project, overall the alternative would have greater geologic impacts than the proposed project. [Greater]

Hydrology and Water Quality

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.2, Hydrology and Water Quality would not occur under the No Project Alternative, because the lots would remain undeveloped. The impacts of alternative OWTS polluting surface or ground waters would be eliminated. There would be no additional runoff created by new development. There would be no additional flooding or transport of pollutants to streams. There would be no effect on groundwater supplies.

For new conventional OWTS, this alternative would result in many of the same types of impacts as described in Section 4.2, Hydrology and Water Quality (e.g., flooding and contamination of surface and ground waters by pathogens, nitrogen, heavy metals and trace organic substances). The hydrology and water quality impacts would generally be greater in regard to ongoing operation, maintenance, and repair of the approximately 12,500 existing OWTS in the County; and the impacts would be either the same or somewhat greater in regard to conventional OWTS installed to serve new development.

With respect to existing OWTS, this alternative would not support the range of design options (e.g., alternative systems) that are in common use elsewhere in the region and that could be employed to more effectively correct failing OWTS in the County. As a result, water quality and public health impacts from failing systems would be greater under this alternative. Repairs and upgrades of existing OWTS would continue to utilize mainly septic tank and gravity dispersal trenches, avoiding the use of supplemental treatment and/or alternative dispersal designs, even where such alternatives may be more suited to the site-specific constraints responsible for the OWTS failure (e.g., shallow soil depth, high groundwater, ground slope). Conventional OWTS repairs may also necessitate the continued practice of granting waivers to standard horizontal setback requirements (e.g., to watercourses) because of space constraints and limited
flexibility to consider other options and locations on the site. Some selective use of alternative technologies for OWTS repairs may occur under this alternative on a case-by-case basis. Without established siting/design criteria for alternative systems, an operating permit program to guide and oversee on-going operation and maintenance needs, and minimum qualifications and training requirements for service providers, the use and effectiveness of improved/alternative technologies would be limited. Additionally, there is some doubt as to whether or not the pending SWRCB Policy for OWTS (per AB 885) would allow future OWTS repairs to be made utilizing supplemental treatment without an operating permit program or equivalent requirements to ensure ongoing maintenance and monitoring of system performance.

This alternative would also be less protective of the environment in regard to measures that could be taken to promote avoidance of system failures through preventative maintenance of existing OWTS. While the County has an effective existing program to oversee septage pumping and hauling operations, basic inspection of each OWTS which can be efficiently performed at the time of septic tank servicing (per the proposed Project) is not presently required.

The total volume of septage generated, pumped and hauled for disposal would be less under this alternative. The No Project Alternative does not include additional requirements in the proposed project related to: (a) septic pumper qualifications and annual training updates; and (b) basic inspection and reporting of OWTS operating conditions in connection with septic tank servicing. These requirements of the proposed project are expected to generally improve the standard of care regarding septage hauling practices in the County.

The indirect impacts of constructing additional development would not occur under this alternative. The impacts of new development polluting surface or ground waters would be eliminated. There would be no additional runoff created by new development. There would be no additional flooding or transport of pollutants to streams. There would be no effect on groundwater supplies. The alternative would eliminate indirect impacts, but all these indirect impacts of the proposed project can be mitigated to a less-than-significant level. Because the alternative would have more direct water quality impacts than the proposed project, the alternative would have greater hydrologic impacts than the proposed project. [Greater]

Biological Resources

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.3, Biological Resources would not occur under the No Project Alternative, because the lots would remain undeveloped. The impacts of alternative OWTS and new development harming special status species, sensitive biological communities and habitats, water quality, wildlife movement, and nesting habitat would be eliminated. Natural habitat occurring on the lots would remain.

As described in the previous subsection, existing regulations are not as strict regarding control of construction-related soil erosion from OWTS installations and gravity dispersal field installations on steep terrain (30 percent to 50 percent slopes), which increases the threat of sediment discharges and possible release of pathogens to receiving waterways. New conventional OWTS installed under this alternative would have more
potential direct impacts on special status species, sensitive natural communities, and aquatic species.

The No Project Alternative would eliminate indirect impacts, but as mentioned above, all these indirect impacts of the proposed project can be mitigated to a less-than-significant level when projects are evaluated at a site-specific level. However, because this alternative maintains more native habitat and eliminates impacts to biological resources from new development, the alternative would have fewer biological impacts than the proposed project. [Lesser]

Cultural Resources

The direct and indirect impacts of installing alternative OWTS and constructing additional development identified in Section 4.4, Cultural Resources would not occur under the No Project Alternative. The lots would remain undeveloped and available for other uses, and potential damage to cultural or paleontological resources would not occur. The No Project Alternative would eliminate indirect impacts, but all these indirect impacts of the proposed project can be mitigated to a less-than-significant level when projects are evaluated at a site-specific level. However, because the alternative eliminates potential impacts, it would have fewer impacts than the proposed project. [Lesser]

Traffic and Circulation

The direct and indirect impacts of installing alternative OWTS and constructing additional development identified in Section 4.5, Traffic and Circulation would not occur under the No Project Alternative. There would be no increase in traffic, traffic congestion, or potential for traffic accidents. The No Project Alternative would eliminate indirect impacts, but all these indirect impacts of the proposed project are less than significant. However, because this alternative would not involve new vehicle trips, the No Project Alternative would have less traffic impacts than the proposed project. [Lesser]

Air Quality

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.6, Air Quality would not occur under the No Project Alternative. There would be no increase in traffic in relation to existing conditions, and, therefore, no increase in the emission of criteria air pollutants or greenhouse gases. The No Project Alternative would eliminate indirect impacts, but all these indirect impacts of the proposed project are already less than significant. However, by eliminating new direct and indirect sources, the alternative would have less impact on air quality and climate impacts than the proposed project. [Lesser]

Noise

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.7, Noise would not occur under the No Project Alternative. There would be no increase in traffic, and, therefore, no increase in traffic noise. There would be no construction noise nor noise from occupancy of new development. While the No Project Alternative would have less direct and indirect impacts because it reduces the number of lots that can be developed, all these noise
impacts potentially resulting from the project can be reduced to a less-than-significant level by conditions typically required by the existing County project review process (site-specific review). By eliminating new direct and indirect noise sources, the alternative would have lesser impact on the noise environment than the proposed project. [Lesser]

Aesthetic Resources

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.8, Aesthetic Resources would not occur under the No Project Alternative. There would be no construction of buildings, roads, or other improvements, and no new lighting would be added to a lot. While the No Project Alternative would have less direct and indirect impacts, all these visual impacts potentially resulting from the project can be reduced to a less-than-significant level by conditions typically required by the existing County project review process (site-specific review). However, by eliminating visual changes associated with induced development, the alternative would have less impact on aesthetic resources than the proposed project. [Lesser]

Utilities and Public Service Systems

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.9, Utilities and Public Service Systems would not occur under the No Project Alternative. Because there would be no new development, there would be no additional demand for fire, police, or emergency medical response; no additional students requiring educational facilities, no increased runoff to storm drains, and no demand for water. While the No Project Alternative would have less direct and indirect impacts, all these public service impacts potentially resulting from the project were determined to be less than significant for the project as proposed. By eliminating additional demand for services and utilities, the alternative would have fewer impacts than the proposed project. [Lesser]

Hazards and Hazardous Materials

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.10, Hazards and Hazardous Materials would not occur under the No Project Alternative. Although these impacts were determined to be less-than-significant for the proposed project, they would be eliminated for this alternative. Accordingly, the alternative would have less impact than the proposed project as regards hazards and hazardous material. [Lesser]

Land Use, Agriculture, and Plan Consistency

The direct and indirect impacts of installing alternative OWTS and constructing additional residential units identified in Section 4.10, Land Use, Agriculture, and Plan Consistency would not occur under the No Project Alternative. There would be no conversion of forest lands. There would be no addition to the County’s housing stock. While the No Project Alternative would have less direct and indirect impacts, all these land use impacts potentially resulting from the project were determined to be less than significant for the project as proposed. By maintaining land in an undeveloped state, the alternative would have fewer land use impacts than the proposed project. [Lesser]
Energy

Less energy would be consumed under this alternative as alternative OWTS that use pumps would be eliminated, and there would be an overall 30 percent reduction in the number of new residences, though this is not a significant impact for the proposed project. Because the alternative reduces energy use, it would have less impact on energy resources. [Lesser]

B. Alternative 2 – Limited Use of Alternative OWTS

1. Description

Alternative 2 (Limited Use of Alternative OWTS) describes the environmental effects of revising the proposed Ordinance to limit the use of alternative OWTS to repairs of existing failing systems and for new development only in cases where a conventional OWTS could be installed (i.e., the owner opts to install an alternative OWTS rather than a conventional system). The proposed amendment of the General Plan and Zoning Ordinance would not be required for this alternative. The portions of the proposed Ordinance related to changes in regulations and guidelines for conventional OWTS would remain part of this project alternative. Under this alternative there would be no to very little development of lots that could not currently be developed under existing County regulations. The changes in conventional system sizing and other requirements included in this alternative could result in a few additional lots being developed, but the increase is speculative and would be expected to be minor.

The objective of including this alternative in the EIR is to compare the impacts of the proposed project against an alternative that would largely eliminate the indirect impacts of accommodated growth possible under the proposed Ordinance while still revising regulations for new conventional OWTS. The following discusses the impacts of this alternative and compares them to the impacts that would result from the proposed project.

2. Impacts

As an introduction, this alternative would have essentially the same indirect impacts as the No Project Alternative described previously. Except for a few lots that could benefit from the changes in regulations governing conventional OWTS, new lots dependent on alternative OWTS could not be developed, so there would be no indirect impacts from development of those lots. The effects of the reduction in buildout potential in the unincorporated portion of the County were addressed above under the No Project Alternative. The benefit of Alternative 2 over the No Project Alternative is that the portions of the proposed Ordinance applicable to conventional OWTS would be retained. In addition, some property owners who could potentially develop their lots with conventional OWTS may choose to install an alternative OWTS that uses less land and/or resources to construct, and which would generally benefit the environment. It is unlikely very many alternative OWTS would be installed under this alternative since it costs more to install alternative OWTS and they require an operating permit with annual reporting and an annual fee. Finally, by allowing the use of alternative OWTS for repairs of existing failing systems, this alternative would ensure that such systems can be fixed
so that an existing residence need not be abandoned or operate with a failing system. This ability to repair failing systems makes it more likely that owners that have such systems would voluntarily repair their failing systems. The following provides more specifics about the environmental impacts of this alternative compared to the project as proposed.

**Geology and Soils**

New alternative OWTS installed under Alternative 2 would have the same direct and indirect impacts as described for the project (i.e., system failure due to earthquakes, residential failure due to seismic activity, unstable slopes, and soil constraints). As described previously, very few alternative OWTS would be expected under this alternative. There would therefore be substantially less risk of these new types of systems failing during seismic events. Regarding new conventional OWTS, the current OWTS regulations pose greater risk of system failure or stability problems on steep slopes, as they allow new OWTS with conventional gravity dispersal trenches on slopes up to 50 percent. In comparison, the proposed Ordinance and Alternative 2 would restrict the use of gravity dispersal trenches to slopes of 30 percent or less; the proposed Ordinance would require the use of pressure distribution or drip dispersal (classified as alternative systems) for slopes between 30 percent and 50 percent. Since Alternative 2 would not permit the use of alternative OWTS except for repairs, new construction on slopes of 30 to 50 percent would not be allowed. Soil erosion potential is the same for the proposed Ordinance and this alternative. Alternative 2 would not substantially decrease the direct impacts of the proposed project.

The indirect impacts of constructing additional residential units would not occur under Alternative 2 (see the earlier discussion under the No Project Alternative). While the impacts related to seismic activity, unstable slopes, soil constraints, and soil erosion would be eliminated, all these potential indirect geologic impacts can be mitigated to a less-than-significant level when project applications are evaluated at a site-specific level. The alternative would have similar impacts as those caused by the proposed project.

**Hydrology and Water Quality**

This alternative would have many of the same types of direct and indirect impacts as described for the project (e.g., flooding and contamination of surface and ground waters by pathogens, nitrogen, heavy metals and trace organic substances). The hydrology and water quality impacts under this alternative would generally be greater in regard to ongoing operation, maintenance and repair of the approximately 12,500 existing OWTS in the County; and the impacts would be either the same or somewhat greater in regard to new conventional OWTS that are installed.

With respect to existing OWTS, Alternative 2 would not allow the range of design options (e.g., alternative systems) that are in common use elsewhere in the region except to correct failing OWTS in the County (or where the applicant opts to install an alternative OWTS rather than a conventional OWTS).

This alternative would be less protective of the environment in regard to measures that could be taken to promote avoidance of system failures through preventative...
maintenance of existing OWTS. Although the DEH has an effective existing program to oversee septage pumping and hauling operations, basic inspection of each OWTS is not presently required.

Because alternative OWTS would generally not be permitted for new development—at full buildout fewer OWTS would be installed—with a correspondingly lower amount of additional sewage effluent discharged to the soil environment countywide. However, taking into account the incentive to use alternative systems to repair failing OWTS and the new regulations governing conventional OWTS, it is conceivable that in the long-term Alternative 2 could result in less loading of nitrogen to groundwater and surface water as compared with the proposed project.

The indirect impacts of constructing additional residential units would not occur under this alternative (see the discussion of indirect impacts in the previous section on the No Project Alternative). The impacts of new development polluting surface or ground waters would be eliminated. There would be no additional runoff created by new development. There would be no additional flooding or transport of pollutants to streams. There would be no effect on groundwater supplies. Alternative 2 would eliminate indirect impacts, but as mentioned previously, all these indirect impacts of the proposed project can be mitigated to a less-than-significant level when projects are evaluated at a site-specific level. Because the alternative would have more direct water quality impacts than the proposed project, it is concluded that overall the alternative would have greater impacts than the proposed project. [Greater]

**Biological Resources**

The direct and indirect biological impacts of installing alternative OWTS and constructing additional development described for the project would not occur under Alternative 2 (except for the few alternative OWTS that could be installed on lots where the owner voluntarily chooses to install an alternative OWTS instead of a conventional OWTS). Most indirect impacts would be eliminated—see the discussion of indirect impacts in the No Project Alternative. Alternative 2 would have substantially less indirect impacts, but as mentioned previously, all these indirect impacts of the proposed project can be mitigated to a less-than-significant level when projects are evaluated at a site-specific level. Because the alternative would maintain more native habitat and eliminate impacts to biological resources from new residential development, the alternative would have fewer impacts than the proposed project on biological resources. [Lesser]

**Cultural Resources**

The direct and indirect cultural resource impacts of installing alternative OWTS and constructing additional residential units described for the project would generally not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). Alternative 2 would have less impact, but as mentioned previously, all these impacts of the proposed project can be mitigated to a less-than-significant level when projects are evaluated at a site-specific level. Because the alternative would substantially decrease the amount of development, it would have fewer impacts than the proposed project on cultural resources. [Lesser]
Traffic and Circulation

The direct and indirect traffic impacts of installing alternative OWTS and constructing additional residential units described for the project would generally not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). There would be no increase in traffic, traffic congestion, or potential for traffic accidents. Though project traffic impacts were found to be less than significant, the alternative would have fewer impacts since it would eliminate additional vehicle trips. [Lesser]

Air Quality

The direct and indirect air quality impacts of installing alternative OWTS and constructing additional residential units described for the project would generally not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). Though project air quality impacts were found to be less than significant, the alternative would have fewer impacts since it eliminates new sources of emissions. [Lesser]

Noise

The direct and indirect noise impacts of installing alternative OWTS and constructing additional residential units described for the project would generally not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). There would be no increase in traffic, and, therefore, no increase in traffic noise. There would be no construction noise or noise from occupancy of new residences. Though project noise impacts were found to be less than significant, the alternative would have fewer impacts since it eliminates new sources of noise. [Lesser]

Aesthetic Resources

The direct and indirect aesthetic impacts of installing alternative OWTS and constructing additional residential units described for the project would generally not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). There would be no construction of buildings, roads, or other improvements, and no new lighting would be added as a result of additional lots that might be developed under the proposed project. Though project’s visual impacts were found to be less than significant, the alternative would have fewer impacts since it would eliminate changes to the visual environment. [Lesser]

Utilities and Public Service Systems

The direct and indirect public service impacts of installing alternative OWTS and constructing additional residential units described for the project would generally not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). Though project public service impacts were found to be less than significant, the alternative would have fewer impacts since it would eliminate any additional demand for services or utilities. [Lesser]
Hazards and Hazardous Materials

The direct and indirect hazard-related impacts of installing alternative OWTS and constructing additional residential units described for the project would generally not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). Though project impacts regarding hazards and hazardous materials were found to be less than significant, the alternative would have fewer impacts since it would eliminate the need to use hazardous materials or construct development in hazardous locations. [Lesser]

Land Use, Agriculture, and Plan Consistency

The direct and indirect land use impacts of installing alternative OWTS and constructing additional residential units described for the project would not occur under Alternative 2 (see the discussion of impacts in the No Project Alternative). Though project land use impacts were found to be less than significant, the alternative would have fewer impacts since it would eliminate land use changes. Accordingly, this alternative would have less of a land use impact. [Lesser]

Energy

Less energy would be consumed under Alternative 2 as there would be a corresponding reduction in the number of new residences, though this is not identified as a significant impact for the proposed project. Because the alternative would reduce energy use, it would have less impact on energy resources. [Lesser]

C. Alternative 3 – Maintain Lexington Basin 1-acre Minimum Lot Size Restriction

1. Description

Alternative 3 (Maintain Lexington Basin 1-acre Minimum Lot Size Restriction) describes the environmental effects of maintaining the existing building restriction in the Lexington Basin watershed. Based on the County’s analysis of developable lots in the basin (see the discussion in the introduction to Chapter 4), this alternative would reduce the number of possible new residences from 83 to 37, or a reduction of 46 units. The proposed Ordinance, including the potential for installation and operation of alternative OWTS, would apply to lots over one acre in this watershed and all other parts of the unincorporated County.

The purpose of including this alternative is to compare the impacts of the project to an alternative that maintains current County building restrictions in the Lexington Basin, thereby reducing new development in the one area where County staff expects that the proposed Ordinance could induce growth.104

104 Dave Rader, personal communication, 10/15/12.
2. **Impacts**

**Geology and Soils**

New alternative OWTS installed under Alternative 3 would have the same direct and indirect impacts as described for the proposed. There would be risks of OWTS and new development failing due to seismic activity or unstable slopes. As many as 46 residences would not be developed under Alternative 3. Geologic and soil constraints possible on these lots would be avoided, and there would be no geologic or soil constraints, including no additional soil erosion. While all these impacts can be reduced to a less-than-significant level for the project as proposed, the alternative would have slightly less impact because of the reduction in development potential. At a program level the reduction is so small that the overall geologic and soil impacts would be approximately the same for the proposed project and this alternative. [Similar]

**Hydrology and Water Quality**

New alternative OWTS installed under this alternative would have the same direct and indirect impacts as described for the proposed project. The hydrologic analysis contained in Section 4.2 of this EIR found that eliminating the lot side restriction in the Lexington Basin would not have a significant water quality or hydrologic impact. Reducing the development potential by 46 units would eliminate the potential for increased flooding, stream channel alteration, sedimentation, and pollution of water quality in streams draining these 46 lots. Fewer new units would reduce water demand thereby decreasing effects on groundwater supplies. While all these impacts can be reduced to a less-than-significant level for the project as proposed, the alternative would have slightly less impact because of the reduction in development potential. At a program level the reduction is so small that the overall hydrologic and water quality impacts would be approximately the same for the proposed project and this alternative. The alternative would not substantially reduce any water quality impact in the Lexington Basin watershed. [Similar]

**Biological Resources**

Potentially significant direct and indirect biological impacts from installing new OWTS and new development would be similar to those described for the project (i.e., harm to special status species, sensitive habitat, and sensitive communities and impairment of water quality adversely affecting aquatic species). As discussed in Impact 4.3-A, most new development in the Lexington Basin watershed would be on smaller lots in older existing subdivisions. The number of small lots developed would be reduced under Alternative 3. It is not expected that this reduction in development would substantially reduce effects to special status species or sensitive habitat, since there is no critical habitat nor special status populations in the areas that would be left undeveloped. Accordingly, at a program level of analysis the alternative would have approximately the same less-than-significant impacts as the proposed project. [Similar]

**Cultural Resources**

Potentially significant direct and indirect cultural resource impacts from installing new alternative OWTS, and development on lots would be similar to those described for the
By eliminating development on up to 46 lots, the alternative would reduce the potential harm to cultural resources in the Lexington Basin. At a program level the potential reduction is so small that overall impacts to cultural resources would be approximately the same for this alternative and the project as proposed. [Similar]

Traffic and Circulation

Potentially significant direct and indirect traffic impacts from installing new alternative OWTS and development on lots would be similar to those described for the project (i.e., increased traffic congestion on the roadway system and increased risk of traffic accident on roads not meeting County standards). Reducing potential additional development in this watershed (from a maximum of 83 to 37 possible future residences) would reduce traffic added to SR 17 and its intersections. This is a less-than-significant impact for the proposed project. In addition, the reduction in trips is so small (a reduction of 46 peak hour trips) that the overall impacts to traffic would be approximately the same for the proposed project and this alternative. [Similar]

Air Quality

Potentially significant direct and indirect air quality impacts from installing new alternative OWTS and development on lots would be similar to those described for the project (i.e., increased emission of criteria air pollutants and greenhouse gases). Alternative 3 would slightly reduce air quality impacts (criteria pollutants and GHG emissions) from additional vehicle trips in Lexington Basin. These impacts would already be at a less-than-significant level for the project as proposed, and at a program level the reduction would be so small that the overall air quality and climate impacts would be approximately the same for the proposed project and this alternative. [Similar]

Noise

Construction of new alternative OWTS would generate similar short-term noise impacts as were described for the proposed project, and future occupancy of new residences would have noise impacts similar to those described for the project, (i.e., increased traffic noise along certain roads). Under Alternative 3, there would be a reduction in maximum buildout traffic with a similar reduction in new traffic-generated noise. At a program level the reduction in noise would be so small that the impacts would be less than significant and approximately the same for either case. [Similar]

Aesthetic Resources

The direct and indirect visual impacts of constructing new alternative OWTS and development on aesthetic resources would be the same as described for the project (i.e., loss of open space views, changes in the scenic quality, and additional night lighting). The reduction in potential new units would result in less open space being developed and would reduce potential impacts to scenic resources, including nighttime views. The 46 vacant lots that would not be developed under Alternative 3 are in areas of relatively dense existing development. It is not expected that elimination of future development of these small lots would result in a substantial reduction in visual impacts. At a program level of analysis the direct and indirect visual impacts under the project or
Alternative 3 would be less than significant and approximately the same for both the project and this alternative. [Similar]

**Utilities and Public Service Systems**

The direct and indirect impacts of constructing new alternative OWTS and development on public service providers and utilities would be the same as described for the project. There would be less overall new development under Alternative 3 with a corresponding reduction in demand for police, fire, emergency medical, recreational, and educational services. Eliminating development on 46 lots would ensure there would be no additional runoff to any storm drain system serving the area, and there would be no demand for water. That said, the direct and indirect impacts on public services and utilities impacts under the project or Alternative 3 would be less than significant and approximately the same for both the project and this alternative. [Similar]

**Hazards and Hazardous Materials**

The direct and indirect impacts of constructing new alternative OWTS and development as regards hazards and hazardous materials would be the same as described for the project. There would be less overall new development under Alternative 3 with a corresponding reduction in use of hazardous materials. At a program level of analysis the direct and indirect impacts on hazards and hazardous materials impacts under the project or Alternative 3 would be less than significant and approximately the same. [Similar]

**Land Use, Agriculture, and Plan Consistency**

The direct and indirect impacts of constructing new alternative OWTS and development on land use and agriculture would be the same as described for the project (i.e., conversion forest lands). The affected 46 lots contain little commercial forest land, so the reduction in this impact would be small. Both the project and Alternative 3 would be consistent with the goals and objectives of the County’s General Plan. At a program level of analysis, the alternative would have approximately the same less-than-significant impacts as the proposed project. [Similar]

**Energy**

Less energy would be consumed under Alternative 3. At a program level the reduction is so small that the project and this alternative would have approximately the same impacts. [Similar]

**D. Environmentally Superior Alternative**

The proposed project meets all DEH objectives for updating regulations governing OWTS installation and operation without resulting in any significant impacts on the environment.

The No Project Alternative eliminates all direct and indirect adverse impacts associated with the proposed project. The impacts to hydrology, soil disturbance, water quality, public health, and biological resources would be greater, since this alternative
lacks the alternative design options and other regulatory measures included in the proposed project that would specifically improve the overall flexibility and effectiveness for ongoing operation, maintenance, repair, and environmental protection for the many thousands of existing and new conventional OWTS.

Because at a program level the direct impacts of installing and operating alternative OWTS can be reduced to a less-than-significant level, and because existing regulations would result in more adverse impacts for new conventional OWTS, the proposed project is environmentally superior to this No Project Alternative as regards direct impacts. As regards indirect impacts, additional development would result in a range of impacts as summarized previously, all of which can be reduced to a less-than-significant level at a program level.

**Alternative 2 (Limited Use of Alternative OWTS)** would eliminate all potentially significant impacts of the proposed project. By not accommodating the potential development of additional lots, the alternative eliminates the on-site impacts that would result from construction of improvements in those lots; the off-site impacts of increased traffic, noise, and air pollution resulting from that development; and the overall impacts on the environment resulting from an increase in the County’s population.

Alternative 2 would maintain the beneficial components of the proposed project as regards future regulation of conventional OWTS (as well as providing regulation for the use of alternative OWTS for system repair or in the few cases where a property owner may opt to install an alternative OWTS rather than a conventional system).

At a program level of analysis, all project direct and indirect impacts can be reduced to a less-than-significant level. This alternative would eliminate the additional development allowed by the project and all the indirect impacts resulting from that growth. Accordingly, Alternative 2 is the environmentally superior to the proposed project.

The principal environmental advantage of **Alternative 3 (Maintain Lexington Basin 1-acre Minimum Lot Size Restriction)** would be a reduction in the buildout potential of the proposed Ordinance, correspondingly reducing indirect impacts of the proposed project. This alternative would maintain the existing ban on use of OWTS on parcels under 1 acre in this watershed. As was discussed previously, that ban was adopted by the County due to potential impacts of development of small lots on water quality. The proposed Ordinance includes techniques and options for technologies that would reduce that water quality impact to a less-than-significant level.

The alternative would reduce the buildout potential of the proposed Ordinance, thereby reducing impacts of the proposed project. Given existing County regulations, these impacts would all be less than significant for the project. In addition, at a program level of analysis, the reduction in impacts achieved by eliminating development of 46 units would not be substantial.

On these bases, Alternative 2 is considered the environmentally superior alternative. See Table 5.4-1 for a comparison of the alternatives.
Table 5.4-1
Comparison of the Environmental Effects of the Alternatives to the Proposed Project

<table>
<thead>
<tr>
<th>Area of Impact</th>
<th>Project as Proposed</th>
<th>Alternative 1 – No Project – Continuation of Existing OWTS Regulations</th>
<th>Alternative 2 - Limited Use of Alternative OWTS</th>
<th>Alternative 3 – Maintain Lexington Basin Lot Size Restriction</th>
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<tr>
<td>Geology</td>
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<td>Cultural Resources</td>
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<td>Air Quality</td>
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<td>Noise</td>
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<td>Visual Resources</td>
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<td>Energy</td>
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</table>

**Environmental Rating**

- All impacts can be reduced to a less-than-significant level
- Greater Impacts
- Environmentally Superior Alternative
- Similar Impacts

**Project Objectives**

- Meets all 8 objectives
- Partially meets 7 objectives
- Partially meets 7 objectives
- Meets 7 objectives

*For the full list, see Chapter 3, Section D. Project Objectives

LTS = less-than-significant impact
6.0 REPORT PREPARATION

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Santa Clara Valley Water Resources Collaborative
Stinson Beach County Water District

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U.S. Environmental Protection Agency

Washington State Department of Health

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### 6.3 PREPARERS OF THE REPORT

This report was prepared by an environmental study team led by Leonard Charles and Associates under a contract of Questa Engineering Corporation with the County of Santa Clara. The EIR preparation was overseen and coordinated by David Rader, Planner, County of Santa Clara Planning Office.

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