Draft DEIR – Volume 1

SONOMA COUNTY WASTE MANAGEMENT AGENCY COMPOST FACILITY

Draft Environmental Impact Report

State Clearinghouse #: 2008122007

Prepared for
Sonoma County Waste
Management Agency

December 2011

ESA

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NOTICE OF AVAILABILITY OF
DRAFT ENVIRONMENTAL IMPACT REPORT AND PUBLIC HEARING

Project Title: SCWMA Compost Facility

Project Applicant: Sonoma County Waste Management Agency

Date: December 21, 2011

The Sonoma County Waste Management Agency (SCWMA), as the lead agency under the California Environmental Protection Act (CEQA), has prepared a Draft Environmental Impact Report (DEIR) for the SCWMA Compost Facility. The DEIR identifies impacts and environmental issues related to the SCWMA Compost Facility (proposed project), and also discusses and analyzes alternatives to the proposed project, as required by CEQA.

The proposed project would process (either through windrow or aerated static pile [ASP] methods) up to 200,000 tons of compost materials per year. The new compost facility may be selected from the three sites studied at project-level in this document. These sites include:

- The project site (Site 5A) -- a 70-acre compost facility located on 100 acres in unincorporated Sonoma County, approximately 6 miles southeast of the City of Petaluma, between Lakeville Road and the Petaluma River;
- The Site 40 Alternative -- a 48-acre compost facility located on 390 acres in unincorporated Sonoma County, located approximately 2.5 miles east of the City of Petaluma at the intersection of Adobe Road and Stage Gulch Road (State Route 116); and
- The Central Site Alternative -- a 38-acre compost facility on the 400-acre Central Disposal Site, approximately 1.5 miles southwest of the City of Cotati, off of Mecham Road.

The proposed project includes constructing a new compost facility that would replace the existing composting facility at the Central Disposal Site. The objectives for the proposed project are the relocation of the SCWMA's composting operations from its current location at the County's Central Disposal Site; the establishment of a permanent composting facility in Sonoma County with sufficient capacity for current and future quantities; and to assist jurisdictions within SCWMA's service area in meeting the goals and objectives for waste diversion as set forth in the California Integrated Waste Management Act of 1989 (AB 939). The DEIR provides the environmental information and evaluation of three sites at the project level of detail. The DEIR is necessary for the planning, construction, operation, and maintenance of the project and is intended to provide sufficient environmental documentation to inform the public and allow the SCWMA Board Members to make an informed decision concerning approval, disapproval, or modification of the proposed project.

Significant adverse environmental impacts

The following significant adverse impacts associated with the proposed project (Site 5A), the Site 40 Alternative, and the Central Site Alternative would be unavoidable, even with the implementation of the mitigation measures identified in this report:

Proposed Project (Site 5A)

- Impact 5.1 – Project construction (either windrow or aerated static pile (ASP) composting option) emissions of NOx.
- Impact 5.10 – Project contribution during construction (windrow composting option) to cumulative emissions of NOx.
- Impact 5.11 – Project contribution during construction (ASP composting option) to cumulative emissions of NOx.
- Impact 8.5: The project would be located within a FEMA-defined 100-year floodplain, and would result in the displacement of flood waters.
- Impact 9.2 – The project has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects.

Site 40 Alternative

- Impact 15.1 – Site 40 Alternative construction (either windrow or aerated static pile (ASP) composting option) emissions of NOx.
- Impact 15.6 - Site 40 Alternative (windrow composting option) may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources.
- Impact 15.10 – Site 40 Alternative contribution during construction (windrow composting option) to cumulative emissions of NOx.
- Impact 15.11 – Site 40 Alternative contribution during construction (ASP composting option) to cumulative emissions of NOx.
- Impact 19.2 – The Site 40 Alternative has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects.
- Impact 19.3: The Site 40 Alternative would result in the conversion of agricultural land, specifically Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance and Grazing Land.

Central Site Alternative

- Impact 29.2 - Operation of the Central Site Alternative composting facility could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies.

The following significant adverse impacts would be unavoidable for the proposed project (Site 5A) if mitigation measures identified in the EIR were found to be infeasible, as the County of Sonoma has ultimate jurisdiction in making the proposed roadway improvements:

- Impact 12.2 – The project could worsen traffic safety at the intersection of Twin House Ranch Road and Lakeville Road due to existing roadway design.
- Impact 12.4 – The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic under Near-Term Cumulative conditions.
- Impact 12.5 – The project would contribute to significant Long-Term Cumulative traffic volumes at study intersections.
- Impact 12.6 – The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic under Long-Term Cumulative conditions.

DEIR Availability, Commenting Procedures, and Meeting on DEIR

The Draft EIR is available for a 45-day public comment period from December 21, 2011 through February 3, 2012. Copies of the DEIR are available to the public for review or purchase at the SCWMA office in Santa Rosa (2300 County Center Drive, Suite B100, Santa Rosa, CA 95403) and available for review at local libraries throughout the County. Electronic copies of the DEIR are also available online at: **http://www.recyclenow.org/agency/reports.asp**.

The public may present comments and concerns regarding the adequacy of the DEIR. Comments may be submitted in writing to:

Mr. Patrick Carter, Waste Management Specialist
Sonoma County Waste Management Agency
2300 County Center Drive, Suite B100
Santa Rosa, CA 95403
Fax: (707) 565-3701
patrick.carter@sonoma-county.org

Please be sure to include your name, address, and telephone number in your correspondence. Written comments on the DEIR must be postmarked or received by fax or e-mail no later than **4:00 pm, February 3, 2012**.

The SCWMA will also hold a public hearing on **Wednesday, January 18, 2012 at 9:00 a.m. in the City of Santa Rosa Council Chambers, 100 Santa Rosa Ave., Santa Rosa, CA 95404**. This hearing will allow public comment on the DEIR for the proposed compost facility project. Comments received during the comment period, including the public hearing, will be considered by the SCWMA during the preparation of the Final EIR.

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CHAPTER 1
Introduction

1.1 Environmental Review

The California Environmental Quality Act (CEQA) requires that before a decision can be made to approve a project with potentially significant environmental effects, an Environmental Impact Report (EIR) must be prepared that fully describes the environmental effects of the project. This EIR analyzes Sonoma County Waste Management Agency (SCWMA)'s proposal to construct a new compost facility that would replace the existing composting facility at the Central Disposal Site. The new compost facility may be selected from the three sites studied at project-level in this document. These sites include:

- The project site (Site 5A) — a 70-acre compost facility located on 100 acres in unincorporated Sonoma County, approximately 6 miles southeast of the City of Petaluma, between Lakeville Road and the Petaluma River;
- The Site 40 Alternative — a 48-acre compost facility located on 390 acres unincorporated Sonoma County, located approximately 2.5 miles east of the City of Petaluma at the intersection of Adobe Road and Stage Gulch Road (State Route 116); and
- The Central Site Alternative — a 38-acre compost facility on the 400-acre Central Disposal Site, approximately 1.5 miles southwest of the City of Cotati, off of Mecham Road.

Chapters 3 and 4 provide details of the three sites. Figure 3-1 shows the regional location of the three sites studied at project-level detail. More detailed site configurations can be found for Site 5a (Figures 3-2, 3-5 and 3-6), Site 40 (Figures 4-2, 4-3 and 4-4), and the Central Site (Figures 4-9. 4-10, and 4-11).

The EIR is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental consequences of a proposed project, to recommend mitigation measures to lessen or eliminate adverse impacts, and to examine feasible alternatives to the project. The information contained in the EIR is reviewed and considered by the governing agency prior to the ultimate decision to approve, disapprove, or modify the proposed project.

CEQA requires that the Lead Agency (in this case, SCWMA) shall neither approve nor implement a project as proposed unless all feasible mitigation has been implemented in an attempt to reduce all impacts to a less-than-significant level. If the Lead Agency approves the project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must state the reasons for its action in writing. This "Statement of Overriding Considerations" must be included in the record of project approval.

On November 26, 2008, SCWMA sent a Notice of Preparation (NOP) to governmental agencies and organizations and persons interested in the project. The NOP is included as **Appendix NOP**. The NOP requested information from responsible and trustee agencies and interested parties regarding the scope and content of the EIR. In addition, SCWMA held a public scoping meeting on December 11, 2008, in Petaluma at the Community Center in Lucchesi Park.

This Draft EIR will be available for a 45-day public review period, from December 21, 2011 through February 3, 2012. During this time, written comments on the adequacy of this Draft EIR may be submitted to Patrick Carter at SCWMA, 2300 County Center Drive, Suite B100, Santa Rosa, CA 95403. Substantive comments received on the adequacy of the Draft EIR and submitted within the specified review period will be included and responded to in the Final EIR. Prior to approval of the project, SCWMA must certify the Final EIR and adopt a mitigation monitoring and reporting program for mitigation measures identified in this report in accordance with the requirements of Public Resources Code Section 21081.

1.2 This EIR

This EIR has been prepared by SCWMA as Lead Agency in conformance with CEQA. This EIR is intended to provide the information and environmental analysis necessary to assist public agency decision-makers in considering all of the approvals necessary to implement the proposed project.

In conformance with CEQA, California *Public Resources Code*, Section 21000 *et. seq.*, this EIR provides objective information addressing the environmental consequences of the proposed project and possible means of reducing or avoiding its potentially significant impacts.

The guidelines for implementing CEQA help define the role of this EIR:

> **15121 (a) Information Document.** An EIR is an informational document which will inform public agency decision-makers and the public generally of the significant environmental effect(s) of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency.
>
> **15151 Standards for Adequacy of an EIR.** An EIR should be prepared with a sufficient degree of analysis to provide decision-makers 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. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

Plans for the project have proceeded to a degree sufficient to permit environmental analysis in conformance with CEQA. Accordingly, this EIR presents the overall types and levels of activities that SCWMA could anticipate under the proposed project and describes their attendant environmental impacts. The analyses, where necessary, are based on conservative assumptions that tend to overstate project impacts. The EIR was prepared in accordance with current State, County and other applicable agency CEQA *Guidelines* and professional standards.

The *CEQA Guidelines*, Section 15382, define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project..." Therefore, in identifying the significant impacts of the project, this EIR concentrates on its substantial physical effects and upon mitigation measures to avoid, reduce, or otherwise alleviate those effects.

1.3 Range of Alternatives

CEQA requires that a reasonable range of alternatives be discussed in an EIR. This EIR identifies and analyzes such a reasonable range of alternatives; discusses the environmental effects of each alternative; and compares the environmental effects of each alternative with the environmental setting and with the project; and addresses the relationship of each alternative to the project objectives. The determinations of SCWMA concerning the feasibility, acceptance, or rejection of each and all alternatives considered in this EIR will be addressed and resolved in SCWMA's findings when it considers approval of the project, as required by CEQA.

The alternatives consist of the following:

1. No Project A – No Relocation of Compost Facilities Alternative,
2. No Project B – No Central Composting Facility Alternative,
3. Alternative Site 40,
4. Alternative Site 13,
5. Central Site Alternative, and
6. Limited Public Access Alternative.

Six alternatives (including two variations of the No Project Alternative, plus two alternative sites) are analyzed in this EIR. Selection of off-site alternatives was guided by the Composting Facility Siting Study prepared for SCWMA (HDR Engineering, Inc., 2008). The siting study is also discussed in Chapter 2, Summary, Section 2.1. The study ranked 36 sites for use as a compost facility based on weighted scoring criteria. The scoring criteria were established by SCWMA and included transportation impacts, neighborhood impacts, biological impacts, available public utilities, existing land use and zoning, and several other criteria. The project site (Site 5A) ranked 4th, Site 13 ranked 5th, and Site 40 ranked 1st. Sites 13 and 40 were considered potentially feasible due to their high ranking and analyzed as alternatives. Owners of the other highest ranked sites indicated to SCWMA staff that they were not available for purchase. As mentioned above, the analysis of the Site 40 and Central Site Alternatives go beyond the CEQA requirements for alternatives and are analyzed at essentially the same level of detail as the proposed project site. Because of its top ranking in the Siting Study, Site 40 might have been selected as the "proposed project" in the EIR, but at the time of the selection of the preferred project site, the Sonoma County Agricultural Preserve and Open Space District was in negotiations for the property. When those negotiations failed, the

SCWMA added a detailed analysis of Site 40 to the EIR, which was already in progress with Site 5A as the proposed project and Sites 13 and 14 as the off-site Alternatives. Site 14 was originally an off-site alternative due to its ranking, but it was dropped as an alternative when Site 40 was added because Site 14 is adjacent to Site 13 and would not add substantial additional information to the range of alternatives being considered. This move was intended to broaden the range of alternatives considered and allow rapid approval of Site 40 if the SCWMA considers the Site 40 Alternative as the best project site after the EIR is certified.

The Central Site Alternative was analyzed at the same level of detail as the proposed project, due to the feasibility of the site. It is currently owned by the County of Sonoma and it is assumed that it would become accessible to the SCWMA by way of lease, rather than purchase. The new location studied is adjacent to the existing compost facility. Analysis of this alternative at the same level as the project would allow rapid approval of the Central Site Alternative if the SCWMA considers the Central Site Alternative as the preferred project site after the EIR is certified.

1.4 Use of the EIR

The EIR provides the environmental information and evaluation necessary for the planning, construction, operation and maintenance of the project. The EIR provides the CEQA compliance documentation upon which all applicable land use permits and other approvals (collectively, "approvals") shall be based. These include without limitation all those approvals set forth in this EIR, as well as any additional approvals necessary or useful to such planning, construction, operation and maintenance (e.g., any use permits, grading permits, and other development-related permits and approvals).

1.5 Public Participation

CEQA and SCWMA encourage public participation in the planning and environmental review processes. Opportunities will be provided for the public to present comments and concerns regarding the CEQA and planning process through a CEQA public review and comment period and public hearings or meetings. Written public comments may be submitted to the SCWMA at any time during the public review and comment period, and written and spoken comments may be presented at the public hearings.

1.6 Organization of the Draft EIR

The Draft EIR begins with **Chapter 1, Introduction**, which provides an overview that describes the intended use and organization of this EIR, and sets forth some of the assumptions critical to the environmental analysis.

Chapter 2, Summary, provides an overview of the project, the environmental impacts that would result from the project at the proposed project site (5A), the Site 40 Alternative and the Central Site Alternative, the mitigation measures identified to reduce or eliminate these impacts, and the alternatives to the project.

Chapter 3, Project Description, provides a description of the project site and location, the project goals and objectives, the project setting, the proposed project components, the approval process, and available project construction and completion information.

Chapter 4, Alternatives, presents a reasonable range of alternatives to the proposed project, evaluates the environmental impacts associated with some of the alternatives (the Site 40 and Central Site Alternative environmental impacts are evaluated in Chapters 15 through 32), compares the relative impacts of each alternative to those of the project, and discusses the relationship of the alternatives to the project objectives.

Chapters 5 through 13, Environmental Issue Areas for Proposed Project Site, provide the existing setting, impacts and mitigation measures related to the environmental issue areas analyzed in this EIR. The environmental issue areas include Aesthetics, Air Quality, Biological Resources, Cultural Resources, Hydrology and Water Quality, Land Use Planning and Agriculture, Noise, Public Services and Utilities, and Traffic and Transportation.

Chapter 14, Introduction to Review of Site 40 Alternative and Central Site Alternative. This chapter provides an introduction to the analyses in Chapters 15 through 32.

Chapters 15 through 23, Environmental Issue Areas for Site 40 Alternative, provide the existing setting, impacts and mitigation measures related to the environmental issue areas analyzed in this EIR. The environmental issue areas include Aesthetics, Air Quality, Biological Resources, Cultural Resources, Hydrology and Water Quality, Land Use Planning and Agriculture, Noise, Public Services and Utilities, and Traffic and Transportation.

Chapters 24 through 32, Environmental Issue Areas for the Central Site Alternative, provide the existing setting, impacts and mitigation measures related to the environmental issue areas analyzes in this EIR. The environmental issue areas include Aesthetics, Air Quality, Biological Resources, Cultural Resources, Hydrology and Water Quality, Land Use Planning and Agriculture, Noise, Public Services and Utilities, and Traffic and Transportation.

Chapter 33, Impact Overview, presents discussions of growth inducement, and summarizes discussions of cumulative impacts, unavoidable significant impacts, and effects found not to be significant.

Chapter 34 Report Preparation, lists report preparers and identifies the persons and organizations consulted during report preparation.

Chapter 35 Acronyms, lists commonly used acronyms in the EIR.

1.7 Approach to Environmental Analysis

Introduction

This section presents the general approach to analysis that was used in this Draft EIR to evaluate the impacts of the project. More specifically, this section describes the EIR baseline scenario and the approach used to determine impact significance and mitigation measure requirements.

Baseline Scenarios

Per California Environmental Quality Act (CEQA) Guidelines Section 15125, the environmental setting is the physical conditions that exist at the date that the Notice of Preparation (NOP) is published. This environmental setting will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant. For this project, the NOP was published in November 2008. The existing conditions and setting for the environmental issue areas analyzed are described in Chapters 5 through 33, and are consistent with the CEQA Guidelines Section 15125 definition. The traffic analysis uses the year 2009 (existing) as well as a comparison baseline year of 2011, which was the earliest year anticipated for composting operations at a new location when the EIR analysis began. The air quality and noise analyses use existing data, but also rely on the traffic data from 2011 for some of the analyses, which acknowledges air quality pollutant profiles of vehicles in the earliest year anticipated for composting operations at a new location.

Impacts and Mitigation Measures

Chapters 5 through 33 analyze the extent that each of the studied issue areas could be affected if the project is approved as proposed. A set of specific significance criteria are identified for each issue area to help categorize the severity of the potential environmental impacts. These standards of significance are defined at the beginning of the impact analyses in Chapters 5 through 13. Once the potential environmental changes are identified, they are compared to the standards of significance. The impacts are then divided into the following categories:

- Significant and unavoidable; cannot be mitigated to a level that is less than significant;
- Significant, can be mitigated to a level that is less than significant;
- Less than significant, no mitigation required.

For all significant impacts, the Draft EIR is required to include a description of feasible measures that could be implemented to avoid the adverse impacts entirely or to mitigate (reduce in magnitude) the impacts to a level that is below the defined standard of significance. Where feasible, mitigation measures are presented for all impacts determined to be significant. Where implementation of the mitigation measures would reduce the magnitude of the impact to below the defined standard of significance, the impact is determined to be less than significant after mitigation. Where implementation of the mitigation measures would not reduce the magnitude of the impact below the defined standard of significance, the impact is determined to be significant and unavoidable.

Analysis of Windrow and Aerated Static Pile Composting

In the relevant chapters that could be affected by the type of composting, this EIR also analyzes the differences in environmental impacts between windrow composting and aerated static pile (ASP) composting.

CHAPTER 2
Summary

2.1 Project Description

The Sonoma County Waste Management Agency (SCWMA) is a joint powers authority composed of the County of Sonoma and the nine incorporated jurisdictions within Sonoma County: Cloverdale, Cotati, Healdsburg, Petaluma, Rohnert Park, Santa Rosa, Sebastopol, Sonoma and Windsor. SCWMA has prepared this Draft Environmental Impact Report (EIR) to assess the environmental effects of the construction of a new compost facility in Sonoma County that would replace the existing composting facility at the Central Disposal Site. SCWMA, as the Lead Agency responsible for administering the environmental review for the proposed project, determined that preparation of an EIR is needed because the project has the potential to cause significant effects on the environment. The proposed project would process (either through windrow or aerated static pile [ASP] methods) up to 200,000 tons of compost materials per year. The new compost facility may be selected from the three sites studied at project-level in this document. These sites include:

- The project site (Site 5A) -- a 70-acre compost facility located on 100 acres in unincorporated Sonoma County, approximately 6 miles southeast of the City of Petaluma, between Lakeville Road and the Petaluma River;
- The Site 40 Alternative -- a 48-acre compost facility located on 390 acres in unincorporated Sonoma County, located approximately 2.5 miles east of the City of Petaluma at the intersection of Adobe Road and Stage Gulch Road (State Route 116); and
- The Central Site Alternative -- a 38-acre compost facility on the 400-acre Central Disposal Site, approximately 1.5 miles southwest of the City of Cotati, off of Mecham Road.

The objectives for the proposed project are the relocation of the SCWMA's composting operations from its current location at the County's Central Disposal Site; the establishment of a permanent composting facility in Sonoma County with sufficient capacity for current and future quantities; and to assist jurisdictions within SCWMA's service area in meeting the goals and objectives for waste diversion as set forth in the California Integrated Waste Management Act of 1989 (AB 939).

Determination of the project site and alternative sites was based on a siting study prepared for SCWMA and published in June 2008 (HDR Engineering, Inc., 2008). The siting study, with consultation from SCWMA, screened areas of the County from further consideration and then located, scored, and ranked potential sites (50 acres and larger) for relocating composting operations. In the screening process, general areas of the County were excluded that were least suitable for a composting facility due to lack of adequate acreage, flaws, or sensitive environmental or land use areas deemed incompatible for use as a composting facility. A total of 36 parcels were not eliminated from the screening process and were scored based on the following weighted criteria: transportation impacts, neighborhood impacts, environmental impacts, site costs, land use designation, visual impacts, and multi-use potential. The project site (Site 5A) ranked 4th, Site 13 ranked 5th, and Site 40 ranked 1st. Sites 13 and 40 were considered potentially feasible due to their high ranking and analyzed as alternatives. The Central Site Alternative was not analyzed in the siting study (HDR Engineering, Inc., 2008) because of the landfill divestiture in process at that time. The divestiture process subsequently failed, and the County allowed the site to be studied in the EIR for applicability for relocation.

2.2 Environmental Impacts and Mitigation Measures

Potential environmental impacts of the project are summarized in **Table 2-1** at the end of this chapter. For each significant impact, the table indicates whether the impact would be mitigated to a less than significant level. Please refer to Chapters 5 through Chapter 32 in this EIR for a complete discussion of each impact. As discussed in Chapter 1, a reporting and monitoring program for all mitigation measures identified in this EIR will be prepared prior to approval of a project site in accordance with the requirements of Public Resources Code Section 21081.

The proposed project, if implemented, could result in significant adverse environmental impacts. Mitigation measures proposed as part of the project, as well as measures identified by this EIR, would avoid or reduce most of the impacts to a less than significant level. The following significant adverse impacts associated with the proposed project, the Site 40 Alternative, and the Central Site Alternative would be unavoidable, even with the implementation of the mitigation measures identified in this report:

Proposed Project (Site 5A)

- Impact 5.1 – Project construction (either windrow or aerated static pile (ASP) composting option) emissions of NOx.
- Impact 5.10 – Project contribution during construction (windrow composting option) to cumulative emissions of NOx.
- Impact 5.11 – Project contribution during construction (ASP composting option) to cumulative emissions of NOx.
- Impact 8.5 – The project would be located within a FEMA-defined 100-year floodplain, and would result in the displacement of flood waters.
- Impact 9.2 – The project has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects.

Site 40 Alternative

- Impact 15.1 – Site 40 Alternative construction (either windrow or aerated static pile (ASP) composting option) emissions of NOx.
- Impact 15.6 – Site 40 Alternative (windrow composting option) may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources.

- Impact 15.10 – Site 40 Alternative contribution during construction (windrow composting option) to cumulative emissions of NOx.
- Impact 15.11 – Site 40 Alternative contribution during construction (ASP composting option) to cumulative emissions of NOx.
- Impact 19.2 – The Site 40 Alternative has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects.
- Impact 19.3 – The Site 40 Alternative would result in the conversion of agricultural land, specifically Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance and Grazing Land.

Central Site Alternative

- Impact 29.2 - Operation of the Central Site Alternative composting facility could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies.

The following significant adverse impacts would be unavoidable if mitigation measures identified in the EIR were found to be infeasible, as the County of Sonoma has ultimate jurisdiction in making the proposed roadway improvements:

- Impact 12.2 – The project could worsen traffic safety at the intersection of Twin House Ranch Road and Lakeville Road due to existing roadway design.
- Impact 12.4 – The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic under Near-Term Cumulative conditions.
- Impact 12.5 – The project would contribute to significant Long-Term Cumulative traffic volumes at study intersections.
- Impact 12.6 – The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic under Long-Term Cumulative conditions.

If SCWMA approves the project despite the identified significant and unavoidable impacts, SCWMA must state the reasons for its action in writing. This “Statement of Overriding Considerations” must be included in the record of project approval.

2.3 Areas of Controversy and Unresolved Issues

The most frequently raised issues in the scoping meeting and letters responding to the NOP (for the proposed project Site 5A) focused on traffic safety, routes and level of service (capacity) concerns, effects of the project on wetlands and wildlife (including endangered species), air quality and greenhouse gas (GHG) impacts of the project, impacts of flooding on the project site, and general concerns about the compatibility of the project operations (being somewhat industrial in nature) with the proposed project site (an agricultural area).

Unresolved issues related to approval of the project include:

- **Choice among project composting options and alternatives**. Composting options (open windrow and ASP) and project alternatives have been analyzed to allow the SCWMA flexibility in deciding the appropriate compost facility operational parameters and site location.
- **Water supply**. Water supply would be provided to the proposed compost facility (Site 5A) via a new groundwater well(s) that would be drilled on the project site. The groundwater well would be used to supply up to approximately 130 acre-feet per year. However, at this time the well has not been developed and there are concerns related to the potential brackish water.
- **Williamson Act Contract.** If the Williamson Act contract is not canceled, use of the site as a compost facility could be determined an incompatible use under the contract. A notice of non-renewal could be filed, starting the 9-year non-renewal process that would terminate the contract or the contract could be terminated by public acquisition pursuant to the Williamson Act.

2.4 Alternatives

This EIR discusses the following alternatives to the project (see Chapter 4 for more details):

1. No Project A – No Relocation of Compost Facilities Alternative
2. No Project B – No Central Composting Facility Alternative
3. Site 40 Alternative
4. Site 13 Alternative
5. Central Site Alternative
6. Limited Public Access Alternative

There are six alternatives considered: two versions of the No Project Alternative, three off-site alternatives, and an alternative (Limited Public Access Alternative) that modifies operations of the compost facility by limiting public access to reduce traffic at the facility. Although not required by CEQA, two of the off-site alternatives, Site 40 (**Table 2-2**) and the Central Site alternative (**Table 2-3**), were evaluated at an equal level of detail as the project (please see Chapters 15 through 23 for the Site 40 Alternative, and Chapters 24 through 32 for the Central Site Alternative).

Issues Related to the Site 40 Alternative

Site 40 was the top ranking site in the siting study prepared for SCWMA (HDR Engineering, Inc., 2008) discussed above, however, at the time of the study, the site was in negotiations for sale to the Sonoma County Agricultural Preserve and Open Space District and thus the site was not analyzed as the project site due to potential unavailability. Negotiations for the purchase of the Site 40 location fell through, and the parcel is still available for purchase as of the writing of this report. Site 40 would result in a few impacts that would be greater than the proposed project, specifically air toxics health risk (non-cancer and cancer), agricultural resources and aesthetic views. However, Site 40 would also reduce several impacts in comparison to the project. The Site 40 Alternative would not impact Coastal Brackish Marsh and would have less potential effects to special status species. Also, unlike the project, the Site 40 area does not have a known archaeological site. The Site 40 Alternative would also have reduced traffic impacts in comparison to the project. Finally, Site 40 is not located within the 100-year floodplain and there are more potential options for water supply that would be useful for the Site 40 Alternative, specifically a potable well on-site, recycled water from the Petaluma wastewater treatment plant and the Pinheiro Reservoir.

Issues Related to the Central Site Alternative

The Central Site was not analyzed in the siting study prepared for SCWMA (HDR Engineering, Inc., 2008). The issues related to this alternative center around the size of the compost area and the existing topography. The compost facility would need to be constructed on four different levels. The first phase would only allow for the processing of approximately 40,000 tons of material a year, and there would be no space for a food pre-processing building. Phase 2, which would not be built until 2018, would only be able to process approximately 110,000 tons of material a year rather than the estimated 200,000 tons of compostable material potentially available.

Environmentally Superior Alternative

The EIR must assess the identified alternatives and determine which among the alternatives (including the project as proposed) is the environmentally superior alternative. One of the alternatives to be assessed is the “No Project” alternative (this EIR analyzes two No-Project Alternatives). If the No Project alternative is identified as the environmentally superior alternative, then another of the remaining alternatives must be identified as the environmentally superior alternative.

Site 40 and Site 13 each meet the three project objectives (as depicted in Table 4-2). Site 40 and Site 13 have specific impacts that would be greater than the project (as shown in Table 4-1). Site 40 would require substantial grading during construction and would result in greater TAC health risk during operations. Site 13 would also result in potentially greater air quality impacts; however, the primary drawback for this alternative is that the safety issues would be greatly increased compared to the proposed project at Site 5A. Importantly, the Site 40 Alternative would avoid any impacts to the 100-year flood plain. The Site 40 Alternative also would avoid the need for safety improvements on Lakeville Road that would be required for the development of the proposed project at Site 5A. In contrast, the safety improvements for Highway 37 required for development of Site 13 would potentially be more expensive and less feasible than the safety improvements needed on Lakeville Road for Site 5A. Given these concerns, the Site 40 Alternative is the environmentally preferred alternative to the project.

TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance Before Mitigation	Impact Significance After Mitigation
5. Air Quality			
Impact 5.1: Construction of the project (associated with either windrow or ASP option) could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, PM10, and PM2.5 that could contribute to existing nonattainment conditions and further degrade air quality.	**Mitigation Measure 5.1: Construction Emission Controls.** During construction, the SCWMA shall require the construction contractor to implement the measures that are specified under BAAQMD's basic and additional construction mitigation procedures. These include: • Basic Control Measures. These measures are required for all construction projects in the BAAQMD jurisdiction: o All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. o All haul trucks transporting soil, sand, or other loose material off-site shall be covered. o All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. o All vehicle speeds on unpaved roads shall be limited to 15 mph. Signage with this speed restriction shall be imposed where appropriate and applicable. o All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. o Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. o All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. o Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations. • Additional Control Measures. Since unmitigated construction emissions would exceed the BAAQMD thresholds, the SCWMA and its contractors shall implement the following additional control measures during project construction: o All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe. o All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. o Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity. o Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is	S	SU

KEY: S - Significant SU – Significant and Unavoidable LS – Less than Significant LSM – Less than Significant with Mitigation NI – No Impact

TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance Before Mitigation	Impact Significance After Mitigation
	established. o The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. o All trucks and equipment, including their tires, shall be washed off prior to leaving the site. o Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel. o Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent. o Minimizing the idling time of diesel powered construction equipment to two minutes. o The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. o Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings). o Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM. o Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines.		
Impact 5.2: Operation of the project (windrow composting option) would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	**Mitigation Measure 5.2a: Composting VOC Reduction via Pseudo-Biofilters.** The SCWMA shall implement the following control measure to reduce off-gas emissions from composting organic materials: • Apply finished compost as a pseudo-biofilter to cap active windrows. Estimated VOC reduction of 75 percent (CIWMB, 2007). **Mitigation Measure 5.2b: Fugitive Dust Control.** The SCWMA shall implement best management practices for fugitive dust emission control, including, but not limited to the following: • Water exposed surfaces two times per day, except during rainy days. • All vehicle speeds on unpaved roads shall be limited to 15 mph. Signage with this speed restriction shall be imposed where appropriate and applicable.	S	LSM
Impact 5.3: Operation of the project (ASP composting option) would result in emissions of criteria air pollutants at levels that would not substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	**Mitigation Measure 5.3:** Implement Mitigation Measure 5.2b (Fugitive Dust Control).	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
Impact 5.4: Project traffic (associated with either windrow or ASP composting option) would generate localized CO emissions on roadways and at intersections in the project vicinity.	None required.	LS	LS
Impact 5.5: Operation of the project (associated with either windrow or ASP composting option) could create objectionable odors affecting a substantial number of people.	**Mitigation Measure 5.5: Odor Control.** The SCWMA shall develop and comply with an Odor Impact Minimization Plan (OIMP) pursuant to the requirements of the California Code of Regulations, Title 14, Division 7, Chapter 3.1, Article 3, Section 17863.4.	S	LSM
Impact 5.6: Implementation of the project (windrow composting option) may lead to increases in exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources.	**Mitigation Measure 5.6:** Implement Mitigation Measure 5.2a (Pseudo-Biofilters)**.**	S	LSM
Impact 5.7: Implementation of the project (ASP composting option) may lead to increases in exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources.	None required.	LS	LS
Impact 5.8: Construction and operation of the project (windrow composting option) could result in a cumulatively considerable increase in greenhouse gas emissions.	**Mitigation Measure 5.8a: Develop Annual GHG Inventory**. The applicant shall become a reporting member of The Climate Registry. Beginning with the first year of composting and continuing for the duration of the project operations, the SCWMA shall conduct an annual inventory of GHG emissions, and report these to The Climate Registry. The annual inventory shall be conducted according to The Climate Registry protocols and third-party verified by a verification body accredited through The Climate Registry. **Mitigation Measure 5.8b: Greenhouse Gas Emissions Reduction Plan**. SCWMA shall prepare and make available to the public a Greenhouse Gas Emissions Reduction Plan (GHG plan) containing strategies to ensure that GHG emissions do not exceed 1,100 MT CO_2e per year. The SCWMA shall implement the approved GHG plan, which will include, but not be limited to, the following measures: • The SCWMA shall power on-road and off-road vehicles with electricity and/or alternative fuels (such as biodiesel and compressed natural gas) where available. • If the SCWMA is unable to reduce emissions to below 1,100 MT CO_2e per year using the above measures, the SCWMA shall offset all remaining project emissions above that threshold. Any offset of project emissions shall be demonstrated to be real, permanent, verifiable, enforceable, and additional. To the maximum extent feasible, as determined by the SCWMA in coordination with the BAAQMD, offsets shall be implemented locally. Offsets may include but are not limited to, the following (in order of preference): 1. Onsite offset of project emissions, for example through development of a renewable energy generation facility or a carbon sequestration project (such as a forestry or wetlands project for which inventory and reporting protocols have been adopted). If the SCWMA develops an offset project, it must be registered with the Climate Action Reserve or otherwise approved by the BAAQMD in order to be used to offset project emissions. The number of offset credits	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance Before Mitigation	Impact Significance After Mitigation
	produced would then be included in the annual inventory, and the net (emissions minus offsets) calculated. 2. Funding of local projects, subject to review and approval by the BAAQMD, that will result in real, permanent, verifiable, enforceable, and additional reduction in GHG emissions. If the BAAQMD or Sonoma County develops a GHG mitigation fund, the applicant may instead pay into this fund to offset GHG emissions in excess of the significance threshold. 3. Purchase of carbon credits to offset emissions to below the significance threshold. Only carbon offset credits that are verified and registered with the Climate Action Reserve, or available through a County-approved local GHG mitigation bank or fund, may be used to offset project emissions.		
Impact 5.9: Construction and operation of the project (ASP composting option) could result in a cumulatively considerable increase in greenhouse gas emissions.	**Mitigation Measure 5.9:** Implement Mitigation Measures 5.8a (Develop Annual GHG Inventory) and 5.8b (Greenhouse Gas Emissions Reduction Plan).	S	LSM
Impact 5.10: The project (windrow composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants.	**Mitigation Measure 5.10:** Implement Mitigation Measures 5.1 (Construction Emission Controls), 5.2a (Composting VOC Reduction via Pseudo-Biofilters), and 5.2b (Fugitive Dust Control).	S	SU
Impact 5.11: The project (ASP composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants.	**Mitigation Measure 5.11:** Implement Mitigation Measures 5.1 (Construction Emission Controls) and 5.2b (Fugitive Dust Control).	S	SU
Impact 5.12: Cumulative risk from all past, present and reasonably foreseeable sources within 1,000 feet of the project (associated with either windrow or ASP composting option) would expose sensitive receptors to PM2.5 and TACs which may lead to adverse health effects.	None required.	LS	LS
6. Biological Resources			
Impact 6.1: Implementation of the project could result in indirect impacts to Coastal Brackish Marsh, a CDFG listed Sensitive Habitat and a USFWS-designated Critical Habitat for the Central California Coast Steelhead Evolutionary Significant Unit (ESU).	**Mitigation Measure 6.1:** The SCWMA shall ensure the protection of the Coastal Brackish Marsh and Central California Coast Steelhead ESU habitats through Application of Best Management Practices (BMPs)[1] to Provide Effective Erosion and Sediment Control. BMPs would reduce indirect impacts to Coastal Brackish Marsh, Central California Coast Steelhead ESU habitats, and other waters of the U.S. that could occur as a result of sedimentation and siltation from construction activities. These BMPs shall be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. The performance and effectiveness of these BMPs shall be determined either by visual means, where applicable (i.e., observation of above-normal sediment release), or by actual	S	LSM

[1] The term “Best Management Practices” refers to a wide variety of measures taken to reduce pollutants in stormwater and other non-point source runoff. Measures range from source control, such as use of permeable pavement, to treatment of polluted runoff, such as detention basins and constructed wetlands. Further, the effectiveness of a particular BMP is highly contingent on the context in which it is applied and the method in which it is implemented. BMPs are best used in combination to most effectively remove target pollutants.

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	water sampling in cases where the verification of containment reduction or elimination (inadvertent petroleum release) is required to determine adequacy of the measure. BMPs to be implemented as part of this mitigation measure shall include, but are not limited to, the following measures: • BMPs for temporary erosion control (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) shall be employed for disturbed areas, stockpiled soil, and along culverts and drainage ditches on the site and in downstream offsite areas that may be affected by construction activities. Requirements for the placement and monitoring of the BMPs shall become part of the contractor's project specifications. Performance and adequacy of the measures shall be determined visually by site construction management and verified by the SCWMA as appropriate. • Dirt and debris shall be swept from paved areas in the construction zone on a daily basis as necessary to remove excessive accumulations of silt, mud or other debris. Sweeping and dust removal shall be implemented by the contractor and oversight of these operations shall be the responsibility of the construction site superintendent. • On areas that would have vegetative cover, grass or other vegetative cover shall be established on bare soils within the construction site as soon as possible after disturbance. If grass is chosen, a native seed mix shall be used. At minimum, vegetative application shall be completed by September 15th to allow for plant establishment. No disturbed surfaces or stockpile areas would be left without erosion control measures in place during the period of October 1 through April 30. The application, schedule, and maintenance of the vegetative cover shall be the responsibility of the contractor and requirements to establish a vegetative cover shall be included in the construction contractor's project specifications. • If discharges of sediment or hazardous substances to drainage ways are observed, construction shall be halted until the source of contamination is identified and remediated. Visual indications of such contamination would include an oily sheen or coating on water, and noticeable turbidity (lack of clarity) in the water. Additional BMPs which would be implemented are listed under Mitigation Measure 8.1. BMPs would be reviewed and approved by the San Francisco Bay Regional Water Quality Control Board, as part of the NPDES General Permit for Discharges of Stormwater Associated with Construction Activities.		
Impact 6.2: Implementation of the project has the potential to result in a loss of waters of the United States and/or waters of the state, including drainages, saline emergent wetlands, freshwater emergent wetlands, and seasonal wetlands.	**Mitigation Measure 6.2:** Compensate for Loss and Disturbance of Jurisdictional Waters of the U.S. and/or Waters of the State Resulting from Construction Activities. • The SCWMA shall prepare a wetland delineation prior to project construction, the results of which will determine the type and acreage of wetland habitat present on the project site, for verification by the Corps. Following the verification, if jurisdictional wetlands and/or other waters of the U.S. occur within the project site, the SCWMA shall obtain and comply with federal and state permit requirements pertaining to impacts to wetlands and/or waters of the U.S., including a Section 404 permit and a Section 401 Water Quality Certification. If it is determined that there are no Waters of the U.S. on the project site, SCWMA shall prepare a report of waste discharge under the Porter Cologne Act. • The SCWMA shall protect wetland habitats that occur near the project site by installing	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	environmentally sensitive area fencing at least 20 feet from the edge of the feature. Depending on site-specific conditions and permit requirements, this buffer may be wider than 20 feet. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area. • The SCWMA shall comply with the no net loss of wetland habitat and no significant impacts to potential jurisdictional features policy. The project shall compensate for the unavoidable loss of wetlands at a ratio no less than 1:1. Compensation shall take the form of wetland preservation or creation in accordance with Corps and CDFG mitigation requirements, as required under project permits. Preservation and creation may occur onsite through a conservation agreement or offsite through purchasing credits at a Corps approved mitigation bank. Compensation may be a combination of onsite restoration/creation, off-site restoration, or mitigation credits. Final compensation will be determined in consultation with the Corps. • A draft restoration, mitigation and monitoring plan shall be developed in accordance with the Corps' federal guidelines (33 CFR 332.4(c)/40 CFR 230.92.4(c). The plan shall describe how wetlands shall be created and monitored over a minimum period of time. • If the results of the wetland delineation, as verified by the Corps, indicate that project activities may result in a substantial modification to a river, stream, or lake the SCWMA shall submit an application for a Section 1602 Streambed Alteration Agreement to the CDFG.		
Impact 6.3: Implementation of the project has the potential to result in adverse impacts to special status species as defined in this section. Implementation of the project could result in direct and indirect impacts to the tricolored blackbird, Point Reyes bird's-beak, soft bird's-beak, and Marin knotweed.	**Mitigation Measure 6.3a:** Perform Preconstruction Surveys for Sensitive Avian Species. Prior to the start of construction, SCWMA shall be required to conduct preconstruction surveys in areas containing suitable habitat for tricolored blackbirds within 0.5 miles of proposed project activities if the construction is scheduled to occur during the March 1 to October 31 of any given year. Surveys shall be conducted in both the breeding and non-breeding season to confirm presence/absence of resident birds. Breeding season for tricolored blackbird is mid-March through mid-July. If active nests or presence of special status avian species are recorded within 500 feet of project activities SCWMA shall consult with CDFG regarding suitable measures to avoid impacting breeding effort. Measures may include, but are not limited to: 1. Maintaining a 50-meter buffer around each active nest; no construction activities shall be permitted within this buffer except as approved by CDFG. 2. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined in consultation with CDFG), bird behavior shall be monitored daily by a qualified biologist during construction within the buffer. The biologist shall have the authority to halt all construction within the buffer in the event that project activities are impacting the breeding effort. The biologist shall immediately inform the construction manager and CDFG. Construction activities within the buffer shall cease until the nest is no longer active as determined by the biologist.	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	Mitigation Measure 6.3b: Prior to project implementation, the SWCMA shall hire a qualified botanist to perform preconstruction surveys for rare plant species listed in **Table 6-3** (located in **Appendix BIO-1**) that have any potential to occur within the project site. The qualified botanist shall conduct preconstruction surveys for rare plants during the appropriate season, according to CDFG guidelines for rare plant surveys (CDFG, 2009d) (**Appendix BIO-2**), and within suitable habitat prior to construction. The general blooming period for the special-status plant species that have the highest potential to occur within the project site are as follows: • Marine knotweed: May through August • Point Reyes birds-beak: June through October • Soft birds-beak: July through November If rare plant species are found during these surveys, the project would propose avoidance, minimization, and/or compensation measures to CDFG and USFWS for their approval. These measures may include, but are not restricted, to the following: 1. Minimizing impacts by restricting removal of plants to a few individuals of a relatively large population; 2. Transplanting plants to suitable habitat outside the project site, either within SCWMA-owned land or off-site. SCWMA shall coordinate with the appropriate resource agencies and local experts to determine whether transplantation is feasible. If the agencies concur that transplantation is a feasible mitigation measure, a qualified botanist shall develop and implement a transplantation plan through coordination with the appropriate agencies. The special-status plant transplantation plan shall involve identifying a suitable transplant site; moving the plant material and seed bank to the transplant site; collecting seed material and propagating it in a nursery; and monitoring the transplant sites to document recruitment and survival rates. 3. Monitoring affected populations or relocated populations to document potential project-related impacts; 4. Restoring or enhancing occupied habitat on-site or at another location; and/or 5. Protecting occupied habitat for the species on-site or at another regional location. If special-status plants are protected on site, environmentally sensitive area fencing (orange construction barrier fencing) shall be installed around special-status plant populations. The environmentally sensitive area fencing shall be installed at least 20 feet from the edge of the population. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.		

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

<table>
<tr><th rowspan="2">Impact</th><th rowspan="2">Mitigation Measure</th><th colspan="2">Impact Significance</th></tr>
<tr><th>Before Mitigation</th><th>After Mitigation</th></tr>
<tr><td colspan="4">7. Cultural Resources</td></tr>
<tr><td>Impact 7.1: The project could have an adverse effect on a known archaeological site (CA-SON-202/H).</td><td>Mitigation Measure 7.1: Evaluate CA-SON-202/H for its eligibility to the National Register of Historic Places and the California Register of Historical Resources and implement an archaeological data recovery program. In the interest of preventing unnecessary disturbance of a potentially-significant archaeological resource, evaluation of the resource should occur after the final determination of the project area. If the site cannot be avoided through redesign, it should be evaluated for its eligibility to the National and California Registers. This should be accomplished by constructing a detailed Archaeological Research Design and Treatment Plan (ARDTP). The ARDTP should be prepared by an archaeologist who meets the Secretary of the Interior’s Professional Qualification Standards for archaeology in consultation with an affiliated Native American representative. The ARDTP shall contain, at a minimum:
A prehistoric and historic-period archaeological research context using existing documents;
An archaeological sensitivity study and testing plan that identifies expected property types, historical development, relevant research issues and themes, project impacts, and an archaeological testing plan that would identify potentially significant archaeological features and deposits; and
An outline of criteria implemented by CEQA and Section 106 of the NHPA if applicable, to evaluate archaeological features and deposits that address relevant research issues.
If it is determined that a legally-significant archaeological resource is present and that the project could have an adverse effect on the site, the Sonoma County Waste Management Agency (SCWMA) shall:
Design and implement an Archaeological Data Recovery Program (ADRP). The ADRP shall identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain. The ADRP should be prepared by an archaeologist who meets the Secretary of the Interior’s Professional Qualification Standards for archaeology in consultation with an affiliated Native American representative. The ADRP shall identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery should be limited to the portions of the historic property that could be adversely affected by the project. Destructive data recovery methods should not be applied to portions of the archaeological resource if nondestructive methods are practical. The results of the ARDP should be presented in a report that contains methods, analysis, report production, laboratory analysis, and appropriate curation of materials. A public outreach program should be implemented that includes information on the site and Coast Miwok traditional lifeways.</td><td>S</td><td>LSM</td></tr>
<tr><td>Impact 7.2: The project could inadvertently discover cultural resources.</td><td>Mitigation Measure 7.2: The SCWMA shall halt work if cultural resources are discovered during ground-disturbing activities. If cultural resources are encountered, all activity in the vicinity of the find shall cease until it can be evaluated by a qualified archaeologist and a Native American representative. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones.</td><td>S</td><td>LSM</td></tr>
</table>

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If the archaeologist and Native American representative determine that the resources may be significant, they shall notify the SCWMA and shall develop an appropriate treatment plan for the resources. The archaeologist shall consult with Native American representatives in determining appropriate treatment for prehistoric or Native American cultural resources. In considering any suggested mitigation proposed by the archaeologist and Native American representative, SCWMA shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed in other parts of the project area while mitigation for cultural resources is being carried out.		
Impact 7.3: The project could inadvertently discover human remains.	**Mitigation Measure 7.3:** Halt work if human skeletal remains are identified during construction. If human skeletal remains are uncovered during project construction, work should immediately halt within 50 feet of the find. SCWMA shall contact the Sonoma County coroner to evaluate the remains and follow the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County coroner determines that the remains are Native American, SCWMA would contact the Native American Heritage Commission (NAHC), in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC would then identify the person(s) thought to be the Most Likely Descendent of the deceased Native American, who would then help determine what course of action should be taken in dealing with the remains.	S	LSM
Impact 7.4: The project could inadvertently discover paleontological resources.	**Mitigation Measure 7.4:** The paleontologist shall halt work if paleontological resources are identified during construction. If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, all ground disturbing activities within 50 feet of the find shall be halted until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate salvage measures in consultation with the project sponsor and in conformance with Society of Vertebrate Paleontology Guidelines (SVP, 1995; SVP, 1996). If the paleontologist determines the fossil find is unique or significant, and worthy of salvage, measures would focus on identifying an institution willing and able to accept the specimen, plaster jacketing the specimen, and promptly removing the specimen from the construction site for study in a paleontology lab.	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
8. Hydrology and Water Quality			
Impact 8.1: The project could violate a water quality standard or waste discharge requirement, or otherwise substantially degrade water quality.	**Mitigation Measure 8.1a**: To control and manage shallow groundwater that is pumped during temporary construction activities, as well as stormwater runoff, SCWMA shall prepare and implement a SWPPP as required under the General Construction Permit for Discharges of Storm Water Associated with Construction Activities, for all construction phases of the project. The SWPPP shall identify pollutant sources that may affect the quality of stormwater discharge and shall require the implementation of BMPs to reduce pollutants in storm water discharges. BMPs may include, but would not be limited to: • Excavation and grading activities in areas with steep slopes or directly adjacent to open water shall be scheduled for the dry season only (April 30 to October 15), to the extent possible. This will reduce the chance of severe erosion from intense rainfall and surface runoff. • If excavation occurs during the rainy season, storm runoff from the construction area shall be regulated through a storm water management/erosion control plan that shall include temporary onsite silt traps and/or basins with multiple discharge points to natural drainages and energy dissipaters. Stockpiles of loose material shall be covered and runoff diverted away from exposed soil material. If work stops due to rain, a positive grading away from slopes shall be provided to carry the surface runoff to areas where flow would be controlled, such as the temporary silt basins. Sediment basins/traps shall be located and operated to minimize the amount of offsite sediment transport. Any trapped sediment shall be removed from the basin or trap and placed at a suitable location onsite, away from concentrated flows, or removed to an approved disposal site. • Temporary erosion control measures (such as fiber rolls, staked straw bales, detention basins, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) shall be provided until perennial revegetation or landscaping is established and can minimize discharge of sediment into nearby waterways. For construction within 500 feet of a water body, appropriate erosion control measures, including fiber rolls and other erosion control measures listed above, shall be placed between the potential source of sediment and the water body. • Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures. • No disturbed surfaces will be left without erosion control measures in place during the rainy season, from October 15th through April 30th. • Erosion protection shall be provided on all cut-and-fill slopes. Revegetation shall be facilitated by mulching, hydroseeding, or other methods and shall be initiated as soon as possible after completion of grading and prior to the onset of the rainy season (by October 15). • A vegetation and/or engineered buffer shall be maintained, to the extent feasible, between the construction zone and all surface water drainages including riparian zones. • Vegetative cover shall be established on the construction site as soon as possible after disturbance. • BMPs selected and implemented for the project shall be in place and operational prior to the onset of major earthwork on the site. The construction phase facilities shall be maintained regularly and	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	cleared of accumulated sediment as necessary. Effective mechanical and structural BMPs that will be implemented at the project site include the following: o Mechanical storm water filtration measures, including oil and sediment separators or absorbent filter systems such as the Stormceptor® system, can be installed within the storm drainage system to provide filtration of storm water prior to discharge. o Vegetative strips, high infiltration substrates, and grassy swales can be used where feasible throughout the development to reduce runoff and provide initial storm water treatment. o Roof drains shall discharge to natural surfaces or swales where possible to avoid excessive concentration and channelizing storm water. o Permanent energy dissipaters can be included for drainage outlets. o The water quality detention basins shall be designed to provide effective water quality control measures including the following: - Maximize detention time for settling of fine particles; - Establish maintenance schedules for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets; - Maximize the detention basin elevation to allow the highest amount of infiltration and settling prior to discharge. • Hazardous materials such as fuels and solvents used on the construction sites shall be stored in covered containers and protected from rainfall, runoff, vandalism, and accidental release to the environment. All stored fuels and solvents will be contained in an area of impervious surface with containment capacity equal to the volume of materials stored. A stockpile of spill cleanup materials shall be readily available at all construction sites. Employees shall be trained in spill prevention and cleanup, and individuals shall be designated as responsible for prevention and cleanup activities. • Equipment shall be properly maintained in designated areas with runoff and erosion control measures to minimize accidental release of pollutants. The SWPPP shall also specify measures for removing sediment from water pumped for trench dewatering before the water is released to waterways. Specific sediment removal techniques shall include as warranted, but not limited to: • Use of settling ponds or large storage tanks (Baker tanks) to allow the settling out of entrained sediments; • Use of physical filters to remove sediment, such as a sand or screen filter, or other filtration method • Use of chemical flocculants, to facilitate the settling out of suspended sediments. **Measure 8.1b:** To ensure that accidental releases of fuels and other potentially water quality pollutants during project operations do not result in water quality degradation, SCWMA shall, prior to commencement of project operation, complete and adhere to the recommendations provided in a spill prevention and control plan. The plan shall provide for compliance with local, state, and federal regulations regarding storage and use of fluids on site, and shall include, but not limited to:		

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	• Storage and handling criteria for fuels, oils, lubricants, antifreeze, and other fluids that minimize fluid release • Operational spill prevention measures including staff training for the recognition and proper handling of potentially hazardous fluids • Cleanup procedures that, in the event of a spill, provide for identification and response procedures to contain spills, and properly dispose of contaminated soils or other materials, so as to minimize water quality effects.		
Impact 8.2: The project could 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 or conflict with Sonoma County General Plan policies regarding groundwater.	**Mitigation Measure 8.2a:** Sonoma County General Plan Policy WR-2d requires that all large scale commercial and industrial groundwater users implement a groundwater monitoring program. The project operator shall implement a groundwater level monitoring program to evaluate drawdown of groundwater in accordance with county groundwater monitoring standards. In the event that unacceptable rates of groundwater drawdown are indicated, as dictated by County policy, the project operator shall work with Sonoma County to identify alternative source(s) of water supply, to be implemented in lieu of or in tandem with on-site groundwater pumping. Other viable water supply options may include drawing water from a well at a different location, or use of a separate or supplementary water supply system, such as recycled water or surface water. **Mitigation Measure 8.2b:** Prior to construction, SCWMA shall complete a study assessing the potential for implementation of the following water conservation measures on site: 1. Use of water-conserving design measures that incorporate green building principles and water conserving fixtures; 2. Use of stormwater retained in the stormwater detention pond to supplement groundwater supplies in support of composting operations; and 3. Potential for use of graywater produced on site as a supplemental water source for composting operations. 4. Potential for use of additional process water from other industrial sources such as wineries. Recommendations from the study, including but not limited to the implementation of the four measures listed above, shall be incorporated into project design, in order to reduce groundwater consumption and pumping, and maintain consistency with the Sonoma County General Plan. **Mitigation Measure 8.2c:** Prior to the initiation of construction activities, SCWMA shall ensure that the project adheres to PRMD permitting requirements for the implementation of this facility, which would result in the use of groundwater sourced from a low-lying area in support of the project. As required by PRMD, SCWMA shall complete a hydrogeologic study to evaluate groundwater supply that is likely to be available to the project. Additionally, to the extent required by PRMD, SCWMA may also be required to complete a saltwater intrusion analysis in support of the project. SCWMA shall prepare these evaluations and submit to PRMD for review, in accordance with PRMD technical standards and submission requirements. Implementation of this mitigation measure would ensure that SCWMA adheres to PRMD requirements for the project.	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance	
		Before Mitigation	After Mitigation
Impact 8.3: The project could 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 which would result in substantial erosion or siltation on- or off-site, or result in flooding on- or off-site.	**Mitigation Measure 8.3a:** Prior to construction, a hydrologic and flooding study shall be completed for the two unnamed drainages on site, and SCWMA shall ensure that recommendations from the study are incorporated into project design. The study shall include the following: • Assessment of maximum (100-year event) flood flow rate (which shall include an extra 10 percent flow rate to accommodate potential climate change conditions) along the affected drainages; • Assessment shall include an evaluation of flows derived from the watershed upstream of the project site, as well as on-site sources that would be discharged to the affected drainages, as relevant; and • Based on these assessments, the study shall specify sizing, capacity, facility location, and outfall location and rate needed to convey a 100-year flood (plus an extra 10 percent volume capacity to accommodate potential climate change conditions) event without causing an increase (as compared to existing conditions) in flooding or other backup of water on site or downstream. **Mitigation Measure 8.3b:** Prior to construction, a grading and drainage plan for the project site shall be completed, and the SCWMA shall ensure that recommendations from that document are incorporated into project design. The study shall include the following: • Quantification of stormwater flows on site, up to 100-year storm conditions (which will include an extra 10 percent volume capacity to accommodate potential climate change conditions); • Composting area engineering diagrams and maps of proposed drainage facilities, sized so as to convey and contain all stormwater flows from the composting area on site, up to 100 year storm conditions plus an extra 10 percent volume capacity to accommodate potential climate change conditions; • Sizing of detention ponds so as to ensure adequate capacity for stormwater storage throughout the rainy season • Engineering diagrams and maps of proposed drainage facilities for areas of the site that are not hydrologically connected to the composting area. Facilities shall include ditches, swales, stormwater retention ponds, and other stormwater conveyances, as needed to ensure that stormwater can be conveyed off site without causing additional flooding, erosion, or sedimentation on site or downstream.	S	LSM
Impact 8.4: The project could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	**Mitigation Measure 8.4:** Implement Mitigation Measure 8.3b	S	LSM
Impact 8.5: The project would be located within a FEMA-defined 100-year floodplain, and would result in the displacement of flood waters.	None feasible.	S	SU
Impact 8.6: The project could expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.	None required.	LS	LS

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
Impact 8.7: Inundation of the project site could result due to seiche, tsunami, or mudflow.	None required.	LS	LS
9. Land Use Planning and Agriculture			
Impact 9.1: The project has the potential to physically divide an established community.	None required.	LS	LS
Impact 9.2: The project has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects.	None feasible.	S	SU
Impact 9.3: The project would result in the conversion of agricultural land, specifically Farmland of Local Importance.	None required.	LS	LS
Impact 9.4: The project would conflict with an existing Williamson Act Contract.	**Mitigation Measure 9.4:** The County, Applicant or existing property owner would complete one of the following options: 1. File a notice of nonrenewal which would begin a 9-year non-renewal process. At the end of this period the Williamson Act contract would be terminated. 2. Terminate the contract by public acquisition pursuant to the Williamson Act. Public acquisition of Williamson Act lands results in termination of the contract following a consultation process with the County administrating body and the DOC. Public acquisition of contracted lands must meet two criteria (California Government Code §51292): a. The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve. b. If the land is agricultural land covered under a contract pursuant to this chapter for any public improvement, that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement.	S	LSM
Impact 9.5: The project has the potential to conflict with airport operations.	**Mitigation Measure 9.5:** The following measures would be implemented to reduce risks associated with wildlife hazards near Gnoss Field Airport: • Prior to construction of the facility, a Construction and Design Best Management Practices Evaluation will be conducted. This evaluation will include review of design specifications and construction plans and practices to identify potential areas to reduce wildlife hazard attractants. • When operation of the project commences, a Wildlife Hazard Assessment (WHA) would be conducted by a wildlife damage management biologist. The WHA would be prepared pursuant to FAA guidelines (coverage of daily and seasonal occurrences which typically entails a year of observations and monitoring) to determine the extent and type of wildlife hazards attracted to the site and whether a Wildlife Hazard Management Plan (WHMP) would be required. • Upon completion of the WHA, a WHMP will be developed if warranted. The WHMP may include standard measures such as wire grids or netting over the stormwater detention pond, use of auditory repellents and/or falconry to discourage birds from the site, covering compost piles, and/or enclosed areas for incoming feedstock. The program would be periodically re-evaluated to revise bird control techniques as necessary.	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
10. Noise			
Impact 10.1: Project construction could expose persons to or generate excessive noise levels.	**Mitigation Measure 10.1:** Construction of the new facility shall occur only during daytime between the hours of 7 a.m. – 7 p.m. Monday thru Friday, 9 a.m. – 5 p.m. Saturday, and no construction on Sunday.	S	LSM
Impact 10.2: Operation of the project could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies.	**Mitigation Measure 10.2:** ASP equipment that would operate at night shall be required to be attenuated to a level that does not exceed 45 dBA at the nearest residences. If post-construction monitoring indicates higher nighttime noise levels from the ASP equipment at sensitive receptor locations, then additional noise barriers (such as fences or walls that block any direct line of site to receptors) or sound insulated equipment enclosures would be required to attenuate operations noise to acceptable levels.	S	LSM
Impact 10.3: Traffic associated with operation of the project would result in an increase in ambient noise levels on nearby roadways used to access the project site.	None required.	LS	LS
Impact 10.4: Increases in traffic from the project in combination with other development would result in cumulative noise increases.	None required.	LS	LS
11. Public Services and Utilities			
Impact 11.1: The project would generate solid waste which would require disposal at a landfill.	None required.	LS	LS
Impact 11.2: The project, and implementation of certain mitigation, would increase energy demands.	None required.	LS	LS
Impact 11.3: The project would require law enforcement services from the Sonoma County Sheriff's Office.	None required.	LS	LS
Impact 11.4: The project would increase demand for fire protection and emergency medical services including response to wildland fires.	None required.	LS	LS
Impact 11.5: The project would include new stormwater drainage facilities, the construction of which could create impacts.	None required.	LS	LS
12. Traffic and Transportation			
Impact 12.1: The project would contribute to Near-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour.	None required.	LS	LS

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

		Impact Significance	
Impact	**Mitigation Measure**	Before Mitigation	After Mitigation
Impact 12.2: The project could worsen traffic safety due to design features or incompatible uses.	**Mitigation Measure 12.2a:** Prior to the start of project operations, SCWMA shall widen (to County standards) the Twin House Ranch Road cross-section between Lakeville Road and the project site to provide two 12-foot-wide lanes, a dedicated left-turn lane and shared through-right turn lane on the Twin House Ranch Road intersection approach to Lakeville Road, and a dedicated southbound right-turn lane on Lakeville Road of a length and turning radius sufficient to fully accommodate southbound right-turning trucks from Lakeville Road separated from the southbound through traffic flow. **Mitigation Measure 12.2b:** Prior to the start of project operations, SCWMA shall install a traffic refuge area (about 200 feet long) on Lakeville Road to accommodate left turning vehicles from Twin House Ranch Road. The refuge area would align opposite to the existing northbound left-turn lane on Lakeville Road and would allow left-turning vehicles from Twin House Ranch Road to cross one lane of through traffic at a time.[2] This intersection is located within Sonoma County's jurisdiction, and thus implementation of these mitigation measures would require encroachment permits from the County. The current paved surface on Lakeville Road is 36 feet (two 12-foot-wide travel lanes and two six-foot-wide shoulders). However, the current paved surface at the study intersection is approximately 45 feet and accommodates a northbound left turn lane (11 feet wide, 160 feet long), and a southbound paved apron (9 to 18 feet wide, 125 feet long) that facilitates right turns onto Twin House Ranch Road. It is estimated that a maximum right-of-way width of 60 feet would be required to construct a southbound right-turn lane, a northbound refuge area, and two 12-foot-wide through lanes and maintain the six-foot-width shoulder on the east side of Lakeville Road.	S	LSM
Impact 12.3: The project would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation.	**Mitigation Measure 12.3a:** The operator of the facility shall ensure that all contract haul trucks are covered to prevent spillage of materials onto haul routes. **Mitigation Measure 12.3b:** The operator shall conduct regular sweeping of the intersection of Lakeville Road / Twin House Ranch Road to keep it free of debris and dirt that may accumulate from exiting trucks.	S	LSM
Impact 12.4: The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic.	**Mitigation Measure 12.4a:** Prior to the start of project operations, SCWMA shall post warning signs on Lakeville Road 250 feet in advance of the access driveway (Twin House Ranch Road) that cautions drivers about truck traffic entering and exiting the roadway. The warning signs shall follow guidelines set forth in the *California Manual on Uniform Traffic Control Devices* (Caltrans, 2010). **Mitigation Measure 12.4b:** SCWMA shall implement intersection improvements identified in Mitigation Measures 12.2a and 12.2b.	S	LSM

2 Caltrans' *Highway Design Manual (Section-403.7 Refuge Areas)* states that "The shadowing effect of traffic islands may be used to provide refuge areas for turning and crossing vehicles. Adequate shadowing provides refuge for a vehicle waiting to cross or enter an uncontrolled traffic stream. Similarly, channelization also may provide a more efficient crossing of two or more traffic streams by permitting drivers to select a time gap in one traffic stream at a time."

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance Before Mitigation	Impact Significance After Mitigation
Impact 12.5: The project would contribute to Long-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour. This would be a significant impact during the a.m. and weekend peak hour.	**Mitigation Measure 12.5a:** Implement Mitigation Measure 12.2b (install a 200-foot-long traffic refuge area on Lakeville Road to accommodate left turning vehicles from Twin House Ranch Road). Implementation of Mitigation Measure 12.2b would improve the LOS at the Lakeville Road and Twin House Ranch Road intersection to LOS C or better during the weekday a.m. peak hour and weekend peak hour, as drivers turning from Twin House Ranch Road left onto Lakeville Road would be able to select a time gap in one traffic stream at a time (as described in Footnote 11). As the intersection would operate at an acceptable LOS after mitigation, the project would have a less-than-significant impact. **Mitigation Measure 12.5b:** Prior to Year 2030, SCWMA shall install a traffic refuge area (about 200 feet long) on Lakeville Road to accommodate left turning vehicles from Stage Gulch Road. Implementation of Mitigation Measure 12.5b would improve the LOS at the Stage Gulch Road and Lakeville Highway – Lakeville Road intersection to LOS C during the weekday a.m. peak hour, as drivers turning from Stage Gulch Road left onto Lakeville Road would be able to select a time gap in one traffic stream at a time (as described in Footnote 11). As the intersection would operate at an acceptable LOS after mitigation, the project would have a less-than-significant impact.	S	LSM
Impact 12.6: The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic.	**Mitigation Measure 12.6a:** Implement Mitigation Measure 12.4a (posting of warning signs on Lakeville Road in advance of Twin House Ranch Road that cautions drivers about truck traffic entering and exiting the roadway). **Mitigation Measure 12.6b:** SCWMA shall implement intersection improvements identified in Mitigation Measures 12.2a and 12.2b.	S	LSM
Impact 12.7: The project could contribute to the degradation of pavement on public roads.	**Mitigation Measure 12.7:** Implement Mitigation Measure 12.2a (widen Twin House Ranch Road to County standards between Lakeville Road and the project site), which would increase the pavement's Traffic Index to support the project-generated heavy truck traffic. Improving the road to County standards will lessen the degradation of the pavement due to the project.	S	LSM
Impact 12.8: Project construction would result in temporary increases in truck traffic and construction worker traffic.	**Mitigation Measure 12.8:** The construction contractor(s) shall develop a construction management plan for review and approval by the Sonoma County Department of Transportation and Public Works. The plan shall include at least the following items and requirements to reduce, to the maximum extent feasible, traffic congestion during construction of this project and other nearby projects that could be simultaneously under construction: • A set of comprehensive traffic control measures that include designating construction access routes and scheduling of major truck trips and deliveries to avoid peak traffic hours and designated construction access routes; and • Notification of adjacent property owners and public safety personnel regarding scheduled major deliveries.	S	LSM

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TABLE 2-1
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 5A)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
13. Aesthetics			
Impact 13.1: The project would alter the visual character of the project site.	None required.	LS	LS
Impact 13.2: The project could result in the production of new sources of light and/or glare.	**Mitigation Measure 13.2:** The following measures are based on recommendations within Sonoma County's Visual Assessment Guidelines and the Sonoma County General Plan. These measures shall be incorporated into the project design: • Exterior lighting shall be downward casting and fully shielded to prevent glare. • Lighting shall not wash out structures or any portions of the site. • Light fixtures shall not be located at the periphery of the property and shall not spill over onto adjacent properties or into the sky. • Flood lights shall not be used. • Parking lot fixtures should be limited in height (20-feet). • All parking lot and/or street light fixtures shall use full cut-off fixtures. • Lighting shall shut off automatically after closing and security lighting shall be motion-sensor activated. • Night time lighting shall be limited to the minimum necessary to provide for security and safety.	S	LSM

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TABLE 2-2
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 40 ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance Before Mitigation	Impact Significance After Mitigation
15. Air Quality/Site 40			
Impact 15.1: Construction of the Site 40 Alternative (associated with either windrow or ASP option) could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, PM10, and PM2.5 that could contribute to existing nonattainment conditions and further degrade air quality.	**Mitigation Measure 15.1:** Implement Mitigation Measure 5.1 (Construction Emission Controls).	S	SU
Impact 15.2: Operation of the Site 40 Alternative (windrow composting option) would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	**Mitigation Measure 15.2a:** Implement Mitigation Measure 5.2a (Composting VOC Reduction via Pseudo-Biofilters). **Mitigation Measure 15.2b:** Implement Mitigation Measure 5.2b (Fugitive Dust Control).	S	LSM
Impact 15.3: Operation of the Site 40 Alternative (ASP composting option) would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	**Mitigation Measure 15.3:** Implement Mitigation Measure 5.2b (Fugitive Dust Control).	S	LSM
Impact 15.4: Site 40 Alternative traffic (associated with either windrow or ASP composting option) would generate localized CO emissions on roadways and at intersections in the site vicinity.	None required.	LS	LS
Impact 15.5: Operation of the Site 40 Alternative (associated with either windrow or ASP composting option) could create objectionable odors affecting a substantial number of people.	**Mitigation Measure 15.5:** Implement Mitigation Measure 5.5 (Odor Control).	S	LSM
Impact 15.6: Implementation of the Site 40 Alternative (windrow composting option) may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources.	**Mitigation Measure 15.6:** Implement Mitigation Measure 15.2a (Pseudo-Biofilters).	S	SU
Impact 15.7: Implementation of the Site 40 Alternative (ASP composting option) may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources.	None required.	LS	LS

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TABLE 2-2
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 40 ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
Impact 15.8: Construction and operation of the Site 40 Alternative (windrow composting option) could result in a cumulatively considerable increase in greenhouse gas emissions.	**Mitigation Measure 15.8a: Develop Annual GHG Inventory.** The applicant shall become a reporting member of The Climate Registry. Beginning with the first year of composting and continuing for the duration of the Site 40 Alternative operations, the SCWMA shall conduct an annual inventory of GHG emissions, and report these to The Climate Registry. The annual inventory shall be conducted according to The Climate Registry protocols and third-party verified by a verification body accredited through The Climate Registry. **Mitigation Measure 15.8b: Greenhouse Gas Emissions Reduction Plan**. SCWMA shall prepare and make available to the public a Greenhouse Gas Emissions Reduction Plan (GHG plan) containing strategies to ensure that GHG emissions do not exceed 1,100 MT CO_2e per year. The SCWMA shall implement the approved GHG plan, which will include, but not be limited to, the following measures: • The SCWMA shall power on-road and off-road vehicles with electricity and/or alternative fuels (such as biodiesel and compressed natural gas) to the extent feasible. • The SCWMA shall provide negative pressure buildings for indoor composting and treat collected air in a biofilter or air scrubbing system, if feasible. • If the SCWMA is unable to reduce emissions to below 1,100 MT CO2e per year using the above measures, the SCWMA shall offset all remaining Site 40 Alternative emissions above that threshold. Any offset of Site 40 Alternative emissions shall be demonstrated to be real, permanent, verifiable, enforceable, and additional. To the maximum extent feasible, as determined by the SCWMA in coordination with the BAAQMD, offsets shall be implemented locally. Offsets may include but are not limited to, the following (in order of preference): 1. Onsite offset of Site 40 Alternative emissions, for example through development of a renewable energy generation facility or a carbon sequestration project (such as a forestry or wetlands project for which inventory and reporting protocols have been adopted). If the SCWMA develops an offset project, it must be registered with the Climate Action Reserve or otherwise approved by the BAAQMD in order to be used to offset Site 40 Alternative emissions. The number of offset credits produced would then be included in the annual inventory, and the net (emissions minus offsets) calculated. 2. Funding of local projects, subject to review and approval by the BAAQMD, that will result in real, permanent, verifiable, enforceable, and additional reduction in GHG emissions. If the BAAQMD or Sonoma County develops a GHG mitigation fund, the applicant may instead pay into this fund to offset GHG emissions in excess of the significance threshold. 3. Purchase of carbon credits to offset emissions to below the significance threshold. Only carbon offset credits that are verified and registered with the Climate Action Reserve, or available through a County-approved local GHG mitigation bank or fund, may be used to offset Site 40 Alternative emissions.	S	LSM
Impact 15.9: Construction and operation of the Site 40 Alternative (ASP composting option) could result in a cumulatively considerable increase in greenhouse gas emissions.	**Mitigation Measure 15.9:** Implement Mitigation Measures 15.8a (Develop Annual GHG Inventory) and 15.8b (Greenhouse Gas Emissions Reduction Plan).	S	LSM

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TABLE 2-2
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 40 ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
Impact 15.10: The Site 40 Alternative (windrow composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants.	**Mitigation Measure 15.10:** Implement Mitigation Measures 15.1 (Construction Emission Controls), 15.2a (Composting VOC Reduction via Pseudo-Biofilters), and 15.2b (Fugitive Dust Control).	S	SU
Cumulative Impact 15.11: The Site 40 Alternative (ASP composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants.	**Mitigation Measure 15.11:** Implement Mitigation Measures 15.1 (Construction Emission Controls) and 15.2b (Fugitive Dust Control).	S	SU
Cumulative Impact 15.12: Cumulative risk from all past, present and reasonably foreseeable sources within 1,000 feet of the Site 40 Alternative (associated with either windrow or ASP composting option) would expose sensitive receptors to PM2.5 and TACs which may lead to adverse health effects.	None required.	LS	LS
16. Biological Resources/Site 40			
Impact 16.1: Implementation of the Site 40 Alternative has the potential to result in a loss of waters of the United States and/or waters of the state, including seasonal drainages and seasonal wetlands.	**Mitigation Measure 16.1** Implement Mitigation Measures 6.1 and 6.2. Although Mitigation Measure 6.1 refers to indirect impacts on water quality of marshlands, application of BMPs and standard procedures to reduce accumulation of water contaminants, erosion, and discharge of sediment and other hazardous materials are applicable to minimize indirect impacts on all wetlands, other waters of the U.S., and waters of the state.	S	LSM
Impact 16.2: Implementation of the Site 40 Alternative could result in direct and indirect impacts to the northwestern pond turtle, a special status species.	**Mitigation Measure 16.2:** To reduce potential impacts on northwestern pond turtles, SCWMA shall retain a biologist to conduct a survey for northwestern pond turtles within 24 hours prior to the start of construction activities in drainages, ponds, and other watercourses located in the work area. If a turtle is found in the work area, the biologist shall try to passively move the turtle out of the area. If a turtle becomes trapped during construction activities in the waterway, a biologist shall remove the turtle from the work area and place it downstream of construction activities or in a suitable habitat in the vicinity of the project.	S	LSM
17. Cultural Resources/Site 40			
Impact 17.1: The Site 40 Alternative would not affect significant architectural/structural resources.	None required.	LS	LS
Impact 17.2: The Site 40 Alternative could inadvertently discover cultural resources.	**Mitigation Measure 17.2:** Implement Mitigation Measure 7.2.	S	LSM
Impact 17.3: The Site 40 Alternative could inadvertently discover human remains.	**Mitigation Measure 17.3:** Halt work if human skeletal remains are identified during construction. Implement Mitigation Measure 7.3.	S	LSM
Impact 17.4: The Site 40 Alternative could inadvertently discover paleontological resources.	**Mitigation Measure 17.4a:** Prior to the start of any subsurface excavation, all construction forepersons and field supervisors shall receive training by a qualified professional paleontologist, as defined by the SVP (1995), who is experienced in teaching non-specialists. Topics to be covered will include the	S	LSM

KEY: S - Significant SU – Significant and Unavoidable LS – Less than Significant LSM – Less than Significant with Mitigation NI – No Impact

TABLE 2-2
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 40 ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	scientific importance of fossil remains; the potential for fossil remains being uncovered and/or disturbed by project-related earth moving; where such remains are most likely to be encountered during earth moving; and procedures to be employed if fossil remains are discovered during excavations. Procedures to be employed if fossil remains are discovered include halting construction within 50 feet of any potential fossil find and notifying a qualified paleontologist, who shall evaluate its significance. Training on paleontological resources shall also be provided to all other construction workers, but may involve using a videotape of the initial training and/or written materials rather than in-person training by a paleontologist. If a fossil is determined to be significant and avoidance is not feasible, the paleontologist shall develop and implement an excavation and salvage plan as described in Mitigation Measure 17.4b. **Mitigation Measure 17.4b:** A qualified professional paleontologist, as defined by the SVP (1995), shall monitor and inspect excavated faces for paleontological resources during initial ground disturbance for each construction phase of the project. After initial ground disturbance, onsite monitoring may cease if the paleontologist determines that the potential to uncover fossils at the project site is low. This determination can be made based upon his or her professional judgment and the specific stratigraphic facies[3] within the Petaluma Formation where excavation is occurring. However, the paleontologist shall remain on-call throughout the project duration in the event of an unanticipated find during subsequent construction activities (as described in Mitigation Measure 17.4a). The paleontologist shall assess the nature and importance of all potential fossil discoveries. If a fossil is determined to be significant and avoidance is not feasible, the paleontologist, in consultation with SCWMA, shall develop and implement an excavation and salvage plan in accordance with SVP standards (SVP, 1995; SVP, 1996). Measures would focus on identifying an institution willing and able to accept the specimen, plaster jacketing the specimen, and promptly removing the specimen from the construction site for study in a paleontology lab.		
18. Hydrology and Water Quality/Site 40			
Impact 18.1: The Site 40 Alternative could violate a water quality standard or waste discharge requirement, or otherwise substantially degrade water quality.	**Mitigation Measure 18.1**: Implement Mitigation Measure 8.1	S	LSM
Impact 18.2: The Site 40 Alternative could 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 or conflict with Sonoma County General Plan policies regarding groundwater.	**Mitigation Measure 18.2**: Implement Mitigation Measure 8.2a and 8.2b	S	LSM

3 A mappable, areally-restricted part of a rock formation, differing in lithology or fossil content from other beds deposited at the same time and in lithologic continuity.

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TABLE 2-2
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 40 ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance	
		Before Mitigation	After Mitigation
Impact 18.3: The Site 40 Alternative could 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 which would result in substantial erosion or siltation on- or off-site, or result in flooding on- or off-site.	**Mitigation Measure 18.3:** Implement Mitigation Measure 8.3b.	S	LSM
Impact 18.4: The Site 40 Alternative could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	**Mitigation Measure 18.4**: Implement Mitigation Measure 8.3b.	S	LSM
19. Land Use and Agriculture/Site 40			
Impact 19.1: The Site 40 Alternative has the potential to physically divide an established community.	None required.	LS	LS
Impact 19.2: The Site 40 Alternative has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects.	**Mitigation Measure 19.2:** Implement ASP composting at Site 40.	S	SU
Impact 19.3: The Site 40 Alternative would result in the conversion of agricultural land, specifically Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance and Grazing Land.	**Mitigation Measure 19.3**. Implement Mitigation Measure 9.4.	S	SU
Impact 19.4: The Site 40 Alternative would conflict with an existing Williamson Act Contract.	**Mitigation Measure 19.4:** Implement Mitigation Measure 9.4.	S	LSM
Impact 19.5: The Site 40 Alternative has the potential to conflict with airport operations.	**Mitigation Measure 19.5:** Implement Mitigation Measure 9.5 to reduce risks associated with wildlife hazards near Petaluma Municipal Airport.	S	LSM
20. Noise/Site 40			
Impact 20.1: Construction at Site 40 could expose persons to or generate excessive noise levels.	**Mitigation Measure 20.1**: Implement Mitigation Measure 10.1.	S	LSM
Impact 20.2: Operation of the Site 40 composting facility could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies.	**Mitigation Measure 20.2:** Implement Mitigation Measure 10.2 (ASP equipment control).	S	LSM
Impact 20.3: Traffic associated with operation of the project could result in an increase in ambient noise levels on nearby roadways used to access the project site.	None required.	LS	LS

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TABLE 2-2
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 40 ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
Impact 20.4: Increases in traffic from the Site 40 Alternative in combination with other development would result in cumulative noise increases.	None required.	LS	LS
21. Public Services and Utilities/Site 40			
Impact 21.1: The Site 40 Alternative would generate solid waste which would require disposal at a landfill.	None required.	LS	LS
Impact 21.2: The Site 40 Alternative and implementation of certain mitigations, would increase energy demands.	None required.	LS	LS
Impact 21.3: The Site 40 Alternative would require law enforcement services from the Sonoma County Sheriff's Office.	None required.	LS	LS
Impact 21.4: The Site 40 Alternative would increase demand for fire protection and emergency medical services including response to wildland fires.	None required.	LS	LS
Impact 21.5: The Site 40 Alternative would include new stormwater drainage facilities, the construction of which could create impacts.	None required.	LS	LS
22. Traffic and Transportation/Site 40			
Impact 22.1: The Site 40 Alternative would contribute to Near-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour.	None required.	LS	LS
Impact 22.2: The Site 40 Alternative could worsen traffic safety due to design features or incompatible uses.	**Mitigation Measure 22.2:** Prior to the start of project operations, SCWMA shall widen (to County standards) the Site 40 Access Road cross-section between Stage Gulch Road and the project site to provide two 12-foot-wide lanes, a dedicated left-turn lane on the access road intersection approach to Stage Gulch Road, and sufficient inbound lane width (westbound traffic) to fully accommodate southbound right-turning trucks from Stage Gulch Road.	S	LSM
Impact 22.3: The Site 40 Alternative would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation.	**Mitigation Measure 22.3a:** Implement Mitigation Measure 12.3a (ensure that all contract haul trucks are covered to prevent spillage of materials onto haul routes). **Mitigation Measure 22.3b:** The operator shall conduct regular sweeping of the intersection of Stage Gulch Road at the Site 40 access road so that the intersection remains free of debris and dirt that may accumulate from exiting trucks.	S	LSM

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TABLE 2-2
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (SITE 40 ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
Impact 22.4: The Site 40 Alternative would generate turning movements by heavy vehicles to and from Stage Gulch Road at the Site 40 access road, increasing the potential for road hazard conflicts between Site 40 Alternative traffic and through traffic.	**Mitigation Measure 22.4:** Prior to the start of Site 40 Alternative operations the SCWMA shall post warning signs on Stage Gulch Road 250 feet in advance of the access driveway (Site 40) that cautions drivers about truck traffic entering and exiting the roadway. The warning signs shall follow guidelines set forth in the *California Manual on Uniform Traffic Control Devices* (Caltrans, 2010).	S	LSM
Impact 22.5: The Site 40 Alternative would contribute to Long-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour.	None required.	LS	LS
Impact 22.6: The project would generate turning movements by heavy vehicles to and from Stage Gulch Road at the Site 40 Alternative access road, increasing the potential for road hazard conflicts between project traffic and through traffic.	**Mitigation Measure 22.6a:** Implement Mitigation Measure 22.4 (posting of warning signs on Stage Gulch Road in advance of the access road (Site 40) that cautions drivers about truck traffic entering and exiting the roadway). **Mitigation Measure 22.6b:** Implement Mitigation Measure 22.2 (intersection improvements).	S	LSM
Impact 22.7: The Site 40 Alternative would contribute to the degradation of pavement on public roads.	None required.	LS	LS
Impact 22.8: Project construction would result in temporary increases in truck traffic and construction worker traffic.	**Mitigation Measure 22.8:** Implement Mitigation Measure 12.8	S	LSM
23. Aesthetics/Site 40			
Impact 23.1: The Site 40 Alternative would alter the visual character of Site 40.	**Mitigation Measure 23.1:** The alternative shall incorporate landscaping or other screening measures, such as the use of native trees and/or a vegetated berm, along the northeastern and southeastern boundaries of the Site 40 composting area.	S	LSM
Impact 23.2: This alternative could result in the production of new sources of light and/or glare.	**Mitigation Measure 23.2:** Implement Mitigation Measure 13.2.	S	LSM

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TABLE 2-3
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (CENTRAL SITE ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
24. Air Quality/Central Site			
Impact 24.1: Construction of the Central Site Alternative could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, PM10, and PM2.5 that could contribute to existing nonattainment conditions and further degrade air quality.	**Mitigation Measure 24.1:** Implement the 'Basic Control Measures' and 'Additional Control Measures' specified in Mitigation Measure 5.1 (Construction Emission Controls) during Phase 1 construction, and implement only the 'Basic Control Measures' (which are required for all construction projects in the BAAQMD jurisdiction) included in Mitigation Measure 5.1 for Phase 2 construction.	S	LSM
Impact 24.2: Operation of the Central Site Alternative would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	None required.	LS	LS
Impact 24.3: Central Site Alternative traffic would generate localized CO emissions on roadways and at intersections in the site vicinity.	None required.	LS	LS
Impact 24.4: Operation of the Central Site Alternative could create objectionable odors affecting a substantial number of people.	**Mitigation Measure 24.4:** Same as Mitigation Measure 5.5 (Odor Control).	S	LSM
Impact 24.5: Implementation of the Central Site Alternative may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources.	None required.	LS	LS
Impact 24.6: Construction and operation of the Central Site Alternative would not result in a cumulatively considerable increase in greenhouse gas emissions.	None required.	LS	LS
Impact 24.7: The Central Site Alternative, together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants.	**Mitigation Measure 24.7:** Implement Mitigation Measure 24.1 (Construction Emission Controls).	S	LSM
Impact 24.8: Cumulative risk from all past, present and reasonably foreseeable sources within 1,000 feet of the Central Site Alternative would expose sensitive receptors to PM2.5 and TACs which may lead to adverse health effects.	None required.	LS	LS

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TABLE 2-3
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (CENTRAL SITE ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
25. Biological Resources/Central Site			
Impact 25.1: Implementation of the Central Site Alternative could result in direct and indirect impacts to the California red-legged frog, northwestern pond turtle, white-tailed kite, hoary bat, and showy Rancheria clover.	**Mitigation Measure 25.1:** To reduce potential impacts to California red-legged frog, northwestern pond turtle, white-tailed kite, hoary bat, and showy Rancheria clover, SCWMA shall implement the following mitigation measures: **California red-legged frog** A qualified biologist shall conduct a protocol-level habitat assessment in accordance with the USFWS' 2005 "Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog" or the most current guidance. If it is determined, based on the results of the habitat assessment and the USFWS, that the pond does not support CRLF habitat, no additional measures would be required. Based on the results of the protocol-level habitat assessment, the USFWS may require protocol-level field surveys, which shall be conducted in accordance with the most current guidelines. The results of these surveys will document use by CRLFs in the freshwater pond habitat. If it is determined, based on the results of the field surveys that the pond does not support CRLFs, no additional mitigation would be required. If the freshwater pond does support CRLFs, SCWMA shall be responsible for obtaining an incidental take permit from the USFWS pursuant to Section 10 of the Federal Endangered Species Act. The incidental take permit shall be acquired prior to the commencement of any construction activities that could affect CRLF habitat. A habitat conservation plan (HCP) shall also be prepared that documents how effects of the authorized incidental take would be adequately minimized and mitigated. The HCP shall detail approved mitigation measures and is likely to include but not be limited to the following: 1. A preconstruction clearance survey shall be conducted by a qualified biologist prior to any vegetation clearing, excavation or construction that occurs within 300 feet of the freshwater pond to determine if any individual CRLF are present and could potentially be harmed by construction activities. Clearance survey should be conducted within 48 hours prior to the commencement of construction. If any frogs are found, they shall be removed from the construction zone and placed in an approved location offsite. 2. Once the active construction zone has been cleared, a qualified biologist shall encircle the construction zone with an exclusionary fence in order to prevent CRLF from returning. Exclusionary fence shall be 36 inches high with 6 inches buried in the soil and shall be constructed of suitable materials as detailed in the project's incidental take permit and HCP. Fencing shall be maintained in good working order and shall remain in place until construction in that particular area is completed. 3. Mitigation for the loss of CRLF habitat shall be developed in consultation with USFWS. However, a typical mitigation ratio for loss of CRLF habitat is 3:1. Replacement can be conducted offsite through purchase of mitigation credits at an approved mitigation bank. 4. All onsite workers shall attend a CRLF information session conducted by the designated monitor prior to beginning work onsite. This session would cover identification of the species and procedures to be followed if an individual is found onsite, as well as basic site rules meant to protect biological resources, such as speed limits, no littering, and no smoking. **Northwestern pond turtle** A survey shall be performed 24 hours prior to the start of construction activities near the freshwater	S	LSM

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TABLE 2-3
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (CENTRAL SITE ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	pond located on the Central Site. If a turtle is found in the freshwater pond, the DFG-approved biologist shall try to passively move the turtle out of the area. If a turtle becomes trapped during construction activities in the freshwater pond, a biologist shall remove the turtle from the work area and place it in a suitable habitat in the vicinity of the project. If a turtle is discovered in the construction area during active operations the equipment operator or equivalent will temporarily cease operations per the biologist's direction until the biologist has moved the turtle away from the construction area and/or out of harm's way. **White-tailed kite and other raptors** A survey shall be conducted two weeks prior to the start of construction activities in suitable nesting habitats such as trees and tall shrubs. If an active nest is found in the construction area, the SCWMA shall consult with the Department of Fish and Game (DFG) to implement appropriate measures to reduce impacts to the nesting effort. The SCWMA shall ensure the following measures are implemented to reduce impacts to white-tailed kites and other raptor species: 1. Maintain a 500-foot buffer or a buffer distance agreed to with DFG around each active raptor nest; no construction activities shall be permitted within this buffer except as a result of consultation with DFG. 2. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined in consultation with DFG), the nest(s) shall be monitored by a qualified biologist during construction within the buffer. If, in the professional opinion of the monitor, the project would impact the nest, the biologist shall immediately inform the construction manager and DFG. The construction manager shall stop construction activities within the buffer until either the nest is no longer active or the project receives approval to continue from DFG. 3. If tree removal is necessary, it shall be conducted outside of the breeding season (between February and October). Loss of a nest tree shall be compensated according to CDFG guidance. **Hoary Bat and other sensitive bat species** 1. A survey shall be conducted two calendar weeks prior to initiation of construction activity in suitable bat roosting habitat (e.g. abandoned buildings, rock crevices, under tree bark, hollow trees, culverts, under bridges, or other dark crevices). The pre-construction bat survey shall be performed by a DFG-approved wildlife biologist or other qualified professional. 2. If a female or maternity colony of bats are found on the project site and the project can be constructed without the elimination or disturbance of the roosting colony (e.g., if the colony roosts in an area not planned for removal), a qualified wildlife biologist shall determine what physical and timed buffer zones shall be employed to ensure the continued success of the colony. Such buffer zones may include a construction-free barrier of 250 feet from the roost and/or the timing of the construction activities outside of the maternity roost season (typically May to August). 3. If an active nursery roost is known to occur on site and the project cannot be conducted outside of the maternity roosting season, bats shall be excluded from the site after August and before May to prevent the formation of maternity colonies. If a non-breeding pallid bat is found in a tree scheduled		

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TABLE 2-3
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (CENTRAL SITE ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	to be removed, the applicant will apply for a memorandum of understanding (MOU) with DFG. The bats shall be safely evicted within the guidelines of the MOU under the direction of a qualified bat biologist by opening the roosting area at dusk to allow air flow through the cavity, or by an alternative measure that does not result in adverse impacts. Tree removal shall then follow no later than the following day (i.e. there would be not less than one night between the initial disturbance for airflow and the removal). This action should allow bats to leave during the dark hours, thus increasing their chance of finding roots with a minimum of potential predation during daylight. **Showy Rancheria clover** Implement Mitigation Measure 6.3b.		
26. Cultural Resources/Central Site			
Impact 26.1: The Central Alternative could inadvertently discover archaeological resources.	**Mitigation Measure 26.1:** Halt work if cultural resources are discovered during ground-disturbing activities. Implement Mitigation Measure 7.2.	S	LSM
Impact 26.2: The Central Site Alternative could inadvertently discover human remains.	**Mitigation Measure 26.2:** Implement Mitigation Measure 7.3.	S	LSM
Impact 26.3: The Central Site Alternative could inadvertently discover paleontological resources.	**Mitigation Measure 26.3:** Implement Mitigation Measure 7.4.	S	LSM
27. Hydrology and Water Quality/Central Site			
Impact 27.1: The Central Site Alternative could violate a water quality standard or waste discharge requirement, or otherwise substantially degrade water quality.	**Mitigation Measure 27.1**: Implement Mitigation Measures 8.1a and 8.1b.	S	LSM
Impact 27.2: The Central Site Alternative could 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 or conflict with Sonoma County General Plan policies regarding groundwater.	**Mitigation Measure 27.2**: Implement Mitigation Measures 8.2a and 8.2b	S	LSM
Impact 27.3: The Central Site Alternative could 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 which would result in substantial erosion or siltation on- or off-site, or result in flooding on- or off-site.	**Mitigation Measure 27.3.** Implement Mitigation Measures 8.3b.	S	LSM
Impact 27.4: The Central Site Alternative could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	**Mitigation Measure 27.4**. Implement Mitigation Measure 8.3b	S	LSM

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TABLE 2-3
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (CENTRAL SITE ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
28. Land Use and Agriculture/Central Site			
Impact 28.1: The Central Site Alternative has the potential to physically divide an established community.	None required.	LS	LS
Impact 28.2: The Central Site Alternative would not conflict with the Sonoma County General Plan or Zoning Ordinance.	None required.	LS	LS
Impact 28.3: The Central Site Alternative would result in the conversion of agricultural land, specifically Grazing Land.	None required.	LS	LS
Impact 28.4: The Central Site Alternative would not conflict with an existing Williamson Act Contract.	None required.	NI	NI
29. Noise/Central Site			
Impact 29.1: Construction at the Central Site Alternative could expose persons to or generate excessive noise levels.	**Mitigation Measure 29.1:** Implement Mitigation Measure 10.1.	S	LSM
Impact 29.2: Operation of the Central Site Alternative composting facility could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies.	**Mitigation Measure 29.2a:** Implement Mitigation Measure 10.2 (ASP equipment control). **Mitigation Measure 29.2b:** The site design shall include sound walls or earthen berms that would block the line of sight to the nearest sensitive receptors to the northeast and the south. **Mitigation Measure 29.2c**: Operational equipment noise shall be minimized by muffling and shielding intakes and exhaust on equipment (per the manufacturer's specifications).	S	SU
Impact 29.3: Traffic associated with operation of the Central Site Alternative could result in an increase in ambient noise levels on nearby roadways used to access the project site.	None required.	LS	LS
Impact 29.4: Blasting that would occur under the project would generate temporary airborne and groundborne noise and vibration.	**Measure 29.4a:** A site specific blasting plan shall be prepared. The blasting plan shall ensure that ground motions do not exceed 0.5 in/s at the nearest residence and determine the appropriate vibration threshold for nearby structures at the time of the blasting. **Measure 29.4b:** The blasting plan shall require monitoring of ground vibration and air-overpressure at a minimum of two locations to ensure these effects remain under threshold levels. One location should be close to the nearest residential property. The second monitoring point should be the adjacent landfill property. **Measure 29.4c:** Blasting shall be limited to daytime hours between 10:00 a.m. and 4:00 p.m. **Measure 29.4d:** A blasting permit shall be obtained from the Sonoma County Sheriff's Department prior to any blasting. **Measure 29.4e:** Discuss the blast monitoring program with the stakeholders in the project area that could be affected by blasting vibration. Educate property owners as to what is being done and why. Obtain information on time periods that are sensitive to blast activity. **Measure 29.4f:** Conduct a pre-blast survey to determine the condition of existing structures, and to alert homeowners that some rattling may be expected but damage is not expected. Contacts should be	S	LSM

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TABLE 2-3
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (CENTRAL SITE ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
	provided so that damage claims and complaints can be monitored and responded to quickly. **Measure 29.4g:** Schedule blasts to occur at approximately the same time on each blast day. Include this information in public announcements.		
Impact 29.5: Increases in traffic from the Central Site Alternative in combination with other development would result in cumulative noise increases.	None required.	LS	LS
30. Public Services and Utilities/Central Site			
Impact 30.1: The Central Site Alternative would generate solid waste which would require disposal at a landfill.	None required.	LS	LS
Impact 30.2: The Central Site Alternative and implementation of certain mitigations, would increase energy demands.	None required.	LS	LS
Impact 30.3: The Central Site Alternative would require law enforcement services from the Sonoma County Sheriff's Office.	None required.	LS	LS
Impact 30.4: The Central Site Alternative would increase demand for fire protection and emergency medical services including response to wildland fires.	None required.	LS	LS
Impact 30.5: The Central Site Alternative would include new stormwater drainage facilities, the construction of which could create impacts.	None Required.	LS	LS
31. Traffic and Transportation/Central Site			
Impact 31.1: The Central Site Alternative would contribute to Near-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour.	None required.	LS	LS
Impact 31.2: The Central Site Alternative could worsen traffic safety due to design features or incompatible uses.	None required.	LS	LS
Impact 31.3: The Central Site Alternative would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation.	**Mitigation Measure 31.3a:** Implement Mitigation Measure 12.3a. **Mitigation Measure 31.3b:** The operator shall be required to conduct regular sweeping of the intersection of Mecham Road at the Central Site access road so that the intersection remains free of debris and dirt that may accumulate from exiting trucks.	S	LSM

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TABLE 2-3
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (CENTRAL SITE ALTERNATIVE)

Impact	Mitigation Measure	Impact Significance: Before Mitigation	Impact Significance: After Mitigation
Impact 31.4: The Central Site Alternative would generate turning movements by heavy vehicles to and from Mecham Road, and could increase the potential for conflicts between Central Site Alternative traffic and through traffic.	None required.	LS	LS
Impact 31.5: The Central Site Alternative would contribute to Long-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour.	None required.	LS	LS
Impact 31.6: The Central Site Alternative could worsen traffic safety due to design features or incompatible uses.	None required.	LS	LS
Impact 31.7: The Central Site Alternative would generate turning movements by heavy vehicles to and from Mecham Road, and could increase the potential for conflicts between Central Site Alternative traffic and through traffic.	None required.	LS	LS
Impact 31.8: The Central Site Alternative would contribute to the degradation of pavement on public roads.	None required.	LS	LS
Impact 31.9: Project construction would result in temporary increases in truck traffic and construction worker traffic.	**Mitigation Measure 31.9:** Implement Mitigation Measure 12.8	S	LSM
32. Aesthetics/Central Site			
Impact 32.1: The Central Site Alternative would alter the visual character of the Central Site.	**Mitigation Measure 32.1:** The alternative shall incorporate landscaping or other screening measures, such as the use of native trees and/or a vegetated berm, along the northwestern and southern boundaries of the Central Site composting area.	S	LSM
Impact 32.2: The Central Site alternative could result in the production of new sources of light and/or glare.	**Mitigation Measure 32.2:** Implement Mitigation Measure 13.2.	S	LSM

KEY: S - Significant SU – Significant and Unavoidable LS – Less than Significant LSM – Less than Significant with Mitigation NI – No Impact

CHAPTER 3
Project Description

3.1 Project Overview

The Sonoma County Waste Management Agency (SCWMA) is proposing to construct a new compost facility in Sonoma County (County) that would replace the existing compost facility at the Central Disposal Site. At project inception, design parameters of the proposed project included processing of up to 200,000 tons of compost feedstock per year on up to 70 acres of a 100-acre site. However, opportunities presented to the SCWMA after project initiation have allowed the SCWMA to add two other sites to this EIR at project-level detail. Any of these three sites (5A, 40, and Central Alternative) may be chosen for project implementation after legal certification of this EIR. The sites include:

- The project site (Site 5A) — a 70-acre compost facility located on 100 acres in unincorporated Sonoma County, approximately 6 miles southeast of the City of Petaluma, between Lakeville Road and the Petaluma River;
- The Site 40 Alternative — a 48-acre compost facility located on 390 acres unincorporated Sonoma County, located approximately 2.5 miles east of the City of Petaluma at the intersection of Adobe Road and Stage Gulch Road (State Route 116); and
- The Central Site Alternative — a 38-acre compost facility on the 400-acre Central Disposal Site, approximately 1.5 miles southwest of the City of Cotati, off of Mecham Road.

This chapter and Chapter 4 provide details of the three sites. Figure 3-1 shows the regional location of the three sites studied at project-level detail. More detailed site configurations can be found for Site 5a (Figures 3-2, 3-5 and 3-6), Site 40 (Figures 4-2, 4-3 and 4-4), and the Central Site (Figures 4-9. 4-10, and 4-11).

The project includes processing of green material[1] (yard waste), food material[2] and agricultural materials[3]. The following are examples of feedstocks received at the current facility which may

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1 "Green Material" means any plant material that is separated at the point of generation, contains no greater than 1.0 percent of physical contaminants by weight, and meets the requirements of section 17868.5. Green material includes, but is not limited to, yard trimmings, untreated wood wastes, natural fiber products, and construction and demolition wood waste. Green material does not include food material, biosolids, mixed solid waste, material processed from commingled collection, wood containing lead-based paint or wood preservative, mixed construction or mixed demolition debris. (CCR Title 14, Chapter 3.1, Article 1, Section 17852)

2 "Food Material" means any material that was acquired for animal or human consumption, is separated from the municipal solid waste stream, and that does not meet the definition of "agricultural material." Food material may include material from food facilities as defined in Health and Safety Code section 113785, grocery stores, institutional cafeterias (such as, prisons, schools and hospitals) or residential food scrap collection. (CCR Title 14, Chapter 3.1, Article 1, Section 17852)

also be feedstocks for the project: green materials, chicken feathers and rice hulls (agricultural material), food materials, and bedding materials from a duck farm (to mix with other products). Non-hazardous liquid wastes may also be accepted as a substitute for the water that is added for efficient composting. The compost facility would use a windrow system, aerated static piles, or a combination of both systems.

The current location of SCWMA's compost facility has been considered temporary since its establishment at the Central Disposal Site in 1993. As a result of the composting operation being located on the landfill, future capacity for municipal waste disposal at the Central Disposal Site is restricted. This project would allow existing compost operations to be relocated from the current location at the County's Central Disposal Site.

3.2 Project Objectives

The primary objectives for implementing the proposed project are:

- Relocate SCWMA's composting operations from its current location at the County's Central Disposal Site.
- Establish a permanent composting facility in Sonoma County with sufficient capacity for current and future quantities.
- Provide a facility to assist jurisdictions within SCWMA's service area in meeting the goals and objectives for waste diversion as set forth in the California Integrated Waste Management Act of 1989 (AB 939).

3.3 Existing Compost Facility

The existing composting facility at the Central Disposal Site encompasses approximately 35 acres that is located above intermediate landfill cover at the currently inactive landfill. Composting operations use approximately 18 acres, with 12 acres of windrows. The current composting operation consists of the receipt of green material and wood waste, processing (grinding) of green material and wood waste, windrow composting of green material (yard trimmings with some commingled food scraps), and load-out of finished compost and processed wood waste. Associated activities include pre-processing/sorting, curing, storage/stockpiling, and screening and blending of materials. There are several sources of green material and wood waste including curbside collection, drop-offs from residents, and drop-offs from landscaping and other businesses.

Sonoma Compost Company (SCC) currently operates the existing composting facility at the Central Disposal Site under a contract to the SCWMA. SCC produces compost, mulch, and related products which are used by local growers, farmers, backyard gardeners, and professional landscapers. They also sell recycled lumber and firewood. A number of products produced by SCC including Sonoma Compost, Mallard Mulch, Hi-Test, and Early/Vineyard Mulch are all listed as "Allowed" materials

[3] "Agricultural Material" means material of plant or animal origin, which result from the production and processing of farm, ranch, agricultural, horticultural, aquacultural, silvicultural, floricultural, vermicultural, or viticultural products, including manures, orchard and vineyard prunings, and crop residues. (CCR Title 14, Chapter 3.1, Article 1, Section 17852)

by the Organic Materials Review Institute (OMRI) for use in the production of organic food and fiber (Sonoma Compost Company, 2009a).

Table 3-1 provides a summary of the volume of green material and wood waste received at the compost facility from 2000 to 2008. In 2008 approximately 88,000 tons of green material was processed by SCC. The volume of green material received by the compost facility shows an upward trend over time. This upward trend is anticipated to continue due to influences such as population growth, maturity of landscape, and increased outreach to capture more green materials from the waste stream. SCWMA conducted a Waste Characterization Study in 2007 which found that 32.1 percent of the waste stream is potentially compostable (SCWMA, 2007). Applying this percentage to the 439,293 tons of waste reported in 2007 (SCWMA, 2009), approximately 141,000 tons in the existing waste stream are potentially compostable with increased outreach.

TABLE 3-1
GREEN MATERIAL AND WOOD WASTE VOLUMES
FOR SONOMA COMPOST COMPANY

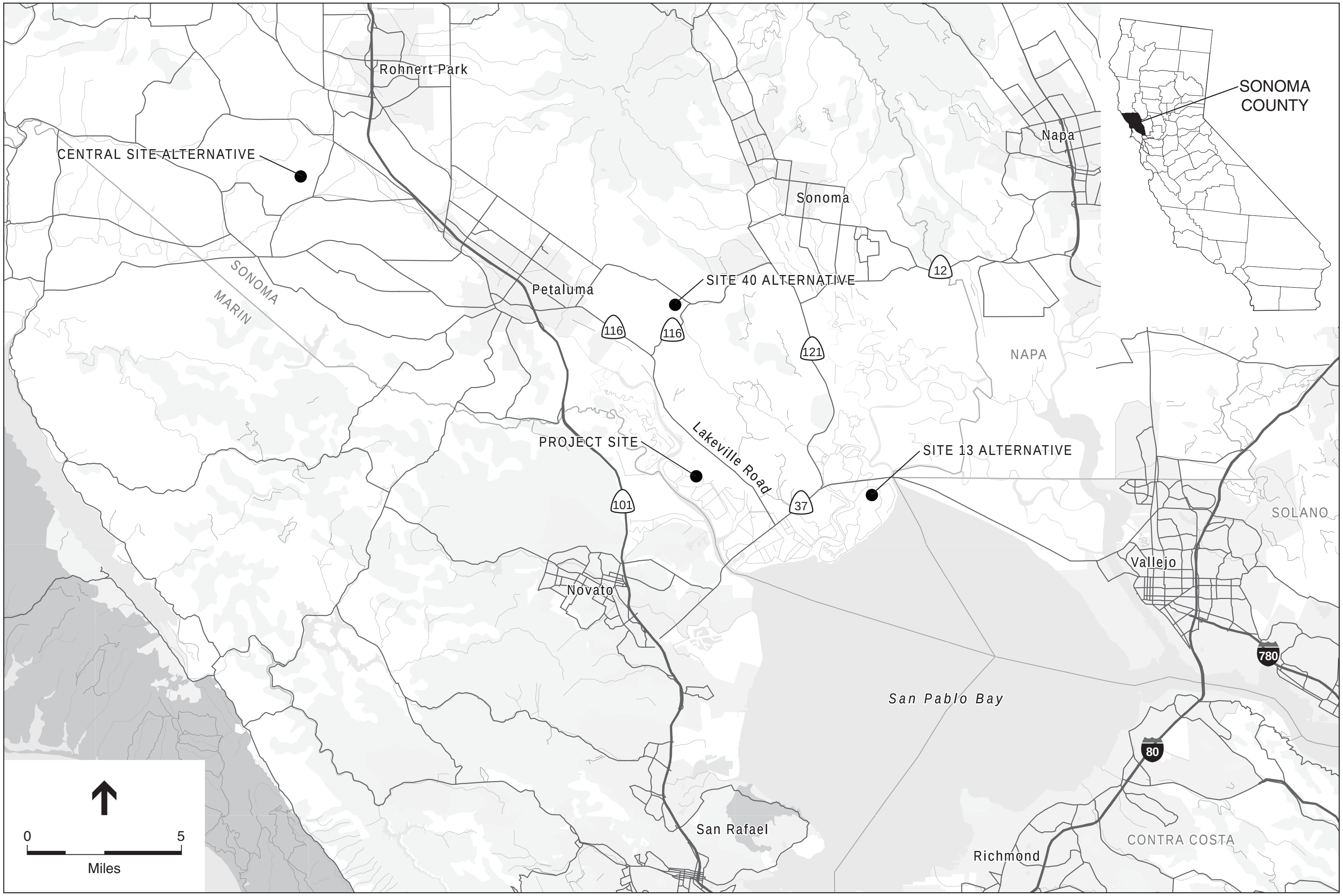
Year	Green Material (Tons/Year)	Wood Waste (Tons/Year)
2000	62,433	12,373
2001	63,336	10,038
2002	69,606	9,086
2003	76,025	10,777
2004	74,383	10,922
2005	75,252	10,593
2006	83,928	9,804
2007	85,951	9,566
2008*	87,825	7,480

* November and December estimated for 2008 data.

SOURCE: Sonoma Compost Company, 2009b

3.4 Project Site and Vicinity Description

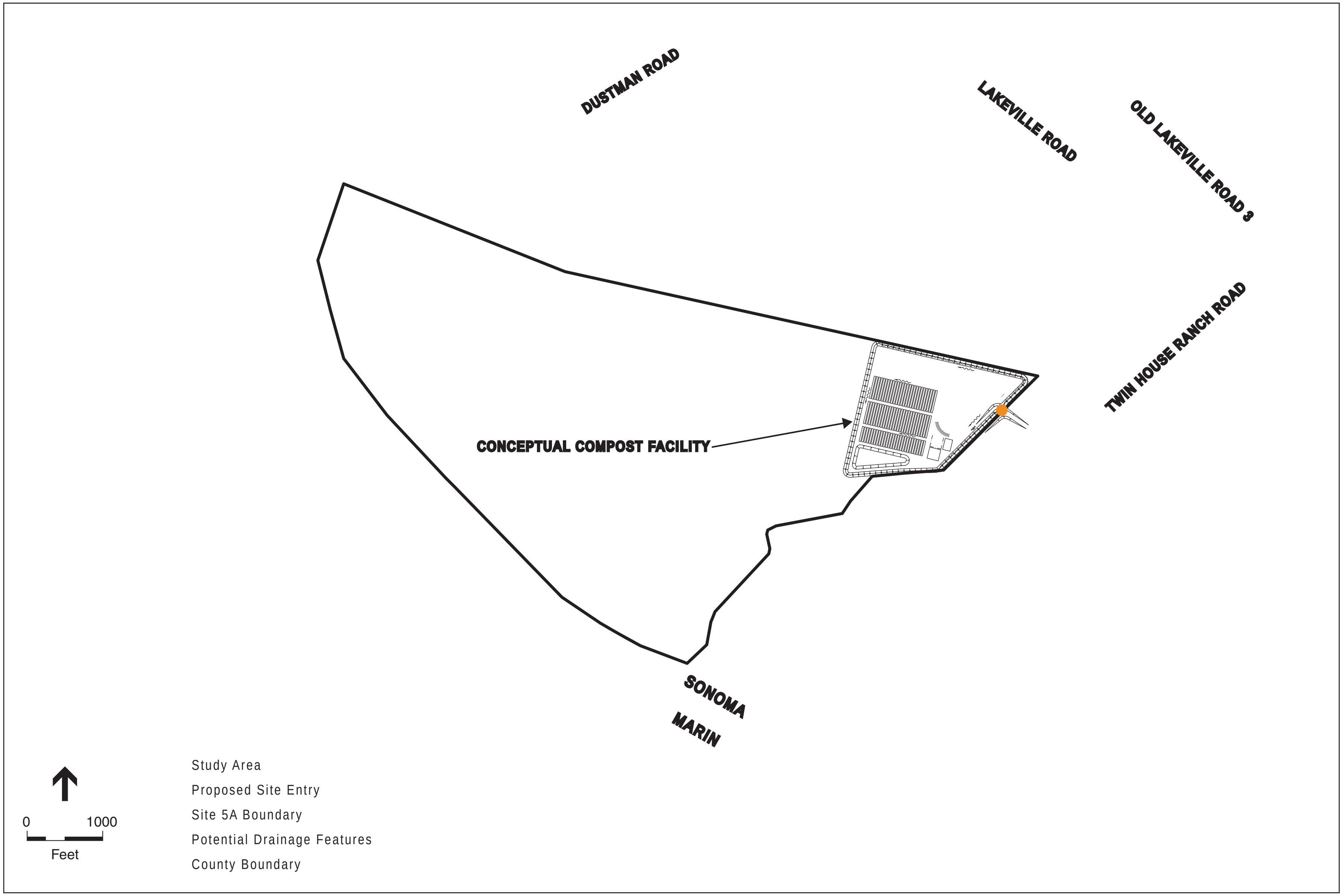
The project site (Site 5A) includes approximately 100 acres in unincorporated Sonoma County. The proposed project would have an initial operational footprint of approximately 70 acres on the project site which includes the levee and footprint within the project levee. The remaining 30 acres of the western portion of the project site would be used as a buffer and potential expansion area. Any future site expansion would be subject to further CEQA review. The project site is located near the Petaluma River, approximately 6 miles southeast of the City of Petaluma and approximately 4.5 miles northeast of the northern shore of the San Pablo Bay (**Figure 3-1**). The project site and vicinity is shown in **Figure 3-2**. The project site is under private ownership, undeveloped and used for hay farming and grazing. There are no structures, paved roadways or utility infrastructure on the project site. Local access to the project site is provided by Twin House Ranch Road via Lakeville Road. Regional access from major population centers in Sonoma County is provided by U.S. Highway 101, State Route 116 (the Lakeville Highway) and Lakeville Road (a County Road).



SOURCE: DeLorme Street Atlas, 2000; and ESA, 2009

SCWMA Compost Facility EIR . 207312

Figure 3-1
Regional Map



SOURCE: NAIP, 2006; ESRI, 2007; and ESA, 2009

Figure 3-2
Project Site Vicinity

The 70-acre compost facility would be located on a 100-acre project site, which is part of a larger 627-acre parcel (Assessors Parcel Number 068-120-002) that was the most highly ranked potential compost site with a willing seller at the time of the decision to proceed with the EIR. The site was indentified as “Site 5A” in the siting study prepared for SCWMA (HDR Engineering, Inc., 2008). It is the intent of the site owner to continue agricultural uses on the remaining portion of the parcel not used for the compost facility. A subdivision of the property would be required to allow for the purchase of the 100-acre project site.

The majority of land uses in the vicinity of the project site are agricultural in nature (e.g., row crops, vineyards, grazing, and dairy) including the uses immediately surrounding the project site. Two unnamed drainages cross the site, generally from east to west. To the north and west are agricultural lands. Vineyard crops are located immediately east of the project site. A fallow field is located just south of the project site.

Nearby businesses include the Riverside Equestrian Center located approximately 2,100 feet south of the project site, the Sleepy Hollow Dairy located approximately 2,600 feet to the east, and Whileaway Farm approximately 2,900 feet south of the project site. The nearest residences are east of Lakeville Road approximately 3,600 feet and 3,700 feet from the project site. The Marin County Airport (Gnoss Field) is located approximately 2 miles west of the project site, on the west side of the Petaluma River.

3.5 Project’s Technical, Economic, and Environmental Characteristics

Facility development would occur on the eastern portion of the parcel due to site access, runoff/drainage and flooding avoidance considerations (**Figure 3-2)**. The project would include an outdoor composting system, similar to the system currently used at the existing composting operations at the Central Disposal Site. The new site would include windrows, aerated static piles, or a combination of the two systems. The project would also include an entrance/exit scale, material sorting and processing areas, composting operations, wood chipping and grinding areas, on-site access roads, buffer zones, a sales area for wood and compost, a single-story administrative and maintenance building, a food pre-processing building, compost curing areas, storage areas, and a stormwater detention pond. Access to the site would continue to be provided by Twin House Ranch Road via Lakeville Road.

Based on the volumes processed at the existing composting facility, the new facility will need to process approximately 100,000 tons per year of green material and 8,000 tons per year of wood waste initially. Ultimately the new compost facility may process up to 200,000 tons of green material and 16,000 tons of wood waste.

Hours of Operation

The existing composting facility located at the Sonoma County Central Disposal Site (Sonoma Compost Company) currently accepts material during the hours of 7:00 a.m. to 3:00 p.m.

Monday through Saturday, with general operation of the facility during the hours of 6:30 a.m. to 5:30 p.m.[4] Although the project may be open to the public on Sundays, the hours of operation would not change for the project.

Compost Processing Options

There are two compost processing options: Option 1 is composting in windrows. Option 2 is composting using aerated static pile technology. The following is a general discussion of the two types of composting options and associated features. It is possible that the ultimate system may be a combination of windrow and aerated static pile.

Option 1 – Open Windrows

Windrow composting is the production of compost by piling organic materials, such as green material in long rows (windrows). This method is suited to producing large volumes of compost and is the most common method of composting in California. The windrows are typically turned to improve porosity, to achieve through mixing of feedstocks, and to redistribute cooler and hotter portions of the pile. Process control parameters include carbon to nitrogen ratio, pile size, temperature, moisture content, porosity, and turning frequency. **Figure 3-3** includes photos of SCC's windrow composting operations at the Central Disposal Site.

Option 2 – Aerated Static Piles

Aerated static piles (ASPs) are compost piles that are mechanically aerated either by a blower that pushes or a pump that pulls air through the piles. Typically ASP systems are not turned as frequently as a windrow system. The project option proposes a conceptual aerated static pile design that has the air pulled through the static piles to an air collection plenum (or piping network) and then discharges the air to a biofilter to control odors and air contaminants.

The aerated piles would typically be 10 to 12 feet high. Two of the main advantages of this type of system are (1) that the process air can be collected for odor control and control of other air contaminants, and (2) the footprint of the composting area can be reduced. The disadvantage is lack of flexibility because of the need to have a very homogeneous initial mix of feedstock materials. More information on different ASP composting systems can be found in Appendices ASP-1, ASP-2, and ASP-3.

Facility Process Description

The compost manufacturing process would consist of approximately 6 major processing steps. These are described below:

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4 The facility is permitted to accept material on Sundays too, but due to budgetary considerations, the site is currently closed to the general public on Sundays.

PHOTOGRAPH 1. Typical windrows (Sonoma Compost Company).

PHOTOGRAPH 2. Typical storage areas for finished compost (Sonoma Compost Company).

SOURCE: ESA, 2007

Figure 3-3a
Typical Windrow Composting Operations

PHOTOGRAPH 3. Front end loader handling incoming green material (Sonoma Compost Company).

PHOTOGRAPH 4. Windrow turner.

SOURCE: ESA, 2007

Figure 3-3b
Typical Windrow Composting Operations

Material Receiving

Arriving materials would be consolidated in a receiving area prior to being processed. The first process at the facility would be to prepare the feedstock materials for the composting process by grinding or shredding the materials. Some of the incoming processed material would be screened prior to composting. For example, some of the processed wood waste could be screened and the oversize fraction would be sent off-site for biofuel. The grinder(s) would be diesel or electrically powered. Processed material could be temporarily stored in the vicinity of the processing equipment until it is convenient or necessary to remove/relocate the materials for composting or bulk storage. Materials would be predominantly managed by front-end loaders. Processed feedstock materials would be loaded directly into a trailer or dump truck for delivery to the compost areas, or stockpiled in the processing area.

Composting

As described above, once processed, the materials would be moved into the composting area for composting. The materials would be composted using either a turned windrow technology (elongated piles) or an aerated static pile technology or a combination of the two. For example, feedstock materials containing a large proportion of food scraps could be mixed with processed green material and placed into an aerated static pile for a prescribed period of time for the initial composting phase. Once the initial composting is completed, the material could be moved into a windrow stage of composting.

Under either technology, water would be added to the feedstocks and they would be piled into the appropriate configuration.

Curing

Towards the end of the composting process the material is said to be “curing”. Compost to be cured would be cured “in-place” or would be moved to a discreet pile for curing. Curing piles are typically larger than windrow or ASP piles.

Screening

Once the compost has completed the curing process, most, through not all of it would be screened using a large portable screening plant, such as a trommel screen. Typically a trommel screen can separate the compost into two fractions: the “unders” or undersize fraction passing through the screen cloth and the “overs” or that which does not pass through the screen cloth. The “unders” are typically what is sold as compost (3/8 inch screen size is typical but certain markets specify different screen sizes). The “overs” are typically used to add additional structure back into the compost process; used as alternative daily cover at a landfill; sold for fuel; or for other uses.

Monitoring and Testing

The compost facility would be required to comply with California Code of Regulations to ensure public health and safety (Title 14, Chapter 3.1, Article 7, §17868.1-17868.4). The regulations require regular sampling of finished compost for compliance with heavy metals and pathogen reduction standards.

PHOTOGRAPH 1. Cedar Grove ASP Compost Facility, Everett, WA.

PHOTOGRAPH 2. Silver Springs Organics, LLC ASP Compost Facility in Tenino, WA.

SOURCE: ESA, 2009

Figure 3-4
Compost Facility Aerial Photographs –
Aerated Static Piles (ASP) at Existing Facilities

Heavy Metals: Title 14 requires all commercial composters to take a composite sample once per every 5,000 cubic yards of compost produced for heavy metals analysis. The metals and their limits are shown in **Table 3-2**:

TABLE 3-2
MAXIMUM ACCEPTABLE METAL CONCENTRATIONS

Parameter	Concentrations (mg/kg)
Arsenic (As)	41
Cadmium (Cd)	39
Copper (Cu)	1500
Lead (Pb)	300
Mercury (Hg)	17
Nickel (Ni)	420
Selenium (Se)	36
Zinc (Zn)	2800

SOURCE: CIWMB Title 14, Chapter 3.1., Article 7, §17868(2), 2009

The metals limits are the same regardless of the compost technology used.

Pathogen Reduction: The pathogen reduction process is a two-part process that involves exposing the compost mass to a proscribed temperature for a specific amount of time, as well as documenting the success of the process via laboratory testing. The laboratory testing is the same regardless of compost technology. In California, all samples are required to be tested for both Fecal Coliform and Salmonella (Federal regulations for biosolids only require one or the other) as shown in **Table 3-3**. The time and temperature requirements vary depending on the technology used (windrows or aerated static piles).

TABLE 3-3
PATHOGEN LIMITS

Indicator Organism	Limit
Fecal Coliform	<1,000 MPN/gram
Salmonella	<3 MPN per 4 grams

SOURCE: Title 14, Chapter 3.1., Article 7, §17868(3)

Windrows. For windrow facilities, the composting mass must reach a temperature of 55° C (131° F) for a consecutive period of fifteen days. During the 15 days, the pile must be turned 5 times. This is designed to keep the hot interior of the pile at elevated temperatures for three days, followed by a turning which assures that all material gets exposed to the three days of elevated temperatures.

Aerated static piles. The pathogen reduction process is shorter for aerated static piles because the pile is insulated (with a layer of wood chips or a membrane cover). Therefore the pile has to achieve temperatures in excess of 55° C (131° F) for three days.

In practice, both types of systems (windrow and ASP) achieve high temperatures for longer than the prescribed period.

Loadout. Finished compost (and other products) would be stockpiled on site (subject to Enforcement Agency limitations) prior to being loaded out for delivery to end users. Loadout would include using front-end loaders to load a variety of trucks.

Other Operational Features:

RCSI: Operations of the Compost Facility would be guided by the description contained in the Report of Composting Site Information (RCSI). The RCSI is a regulatory document which also serves as a broad operations plan. The RCSI documents how the facility would meet state minimum standards for a number of aspects of the composting facility. The RCSI would describe site layout, facility processes, a schematic drawing, emergency provisions, identification of responsible oversight, and an Odor Impact Minimization Plan among other requirements (Title 14, Chapter 5, Article 3.2). This document would be prepared by the compost facility operator after the project is approved.

Fire Prevention: Composting facilities in California are required to comply with CCR Title 14 composting regulations (Title 14, Chapter 3.1. Article 6, §17867(8)) which requires operations to provide fire prevention, protection and control measures, including but not limited to:

- Temperature monitoring of windrows and aerated static piles
- Adequate water supply for fire suppression
- Isolation of potential ignition sources from combustible materials
- Fire-lanes shall be provided to allow fire control equipment access to all operation areas.

Given the nature of the facility, storing large quantities of combustible materials, site specific fire mitigations and safety features would likely be developed as part of the Conditional Use Permit process as well as the Solid Waste Facility Permit. As with the RCSI, these would be developed after the project is approved.

Water Demand

The required water volume to serve the project would need to accommodate an annual throughput of 200,000 tons of material. Although the quantity of water can vary depending on a variety of issues such as material feedstock moisture content, compost processing methods, wind, the use of tarps, etc. a facility of this size would require approximately 104,000 gallons per day (based on the annual water demand calculated in Appendix WSA) for a windrow system. Approximately half that amount (52,000 gallons per day) would be required for an ASP system.

Water demands for the proposed project are based on estimates from similar uses in other settings as well as use of standard professional practices for estimating water needs. Estimates were determined based off of assumed feedstock moisture content and the amount of water needed to keep the compost piles sufficiently wet to allow for the composting process. The numbers were compared to other compost facility operations and found to be consistent with those facilities.

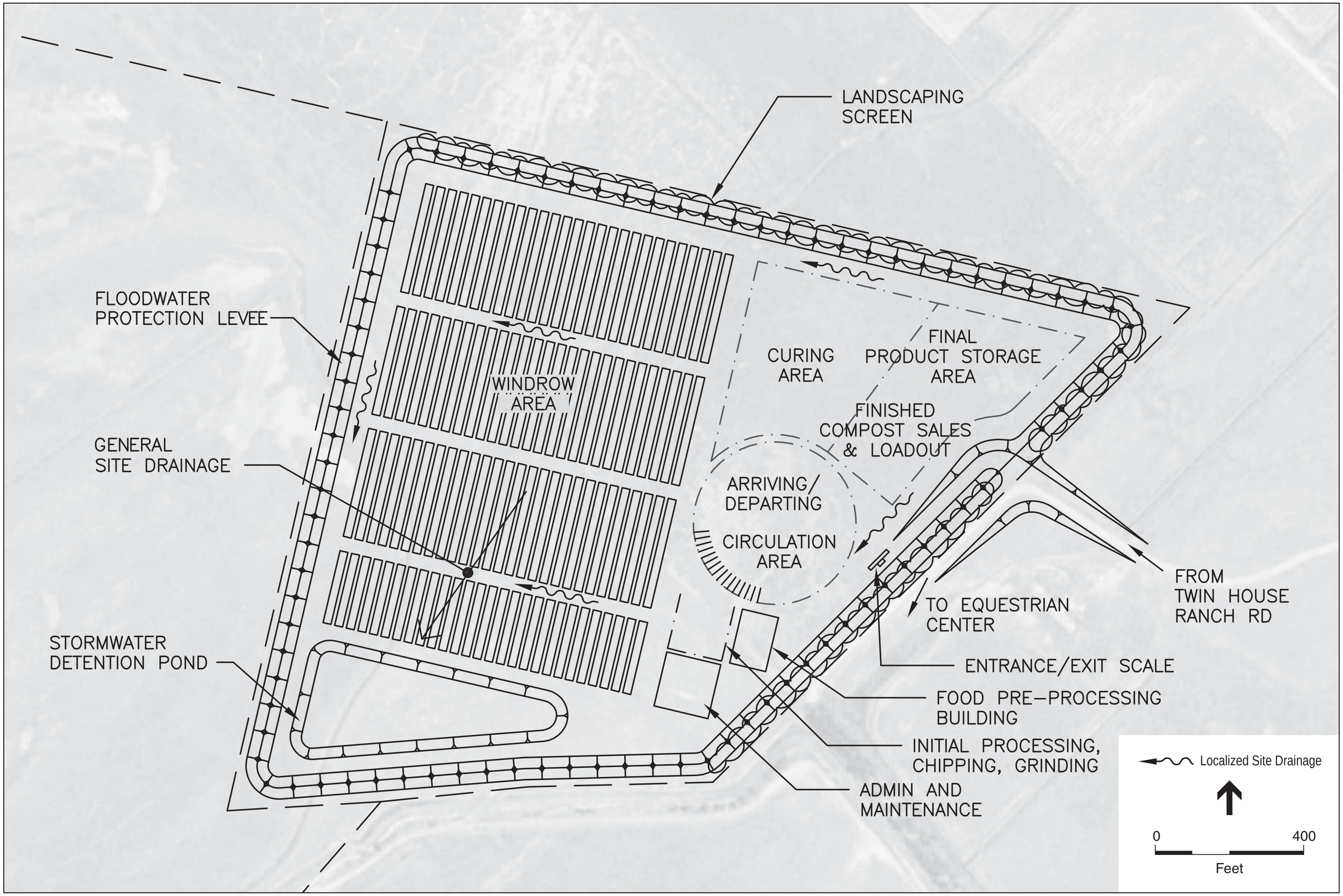
Required Facilities

The following is a summary description of the physical improvements at the project site. The proposed layout for Option 1 – Open Windrows on the project site is provided as **Figure 3-5**. Under this option, the open windrow compost processing area would occupy approximately 24 acres. The proposed layout for Option 2 – ASPs is presented in **Figure 3-6**. Under this option, the ASP windrow and biofilter areas would occupy approximately 15 acres and 2 acres, respectively, with a total compost processing area of approximately 20 acres. Depending on operational features, feedstocks and regulatory requirements the layout could combine windrows and aerated static piles.

Windrow piles would vary in height up to a maximum of 12 feet. A drainage system would be incorporated into the windrow area that would deliver any potential runoff from the compost site to the stormwater detention pond. Other site improvements would include the following:

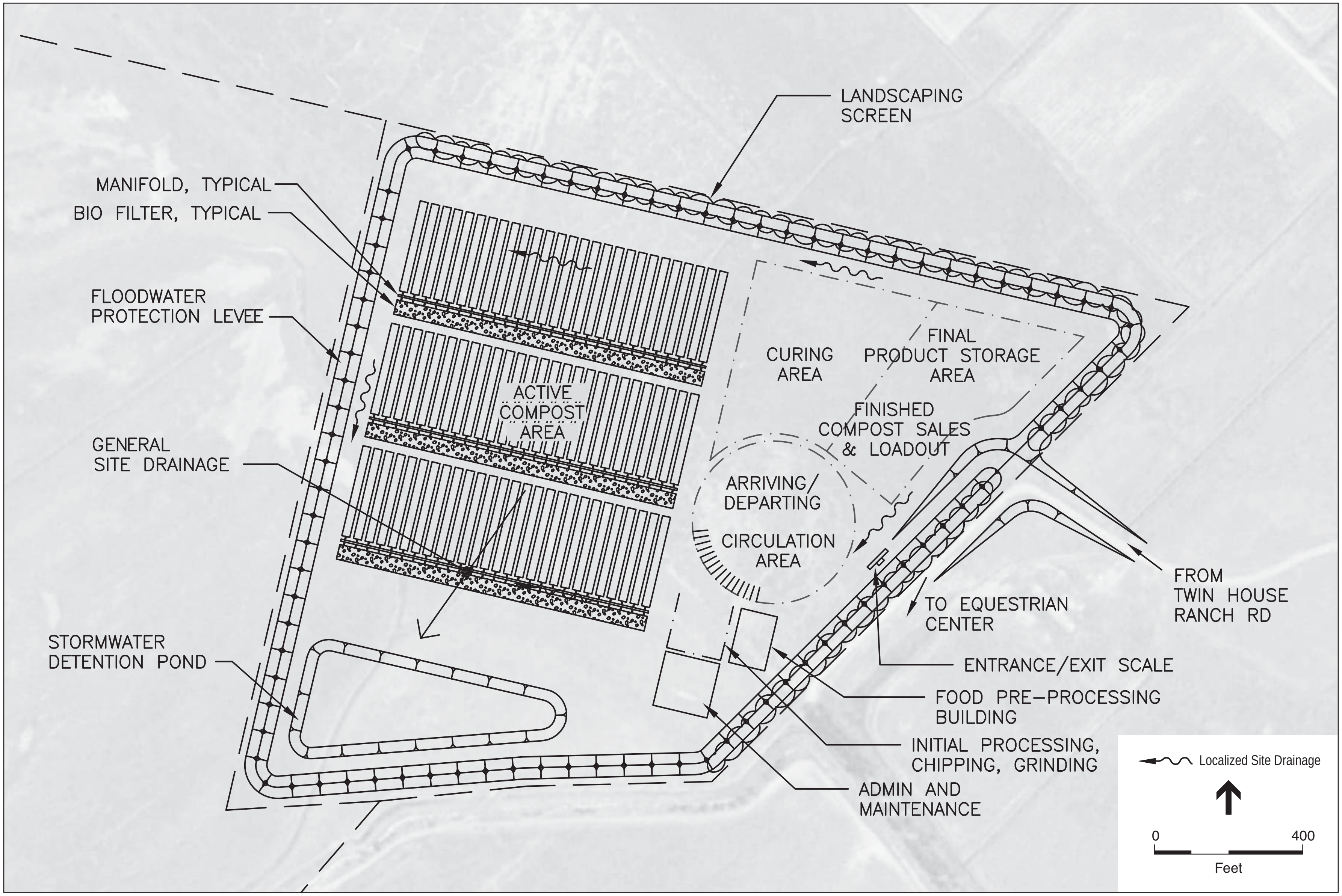
- Entrance road with entrance/exit scale;
- Arriving and departing circulation area;
- Initial processing, chipping and grinding pad;
- Curing pad;
- Administration and maintenance building (22,500 square feet). The office function includes space for employees to conduct regular business activities as well as break/dining and restroom facilities. The maintenance function includes: regular preventative maintenance, fueling and storage of operating equipment and storage of other operating supplies and spare parts.
- Employee parking in the Administrative and Maintenance area would be provided in accordance with Sonoma County requirements, such as the provision of 1 parking space per 250 square feet of floor area with a minimum of 4 spaces. Parking lots would be paved with asphalt.
- Final product storage pad
- Finished compost sales and loadout pad
- Stormwater detention pond-32 acre feet
- Landscaping buffer screen
- Biofilters (for Aerated Static Pile Option)

All project area stormwater runoff would be diverted and contained on the project site to a detention pond. In addition, the entire perimeter of the facility would contain an 8 foot high floodwater protection levee to protect the facility from off-site water intrusion in the event of 100-year flood conditions. The grading and drainage plans would direct all project site surface flows to the detention pond, thereby preventing any off-site discharges. Water in the detention ponds would be reapplied to the compost areas. The project would include new landscaping around the perimeter of the facility to effectively shield the view of the composting piles and buildings from public roads for visual enhancement.



SOURCE: HDR, 2009; and ESA, 2009

Figure 3-5
Project Site Windrow Layout



SOURCE: HDR, 2009; and ESA, 2009

SCWMA Compost Facility EIR . 207312

Figure 3-6
Project Site ASP Layout

Electrical service to the project site would be provided by PG&E. Overhead electrical lines currently serve adjacent parcels. The project would generate energy demands from operation of smaller building facilities including lighting and heating/cooling in offices as discussed in Chapter 11, Public Services and Utilities. Some processing equipment might also use electricity (grinders, blowers, etc). As natural gas service is not provided in the vicinity of the project it is likely that electric appliances or propane gas from local distributors would be used for heating.

Construction Methods

Site Preparation and Earthwork

Site preparation and earthwork would consist of stripping the area of existing vegetation and either removing or storing the materials for later use in the finished grading phase. Rough earthwork would consist of cutting or filling the site to produce overall site gradients as specified in the final design. In general surfaces would be graded to drain to a detention pond located at the lowest portion of the site. The drainages that cross the site would be relocated around the perimeter and properly designed to allow for conveyance of stormwater flows around the compost site. Additional rough grading features include construction of a perimeter levee. The perimeter levee serves two purposes: to prevent the site from flooding and as a visual barrier. The perimeter levee would require the importation of approximately 80,000 to 100,000 cubic yards of soil. A borrow site would need to be identified as a part of the final design or contractor procurement phase of the project to provide this quantity of soil. All soil would be imported from a borrow site permitted by the County of Sonoma for such a purpose.

Other rough grading features include the preparation of the primary operational areas such as the arriving and unloading area, building and maintenance areas, grinding and processing areas, curing and final product storage areas. Each of these areas would require specific grading and drainage features which would be rough graded in this phase of the project.

Buildings and Facilities

The buildings would be typical for industrial operations and would likely be prefabricated buildings. Buildings would be single-story and neutral in color.

Off-Site Improvements

Certain roadway improvements would be required as mitigation for the impacts caused by the proposed project. These improvements are detailed in the Chapter 12, Traffic and Transportation.

Other off-site improvements include provision for utilities to the site. Power is expected to extend to the site via above grade power poles which would be installed within the right-of-way but alongside the improved road.

3.6 Regulatory Requirements, Permits, and Approvals

The principal approval to initiate the project would be the approval of funding for the project that would be granted by the SCWMA. The SCWMA would use information contained in this EIR during the decision-making process. The SCWMA shall also approve the Water Supply Assessment prepared at a regular or special meeting. Permits and approvals from other agencies would be necessary prior to the development of the project. Known entitlements, permits, and approvals required for the project are identified below.

County of Sonoma

- Adoption of a County of Sonoma General Plan Amendment including re-designation of a portion of the site from Land Extensive Agriculture (LEA) to Public and Quasi Public (PQP)
- Sonoma County Department of Environmental Health (the Local Enforcement Agency) will require a Compostable Materials Handling Permit.
- Approval of Rezone from LEA District to Public Facilities (PF) District.
- Issuance of a Conditional Use Permit
- Design and site plan review and approval
- Approvals for road improvements
- Lot line adjustment
- Approval of grading and erosion control permits
- Issuance of building permits
- File a notice of non-renewal to begin the 9-year non-renewal process to terminate the Williamson Act contract, or get approval for public acquisition of land with a Williamson Act contract

Other Governmental Agency Approvals

Additional subsequent approvals and other permits that may be required from local, regional, state, and federal agencies are identified below.

- The Bay Area Air Quality Management District (BAAQMD) will require an authority to construct and a permit to operate for equipment that emits air pollution related to the operation of the project. BAAQMD may also consider regulating emissions from the compost process itself.
- The Department of Resources Recycling & Reuse (CalRecycle) must concur with the LEA issuance of the Compostables Materials Handling Permit.
- San Francisco Regional Water Quality Control Board may issue Waste Discharge Requirements.
- State Historic Preservation Office – project may need to comply with Historic Preservation Act Section 106 if a 404 Permit is required

- California Department of Fish and Game – Section 1600 et. seq. Streambed Alteration Agreement
- U.S Army Corps of Engineers – Clean Water Act Section 404 Permit, if the project affects jurisdictional waters; review of site levee design.
- RWQCB – Clean Water Act Section 401 Water Quality Certification, if the project affects jurisdictional waters
- Department of Conservation – approval of public acquisition of land under a Williamson Act contract

3.7 References

California Code of Regulations (CCR) Title 14, Chapter 3.1., Article 7, §17868(2)

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CHAPTER 4
Alternatives

4.1 Introduction

The California Environmental Quality Act (CEQA) requires an evaluation of the comparative effects of a range of reasonable alternatives to the project that would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project (*CEQA Guidelines* Section 15126.6(a)). The range of alternatives is governed by the "rule of reason" that requires the Environmental Impact Report (EIR) to set forth only those alternatives necessary to permit a reasoned choice (Section 15126.6(f)). The significant effects of the alternatives shall be discussed, but in less detail than the significant effects of the project (Section 15126.6(d)).

The EIR must assess the identified alternatives and determine which among the alternatives (including the project as proposed) is the environmentally superior alternative. One of the alternatives to be assessed is the "No Project" alternative (see discussion below). If the No Project alternative is identified as the environmentally superior alternative, then another of the remaining alternatives must be identified as the environmentally superior alternative.

This chapter discusses the following alternatives to the project:

1. No Project A – No Relocation of Compost Facilities Alternative
2. No Project B – No Central Composting Facility Alternative
3. Site 40 Alternative
4. Site 13 Alternative
5. Central Site Alternative
6. Limited Public Access Alternative

There are six alternatives considered: two versions of the No Project Alternative, three off-site alternatives, and an alternative (Limited Public Access Alternative) that modifies operations of the compost facility by limiting public access to reduce traffic at the facility. The components of these alternatives are described below, including a discussion of their impacts and how they would differ from the significant impacts of the proposed project. Site 13 and the Limited Public Access Alternative are analyzed to a level to determine impacts in comparison to the proposed project as required by CEQA. Site 40 Alternative and the Central Site Alternative go beyond the requirements of CEQA and are analyzed at essentially an equal level of detail as the proposed project. A discussion of the environmentally superior alternative is also included in this chapter.

The *CEQA Guidelines* require that an EIR briefly describe the rationale for selecting the alternatives to be discussed (Section 15126.6(a)), and suggest that an EIR also identify any alternatives that were considered by the lead agency but were rejected as infeasible (Section 15126.6(c)). This chapter of the EIR also addresses these issues.

4.2 Factors in Selection of Alternatives

The alternatives addressed in this EIR were selected in consideration of one or more of the following factors:

- the extent to which the alternative would accomplish most of the basic objectives of the project (see Chapter 3, Project Description);
- the extent to which the alternative would avoid or lessen any of the identified significant adverse environmental effects of the project;
- the feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, consistency with regulatory limitations, and whether the project sponsor can reasonably acquire, control, or otherwise have access to the site;
- the appropriateness of the alternative in contributing to a “reasonable range” of alternatives necessary to permit a reasoned choice; and
- the requirements of *CEQA Guidelines* to consider a “no project” alternative and to identify an “environmentally superior” alternative in addition to the no-project alternative (*CEQA Guidelines*, Section 15126.6).

As stated in Chapter 3, Project Description, the project objectives are:

Objective 1. Relocate Sonoma County Waste Management Agency’s (SCWMA) composting operations from its current location at the County’s Central Disposal Site

Objective 2. Establish a permanent composting facility in Sonoma County with sufficient capacity for current and future quantities.

Objective 3. Provide a facility to assist jurisdictions within SCWMA’s service area in meeting the goals and objectives for waste diversion as set forth in the California Integrated Waste Management Act of 1989 (AB 939).

In consideration of the above factors, six alternatives (including two variations of the No Project Alternative, plus two alternative sites) are analyzed in this EIR. Selection of off-site alternatives was guided by the Composting Facility Siting Study prepared for SCWMA (HDR Engineering, Inc., 2008). The siting study is also discussed in Chapter 2, Summary, Section 2.1. The study ranked 36 sites for use as a compost facility based on weighted scoring criteria. The scoring criteria were established by SCWMA and included transportation impacts, neighborhood impacts, environmental impacts, site costs, land use designation, visual impacts, and multi-use potential. The project site (Site 5A) ranked 4^{th}, Site 13 ranked 5^{th}, and Site 40 ranked 1^{st}. Sites 13 and 40 were considered potentially feasible due to their high ranking and analyzed as alternatives. Owners of the other highest ranked sites indicated to SCWMA staff that they were not available for purchase. As mentioned above, the analysis of the Site 40 and Central Site Alternatives go beyond the CEQA requirements for alternatives and are analyzed at essentially the same level of detail as the proposed project site (Site 5A). Because of its top ranking in the Siting Study, Site 40 might have been selected as the "proposed project" in the EIR, but at the time of the selection of the preferred project site (Site 5A), the Sonoma County Agricultural Preserve and Open Space District was in negotiations for the property. When those negotiations failed, the SCWMA added a detailed analysis of Site 40 to the EIR, which was already in progress with Site 5A as the proposed project and Sites 13 and 14 as the off-site Alternatives. Site 14 was originally an off-site alternative due to its ranking, but it was dropped as an alternative when Site 40 was added because Site 14 is adjacent to Site 13 and would not add substantial additional information to the range of alternatives being considered. This move was intended to broaden the range of alternatives considered and allow rapid approval of Site 40 if the SCWMA considers the Site 40 Alternative as the best project site after the EIR is certified.

The Central Site Alternative was analyzed at the same level of detail as the proposed project, due to the feasibility of the site. It is currently owned by Sonoma County and it is assumed that it would become accessible to the SCWMA by way of lease, rather than purchase. The site is adjacent to the existing compost facility. Analysis of this alternative at the same level as the project would allow rapid approval of the Central Site Alternative if the SCWMA considers the Central Site Alternative as the preferred project site after the EIR is certified.

4.3 Alternatives Eliminated from Further Consideration

The preferred project site and the off-site alternative locations were selected based on siting criteria determined by SCWMA and the resulting rankings in the siting study discussed above and the availability of the sites for sale. The SCWMA wants to avoid the need for use of eminent domain in acquiring a site for composting. Analysis of sites owned by unwilling sellers can also lead to delays and legal challenges that SCWMA wanted to avoid. Three of the sites selected for analysis (the project Site 5A, Alternative 13 and Alternative 40) in this EIR were among the top five ranked sites. The 33 remaining ranked sites as well as areas of the County screened from the ranking process were eliminated from further consideration in this EIR.

Anaerobic digestion is the biological decomposition of organic matter with little or no oxygen producing a biogas composed primarily of CO_2 and methane. Anaerobic decomposition (not digestion) yielding methane occurs naturally in marshes, wetlands, landfills, ruminants, and certain insects. There are a variety of controlled systems where anaerobic digestion technology is currently utilized in the United States including wastewater treatment facilities and dairy manure digesters and co-digesters. In other countries (primarily in Europe), anaerobic digestion technology is utilized to process and treat the organic fraction of municipal solid waste to recover energy and to reduce the volume of solid waste that must be landfilled.

Anaerobic digester (AD) facilities that process solid waste produce biogas and digestate (liquids and solids). The biogas consists primarily of methane (CH_4), which can be used for energy, and carbon dioxide (CO_2), with small amounts of hydrogen sulfide (H_2S), and ammonia (NH_3). Typically, biogas is saturated with water vapor and may have trace amounts of hydrogen (H_2), nitrogen (N_2), oxygen (O_2), dust and siloxanes.[1] Residual products from anaerobic digestion are liquid and solid residuals (digestate).

Currently there are no commercial-scale AD facilities processing organics in California; however, interest in developing AD facilities for organic processing is growing, and the California Department of Resources Recycling and Recovery (CalRecycle) anticipates that AD facilities will be developed across the state to meet the increasing need to divert organic waste from landfills. CalRecycle prepared a Statewide Program Environmental Impact Report (EIR) to assess the potential environmental effects that may result from the development of AD facilities in California (CalRecycle, 2011). The results of the Program EIR will inform future policy considerations related to AD facilities and provide background information on AD technologies, potential impacts and mitigation measures.

While it is possible that an anaerobic digester could be developed to process some of the materials currently composted in Sonoma County, and potentially other organic materials, the technology is not developed in California to the degree that this could be considered a feasible alternative for analysis at this time. Therefore, this alternative was eliminated from further consideration at this time. CalRecycle's Program EIR shows promise for anaerobic digestion technologies (CalRecycle, 2011). The Program EIR notes that compost facilities can work together with anaerobic digestion facilities, by providing pathogen reduction for the digestate from the anaerobic digestion facilities. The feasibility of anaerobic digestion facilities could be revisited at a future date, the use of which would be subject to additional environmental review.

Another alternative considered for this project was the use of a covered building. Only a very small percentage of composting facilities occur in buildings. Typically these are facilities that 1) are located in urban areas; and 2) are processing higher value feedstocks (like mixed solid waste (MSW) and/or biosolids) and/or 3) are located in areas exposed to severe weather impacts. In California, the majority of composting facilities use outdoor windrow composting. There are only two composting facilities in California that occur entirely in buildings - the Inland Empire Regional Composting Facility, which is located in an urban portion of Rancho Cucamonga and processes biosolids; and the Mariposa County Mixed Solid Waste Composting Facility. The Mariposa Facility was located in a building to provide the extensive process control required for composting mixed solid waste (as opposed to green material) and also because the project area has seasonally freezing temperatures. A third facility, the South Kern Regional Composting Facility in Taft (a large biosolids composting operation), has an enclosed receiving building, though the actual composting is done outside. There are no in-building composting facilities in California that process only green material.

Locating a composting facility within a building may solve some operational problems, but it creates others. Most in-building composting facilities were designed to prevent odors or to mitigate inclement weather. Locating the facility inside a building also adds significant costs. Due to the corrosive nature of the decomposition process (and the acids that are created) buildings must be carefully constructed and insulated or coated to prevent corrosion. In addition, the buildings must be carefully engineered

[1] Greer, Diane, 2010. *Fundamentals of Biogas Conditioning and Upgrading*. Biocycle Journal. February 2010.

to the specific project size, which allows little flexibility - once the building is built it can be extremely costly to expand the facility to adapt to changes in feedstocks or volumes. Composting facilities inside buildings must also have significant air removal systems to assure a safe working environment for employees. All of the additional venting required to provide a safe working environment combined with the air movement needed to aerate the composting mass can lead to significant electrical power loads for indoor composting facilities. The increased electrical load results in increases in greenhouse gas emissions. In addition, specialized equipment may be necessary to operate inside of a building as opposed to more standard equipment used in outdoor windrow facilities. For these reasons, this alternative was eliminated from further consideration.

4.4 No Project Alternative

Two scenarios are evaluated under the No Project Alternative, since it is not clear what the most likely future would be without the project. The two scenarios are described below as the No Project A Alternative and the No Project B Alternative.

No Project A Alternative – No Relocation of Compost Facilities

If the project is not approved, the proposed project site (Site 5A) would continue to be used for agricultural activities including hay farming and grazing. No composting facility would be developed on the project site and there would be no impacts on Site 5A from the project.

Under this alternative the composting facilities would remain at their current location at the Central Disposal Site in the short-term, until a new site is developed. This alternative could also be shortened due to permitting restrictions or other regulatory constraints at the existing compost facility. It is assumed that over the timeframe of the analysis for the project (through 2030) many changes in operation could also be required at the existing compost facility to be able to process up to 200,000 tons per year of compostable materials. Although the tonnage would double in comparison to existing operations, this analysis does not analyze in detail how the operations might change. It is possible that No Project A would expand the use of aerated static pile (ASP) composting at the site to increase material throughput. Sonoma Compost Company has been conducting a pilot ASP project at the existing facility to determine if ASP would (1) meet Sonoma Compost Company quality standards (2) increase material throughput, and (3) result in any new environmental issues that would need to be addressed if ASP is used on a larger scale (Sonoma Compost Company, 2009).

This alternative would meet one of the project objectives until 2013 (Objective 3 - to provide a facility to assist jurisdictions in meeting the goals and objectives for waste diversion as set forth by AB 939) as the existing composting operations would continue. This alternative would not meet the other two project objectives.

Environmental Impacts

Under the No Project A Alternative, no new development is proposed either on the project site or at the existing compost operations; however this alternative could require incremental changes in operations at the existing compost facility. Such changes would result in an intensification of compost operations at the existing facility but would not change the overall character of the existing compost facility, which currently handles approximately 100,000 tons of green material (including wood waste). Recent changes identified on the Sonoma Compost Company website include adding more area for composting and a pilot ASP project to determine if ASP could increase material throughput (Sonoma Compost Company, 2009).

Aesthetics

The No Project A Alternative would have less impact to aesthetics because, instead of developing a compost facility at a new site, this alternative would result in minor changes in the aesthetics at the existing compost facility at the Central Disposal Site. The existing compost facility is visually isolated with no viewpoints from public roadways.

Air Quality

The No Project A Alternative would have similar air quality impacts as development at a new site. The No Project A Alternative would have less impact from construction because the existing compost facility would not require the extensive construction that would be required to develop a compost facility at a new site. The No Project A Alternative would also be more centrally located in the County than the proposed project site, resulting in less air quality impacts from traffic for the No Project A Alternative. Because air quality emissions would occur at the existing compost facility and would not be generated at a new site, the localized air quality impacts (i.e., fugitive dust, odors, and toxic air contaminants) would continue to occur where they occur now, at the existing compost facility. Regional air pollutants, such as the ozone precursors (NOx and ROG) would still be generated in Sonoma County and would have a similar effect, regardless of whether the compost facility stays at the existing site or is moved to a new site. Development of a compost facility at a new site may lead to reduced emissions (in comparison to emissions at the existing compost facility), if the compost facility at the new site incorporates an ASP composting design that reduces both local and regional air pollutant emissions. Such modifications could also occur at the existing compost facility, which is conducting pilot tests of ASP composting. Another unknown factor would be future regulations that could mandate composting controls on air emissions regardless of the location of the composting facility. Any future mandated air emission controls for composting would tend to equalize emissions, whether they occur at the existing compost site or a new compost site.

Biological Resources

The No Project A Alternative would have less impact to biological resources than the development of a new compost facility at the proposed project site. Since no new development would occur, this alternative would avoid all potential impacts to biological resources associated with the project. Specifically, this alternative would avoid the significant impacts to Coastal Brackish Marsh, waters of the United States and/or waters of the state, and several special status species (albeit project impacts would be less than significant with mitigation).

Cultural Resources

The No Project A Alternative would have less impact to cultural resources than the development of a new compost facility at the proposed project site. This alternative would avoid all potential impacts to cultural resources associated with project. Specifically, this alternative would avoid significant impacts to a known archaeological site or potential disturbance of previously undiscovered archeological and paleontological resources on the project site (albeit project impacts would be less than significant with mitigation).

Hydrology and Water Quality

The No Project A Alternative would have less impact to hydrology and water quality than the development of a new compost facility at the proposed project site. This alternative would avoid all potential impacts associated with construction and operation on hydrology and water quality. Specifically, this alternative would avoid impacts to water quality due to construction activities, inconsistency with the Sonoma County General Plan regarding groundwater monitoring, and alteration of stormwater flows and surface drainages (albeit project impacts would be less than significant with mitigation). The existing composting facility already has established drainage facilities and containment in place, a system that has been developed and refined over a period of many years under the oversight of the North Coast Regional Water Quality Control Board. However, not moving the existing site could affect the capping and closure of the Central Landfill, thus having greater potential water quality impacts than the project.

Land Use Planning and Agriculture

The No Project A Alternative would have less impact to land use and agriculture than the development of a new compost facility at the proposed project site. Specifically, this alternative would avoid potential conflicts with airports associated with the proposed project.

Noise

The No Project A Alternative would have less impact to noise than the development of a new compost facility at the proposed project site off Twin House Ranch Road. Under this alternative, no new construction or other noise generating activities would occur and no vehicular traffic would be generated at the proposed project site off Twin House Ranch Road. Accordingly, this alternative would avoid significant noise impacts from construction associated with the project (albeit project impacts would be less than significant with mitigation). Traffic noise from vehicles going to the existing compost site is part of the current noise environment at that existing compost site and continued operations of the existing compost facility would result in minimal noise increases associated with increased volumes of compost.

Public Services and Utilities

Similar to the project, the No Project A Alternative would not increase demands on public services or utilities. Analysis of the project found no impacts to be significant after mitigation for this issue area.

Traffic and Transportation

The No Project A Alternative would generally have less impact to traffic and transportation than the development of a new compost facility at the proposed project site off Twin House Ranch Road.

No traffic would go to the proposed new compost facility and no construction would be needed to the intersection of Lakeville Road and Twin House Ranch Road.

Traffic going to the existing site is part of the current traffic environment at the existing compost site. However, future operations of the existing compost site would likely increase traffic. The No Project A Alternative would result in greater traffic impacts in the immediate vicinity of the existing compost facility.

In summary, the No Project A Alternative would have potentially greater impacts near the existing compost facility, but less impacts in the vicinity of the proposed new compost facility.

No Project B Alternative – No Countywide Composting Facility

No Project B Alternative considers the removal of the existing composting facility at the Central Disposal Site and no relocation at the Central Disposal Site, the proposed project site or either of the off-site alternatives; thus, under this alternative there would be no Countywide composting facility in Sonoma County for the currently collected green materials. This alternative would fail to meet all of the project objectives as composting operations would be discontinued in Sonoma County.

Environmental Impacts

It is uncertain what would happen to the green material that would no longer be composted at a Countywide facility in Sonoma County. The two most likely scenarios are that the majority of the collected green material would be would either be hauled to composting operations outside of the County or used as Alternative Daily Cover (ADC)[2] at the reopened Central Disposal Site, or at an out-of-County landfill. Private in-county composting facilities could be available in the County but they would not be anticipated to provide Countywide composting services to SCWMA, or County residents or businesses. Other than the existing composting facility at the Central Disposal Site, the capacity to compost the green material volumes generated by SCWMA members does not currently exist in Sonoma County.

The No Project B Alternative would avoid the impacts associated with the project as described under the No Project A Alternative and would also avoid any potential environmental impacts associated with existing composting facilities at the Central Disposal Site. This analysis considers the potential impacts from the potential alternative uses of the green material as ADC at the Central Disposal Site and impacts from hauling the material out of the County for composting or use as ADC.

Aesthetics

The No Project B Alternative would have less impact to aesthetics than the project because, instead of developing a compost facility at a new site, no new site would be developed. Any aesthetic impacts

[2] Alternative Daily Cover: Landfill operators are required to cover the active face of the landfill at the end of every day to prevent odors and risks to public health. Soil is traditionally used, but operators have found that other materials such as processed green waste, auto shredder fluff, and tarps can also be used for this same purpose.

would be minimal from using the green material as ADC at the Central Disposal Site or as a result of out-of-County hauling of materials to an existing compost facility or for use as ADC.

Air Quality

The No Project B Alternative would have the potential for less or greater overall air quality impacts depending on the air pollutants being considered and actual use of the materials that would no longer be composted in Sonoma County. Instead of developing a compost facility at a new site, no new site would be developed. This would eliminate all the potential localized air quality impacts (i.e., fugitive dust and odors) that would occur in the vicinity of the proposed new sites.

By ceasing composting operations at the Central Disposal Site, all the existing localized air quality impacts would be lessened at that location.

Depending on the ultimate use of the materials currently composted at the Central Disposal Site, regional air quality emissions could decrease or increase. If the currently composted materials are used as ADC (if the Central Landfill reopens), there could be a decrease in volatile organic compound VOC emissions from the No Project B Alternative (compared to the existing windrow composting at the site). If the currently composted materials are hauled out of Sonoma County for composting or use as ADC, the haul length would be important and the operations of the receiving facility would greatly affect the air emissions. Further analysis of any out-of-County hauling is speculative except to acknowledge that out-of-County hauling would increase transportation air quality emissions compared to similar operations (composting or ADC) occurring in the County.

It is assumed that greenhouse gases (GHGs) would increase with this alternative. Composting out of Sonoma County would have the same impacts as in Sonoma County but there would be increased GHGs from the transportation fuel used. ADC would increase methane production somewhat in any receiving landfill (as opposed to using soil for the landfill cover). Most of the methane would be captured and used for energy generation or flared, but some methane would escape as fugitive emissions. Because of the high potency of methane as a GHG (methane is approximately 23 times more potent than CO_2 as a GHG); the fugitive emissions of methane would probably result in an increase in GHGs in comparison to the amount of GHG emissions that would result from the same amount of material being used to make compost.

Biological Resources

The No Project B Alternative would have less impact to biological resources than the project because, instead of developing a compost facility at a new site, no new site would be developed. Any biological resource impacts would be minimal from using the green material as ADC at the Central Disposal Site or as a result of out-of-County hauling of materials to an existing compost facility or for use as ADC.

Cultural Resources

The No Project B Alternative would have less impact to cultural resources than the project because, instead of developing a compost facility at a new site, no new site would be developed. There are no anticipated cultural resource impacts from using the green material as ADC at the Central Disposal

Site or as a result of out-of-County hauling of materials to an existing compost facility or for use as ADC.

Hydrology and Water Quality

The No Project B Alternative would have less impact to hydrology and water quality than the project because, instead of developing a compost facility at a new site, no new site would be developed. Any hydrology and water quality impacts would be minimal from using the green material as ADC at the Central Disposal Site or as a result of out-of-County hauling of materials to an existing compost facility or for use as ADC.

Land Use Planning and Agriculture

The No Project B Alternative would have less impact to land use planning and agricultural resources than the project because, instead of developing a compost facility at a new site, no new site would be developed. There are no anticipated land use planning or agricultural resource impacts from using the green material as ADC at the Central Disposal Site or as a result of out-of-County hauling of materials to an existing compost facility or for use as ADC. It should be noted that this No Project Alternative B could result in less compost being available countywide for agricultural purposes.

Noise

The No Project B Alternative would have less impact to noise than the development of a new compost facility at one of the proposed new sites. Under this alternative, no new construction or other noise generating activities would occur and no vehicular traffic would be generated at the proposed new sites.

Any noise impacts would be minimal from using the green material as ADC at the Central Disposal Site or as a result of out-of-County hauling of materials to an existing compost facility or for use as ADC.

Public Services and Utilities

Similar to the project, the No Project B Alternative would not increase demands on public services or utilities. Analysis of the project found no impacts to be significant after mitigation for this issue area.

Traffic and Transportation

The No Project B Alternative would generally have less impact to traffic and transportation than the development of a new compost facility at the proposed new sites. No traffic would go to the proposed new compost facility and no construction would be needed to the intersection of Lakeville Road and Twin House Ranch Road.

Any traffic going to the Central Disposal Site to deliver green materials for ADC or potentially as a transfer location out-of-County hauling would probably be less than the current traffic environment in this area from traffic going to the existing compost site.

In summary, the No Project B Alternative would probably have less traffic impacts than the current setting, both at the Central Disposal Site and at the proposed new sites.

4.5 Site 40 Alternative

Overview

The Site 40 Alternative proposes the construction of a new central compost facility on Site 40. As with the proposed project, the Site 40 Alternative would replace the existing compost facility at the Central Disposal Site and would have the capacity to process approximately 200,000 tons of incoming feedstock materials per year. Processing would include green material, food material and agricultural materials. The compost facility would use an outdoor windrow system, ASP technology, or a combination of both systems. Under this alternative, no development is proposed on the project site (Site 5A).

Objectives

The Site 40 Alternative would meet all the primary objectives discussed above in Section 4.2.

Site 40 and Vicinity

Site 40 (Assessor's Parcel Number 068-040-015) includes 390 acres in unincorporated Sonoma County. Site 40 is located approximately 2.5 miles east of the City of Petaluma at the intersection of Adobe Road and Stage Gulch Road (State Route 116) as shown on **Figure 4-1**. An aerial photograph of Site 40 and the immediate vicinity is shown on **Figure 4-2**. The operational footprint or composting area would occupy approximately 48 acres in the western corner of Site 40 as shown on **Figure 4-2**.

The site is under private ownership and currently used for grazing of dairy cows and reclaimed water irrigation. The central portion of the site contains structures associated with dairy and livestock operations, a main residence, and a duplex. An unused dairy milking barn, several large livestock barns and associated equipment building are located west and south of the residence (dairy operations ceased in 2006). A narrow paved road on site provides access from Stage Gulch Road to the existing structures on Site 40. Regional access from major population centers in Sonoma County is provided by U.S. Highway 101.

Site 40 was the top ranking site in the siting study prepared for SCWMA (HDR Engineering, Inc., 2008), which is discussed in Chapter 2, Summary, Section 2.1. At the time of the study, the site was noted as having a pending sale and thus the site was not analyzed as the project site due to potential unavailability.

The majority of land uses surrounding Site 40 are agricultural in nature with areas of open space. A vineyard is located just east of Site 40. Single-family rural residences are scattered in the surrounding area and often present on sites with agricultural operations. Livestock operations such as dairy farming and grazing are located just north and south of Site 40. The closest residence to the Site 40 composting area is approximately 1,750 feet to the west. Other residences are approximately 1,835 feet to the east and 2,450 feet to the north. Urban development associated with the City of Petaluma is located approximately 2.5 miles west of Site 40. The Petaluma Municipal Airport is located approximately 3.25 miles west of Site 40.

Site 40 Alternative Characteristics

The Site 40 Alternative includes the same two processing options as the proposed project, open windrows (Option 1) and ASP (Option 2). It is also possible that the ultimate system may be a combination of open windrow and ASP. Facility development would occur on the western portion of the parcel due to topography (**Figure 4-2**) and would include construction cut and fill of 350,000 cubic yards and 200,000 cubic yards of soil, respectively. The compost-related facilities would be the same as the proposed project, including an entrance/exit scale, material sorting and processing areas, composting operations, wood chipping and grinding areas, on-site access roads, buffer zones, a sales area for wood and compost, an administrative and maintenance building, a food pre-processing building, compost curing areas, storage areas, and a stormwater detention pond. Access to the site would continue to be provided by Stage Gulch Road via Adobe Road and Lakeville Highway.

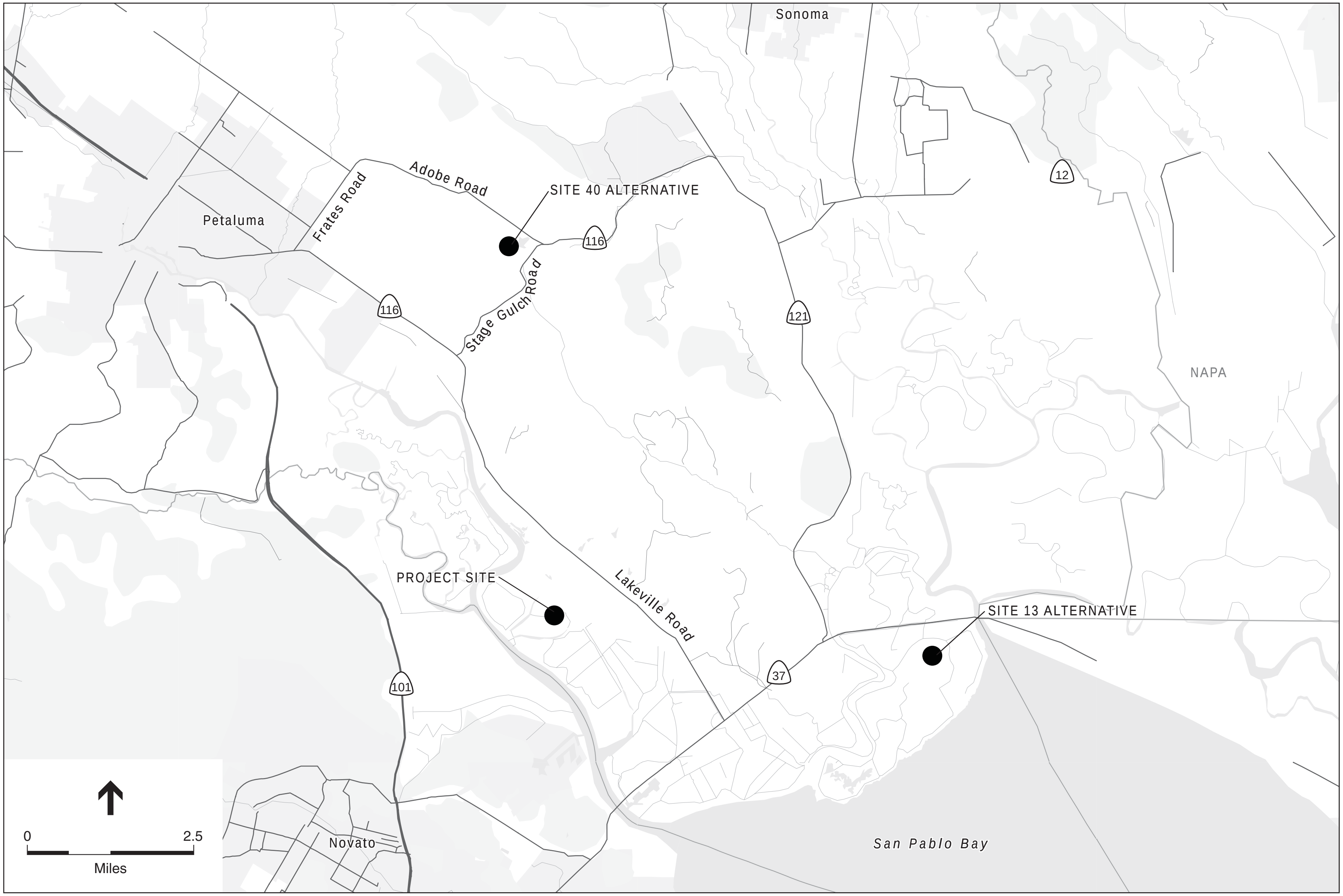
The proposed layout for Option 1 – Open Windrows on Site 40 is provided as **Figure 4-3**. Under this option, the open windrow area would occupy approximately 16.52 acres. The proposed layout for Option 2 – ASP is presented in **Figure 4-4**. Under this option, the ASP windrow and biofilter areas would occupy approximately 11 acres and 1.79 acres, respectively, with a total composting area of 14.74 acres. For either Option 1 or 2, the storm water detention pond would hold approximately 24 acre-feet. Depending on operational features, feedstocks and regulatory requirements the layout could combine windrows and ASP technology. A description of operations associated with each option is included in Chapter 3, Project Description, Section 3.5. In addition, the Site 40 Alternative would also be subject to the entitlements, permits, and approvals described in Chapter 3, Project Description, Section 3.6.

Environmental Analysis

The environmental impacts of the Site 40 Alternative are analyzed in Chapters 15 through 23. Several environmental issues were determined to be less than significant for the project and were not analyzed further in this EIR for the proposed project or other alternatives. As the Site 40 Alternative was analyzed to an equal level of analysis as the proposed project these issues are discussed briefly below.

Geology and Soils

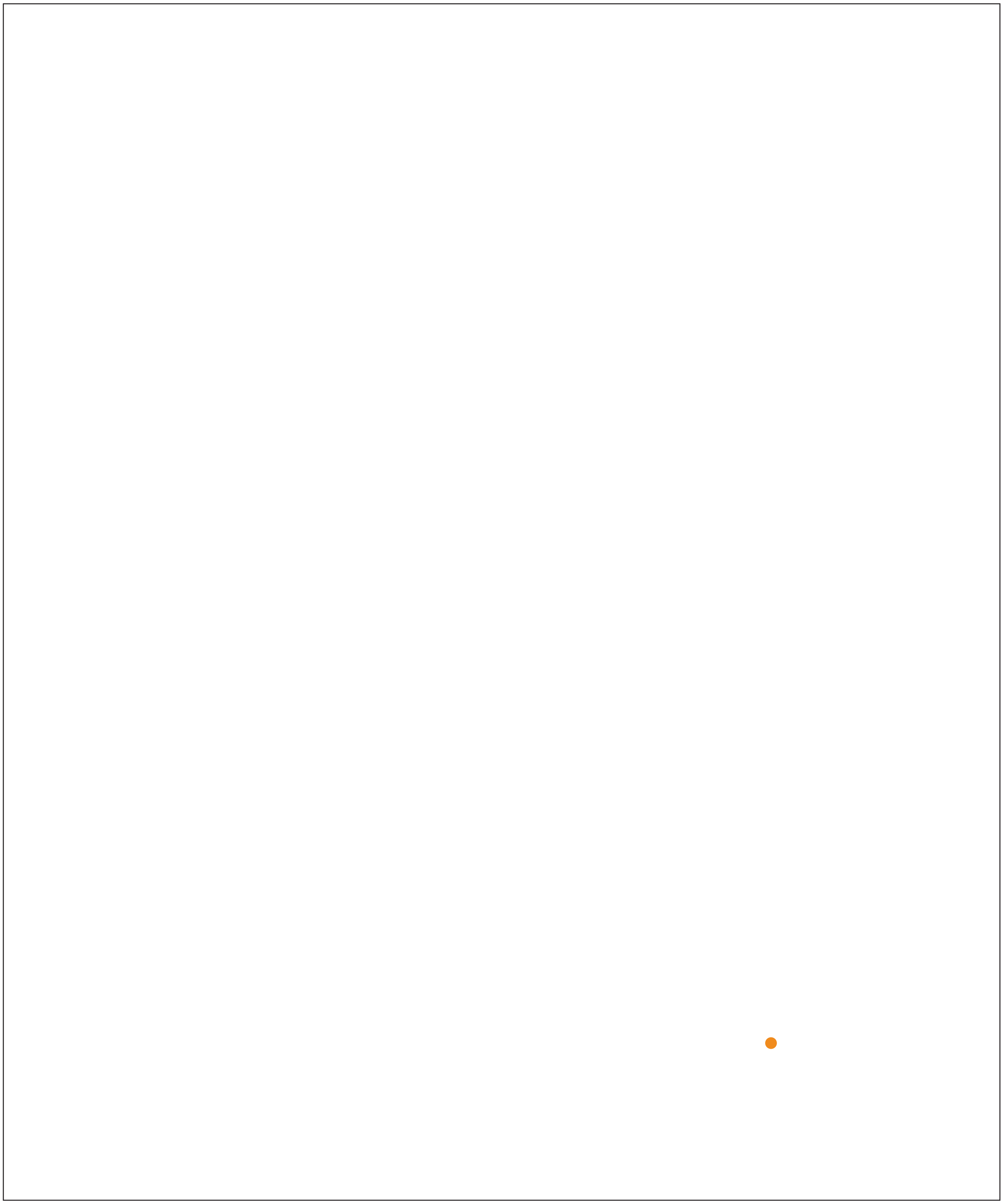
As with the project site, Site 40 is located in an area with potential seismic hazards. The Rogers Creek Fault is located approximately one mile to the northeast and the Tolay Fault is located approximately two miles to the southwest (EBA Engineering, 2008). Design would follow building codes which address seismic concerns and thus this impact would be less than significant.



SOURCE: DeLorme Street Atlas, 2000; and ESA, 2009

SCWMA Compost Facility EIR . 207312

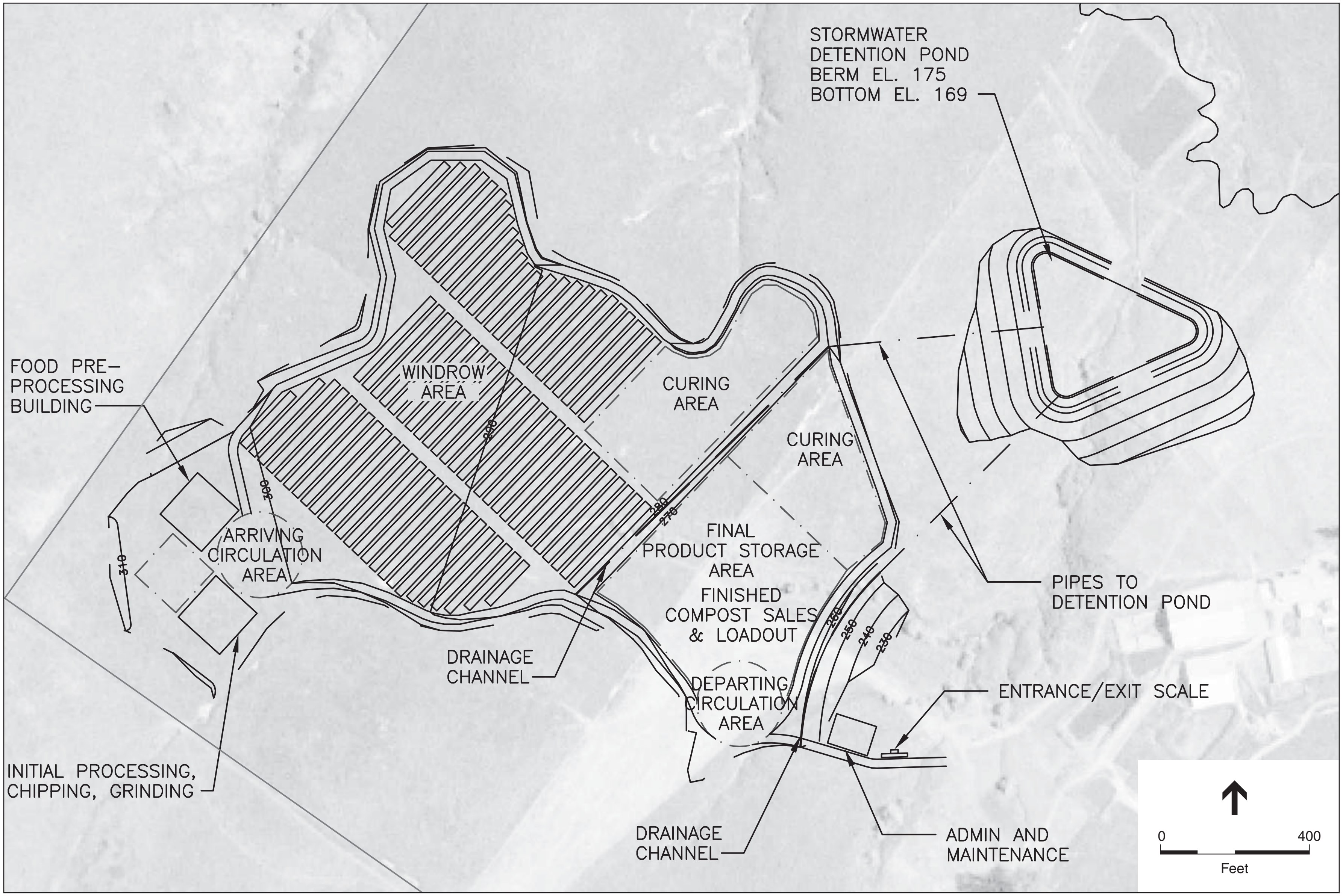
Figure 4-1
Site 40 Regional Map and Roadways



SOURCE: NAIP, 2006; ESRI, 2007; HDR, 2009; and ESA, 2009

SCWMA Compost Facility EIR . 207312

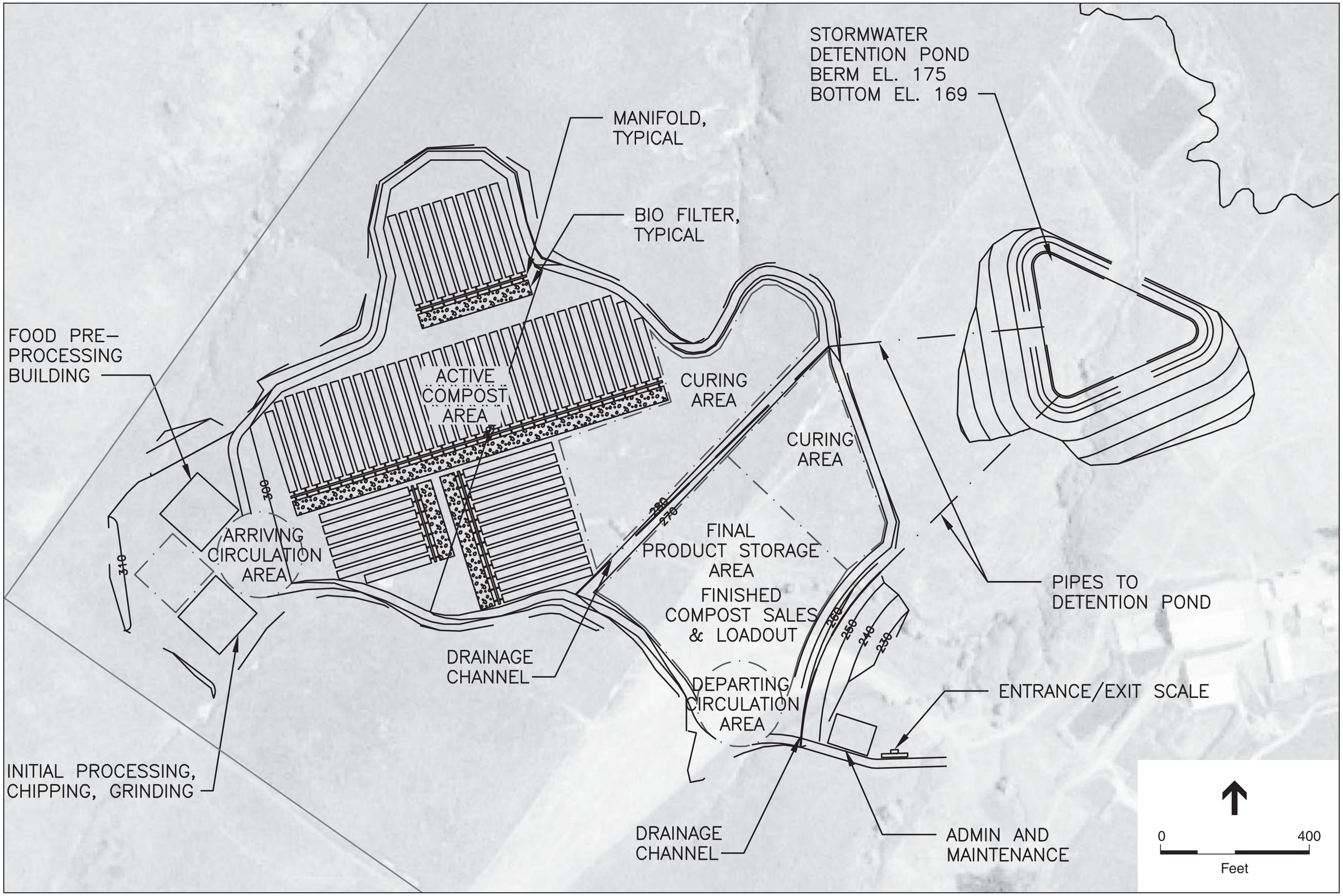
Figure 4-2
Site 40 Alternative Vicinity



SOURCE: HDR, 2009; and ESA, 2009

SCWMA Compost Facility EIR . 207312

Figure 4-3
Site 40 Windrow Layout



SOURCE: HDR, 2009; and ESA, 2009

Figure 4-4
Site 40 ASP Layout

Hazards and Hazardous Materials

As with the project, the only hazardous materials associated with composting operations would be required for the maintenance of the processing equipment, such as diesel fuel, lubricants, and antifreeze. These materials would be controlled by following Best Management Practices. The Phase I Environmental Assessment prepared for the property included a record search which identifies Site 40 as having jurisdiction for waste discharges related to the confining of animals and the production of animal products. Several sites mapped as having environmental concerns are located within 2 miles of Site 40, although none of the sites pose significant environmental risks to the Site 40 Alternative area (EBA Engineering, 2008). This impact would be less than significant.

Mineral Resources

Sonoma County includes a Mining Resource (MR) combining district for the conservation and protection of land that is necessary for future mineral resource production. Site 40 is not located in an area with a zoning designation for mineral resources.

Population and Housing

There is one residence on Site 40 located outside of the Site 40 composting area. The house would no longer operate as a residence under this alternative. The displacement of one residence would be a less than significant impact.

Recreation

The establishment of composting operations at Site 40 would not increase demands on recreational facilities nor would it include the construction of recreational facilities.

4.6 Site 13 Alternative

This alternative is included in the EIR to provide a basis for comparing the impacts of a similar composting operation at an alternative location.

Overview

The Site 13 Alternative proposes the construction of a new central compost facility on Site 13 rather than the project site. As with the proposed project, the Site 13 Alternative would replace the existing compost facility at the Central Disposal Site and would have the capacity to process approximately 200,000 tons of compost per year. Processing would include green material, food material and agricultural materials. The compost facility would use an outdoor windrow system, ASP technology, or a combination of both systems. Under this alternative, no development is proposed on the project site (Site 5A).

Objectives

The Site 13 Alternative would meet the primary objectives discussed in Chapter 3, Project Description, Section 3.2.

Site 13 and Vicinity

Site 13 (Assessor's Parcel Number 068-180-004) includes 578 acres in unincorporated Sonoma County. Site 13 is located approximately 11 miles southeast of the City of Petaluma and is adjacent to the San Pablo Bay as shown on **Figure 3-1**. An aerial photograph of Site 13 and the immediate vicinity is shown on **Figure 4-5**. The operational footprint or composting area would occupy approximately 61 acres in the northern corner of the project site as shown on **Figure 4-5**. The site is currently owned by Vallejo Sanitation and Flood Control District and is used for dry biosolids farming. Noble Road provides access to the site from State Route 37 (also known as Sears Point Road).

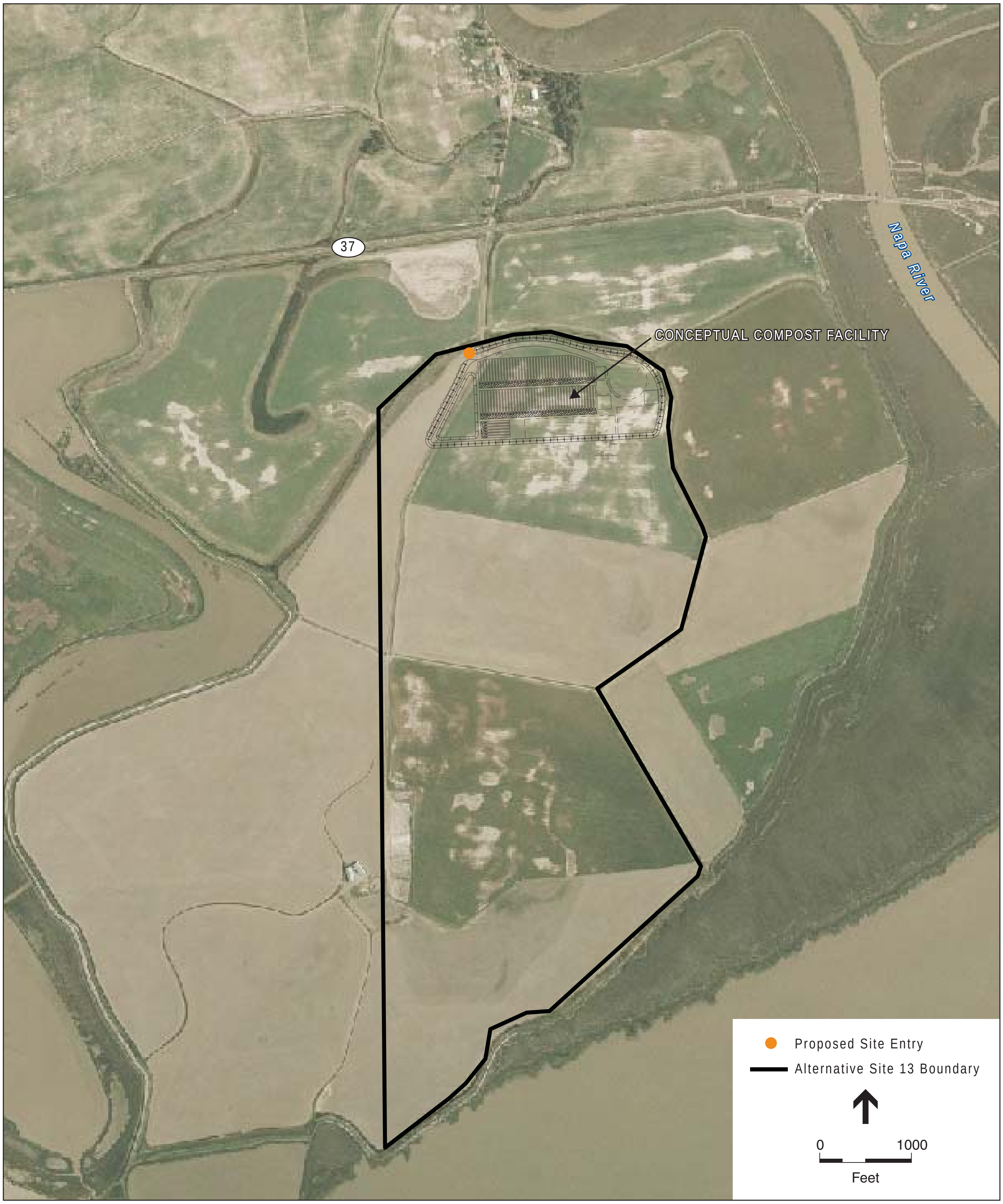
Site 13 ranked 5th in the Compost Facility Siting Study (HDR Engineering, Inc., 2008) and there are four other sites with high rankings (6th, 7th, 8th and 9th) within 0.25 miles of Site 13. All of these sites are located in what is known as the Tubbs Island Area. This area was considered potentially feasible for development of central composting facilities; however, there are significant safety concerns related to traffic as discussed below.

Land uses surrounding Site 13 are agricultural in nature. Immediately south of Site 13 is a portion of the San Pablo Bay which is part of the San Pablo Bay National Wildlife Refuge. There are no residences on Site 13 or adjacent parcels.

Site 13 Alternative Characteristics

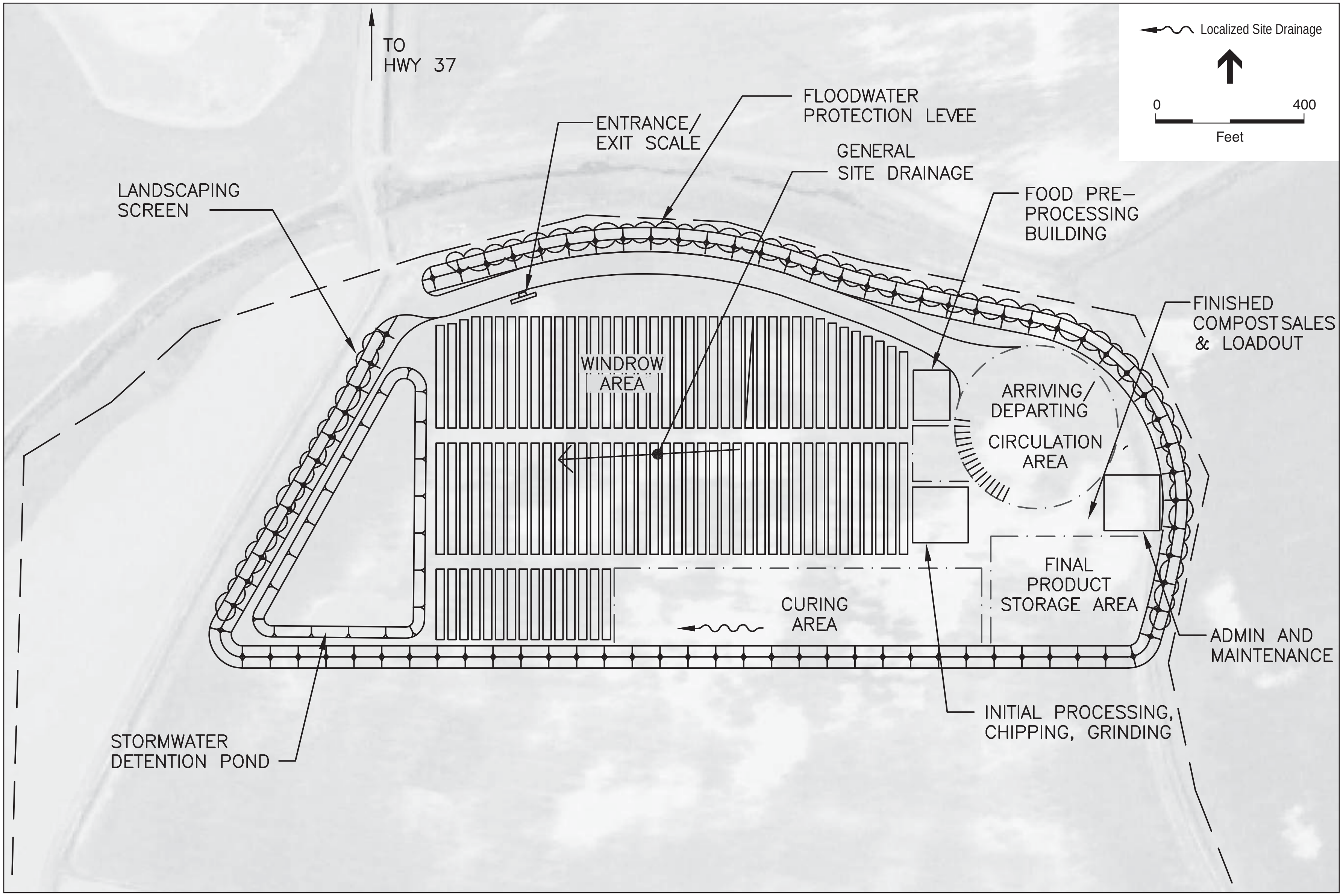
The Site 13 Alternative includes the same two processing options as the proposed project and the Site 40 Alternatives, open windrows (Option 1) and ASP (Option 2). It is also possible that the ultimate system may be a combination of open windrow and ASP. Facility development would occur on the northern portion of the parcel for ease of site access (**Figure 4-5)**. Access to the site would continue to be provided by Noble Road via State Route 37.

The compost-related facilities would be the same as those described for the proposed project and the Site 40 Alternatives. The proposed layout for Option 1 – Open Windrows on Site 13 is provided as **Figure 4-6**. Under this option, the open windrow area would occupy approximately 20.84 acres. The proposed layout for Option 2 – ASP is provided as **Figure 4-7**. Under this option, the ASP windrow and biofilter areas would occupy approximately 15.3 acres and 2.5 acres, respectively, with a total composting area of 20.28 acres. For either Option 1 or 2, the storm water detention pond would hold approximately 30 acre-feet. Depending on operational features, feedstocks and regulatory requirements the layout could combine windrows and ASP technology. A description of operations associated with each option is included in Chapter 3, Project Description, Section 3.5.



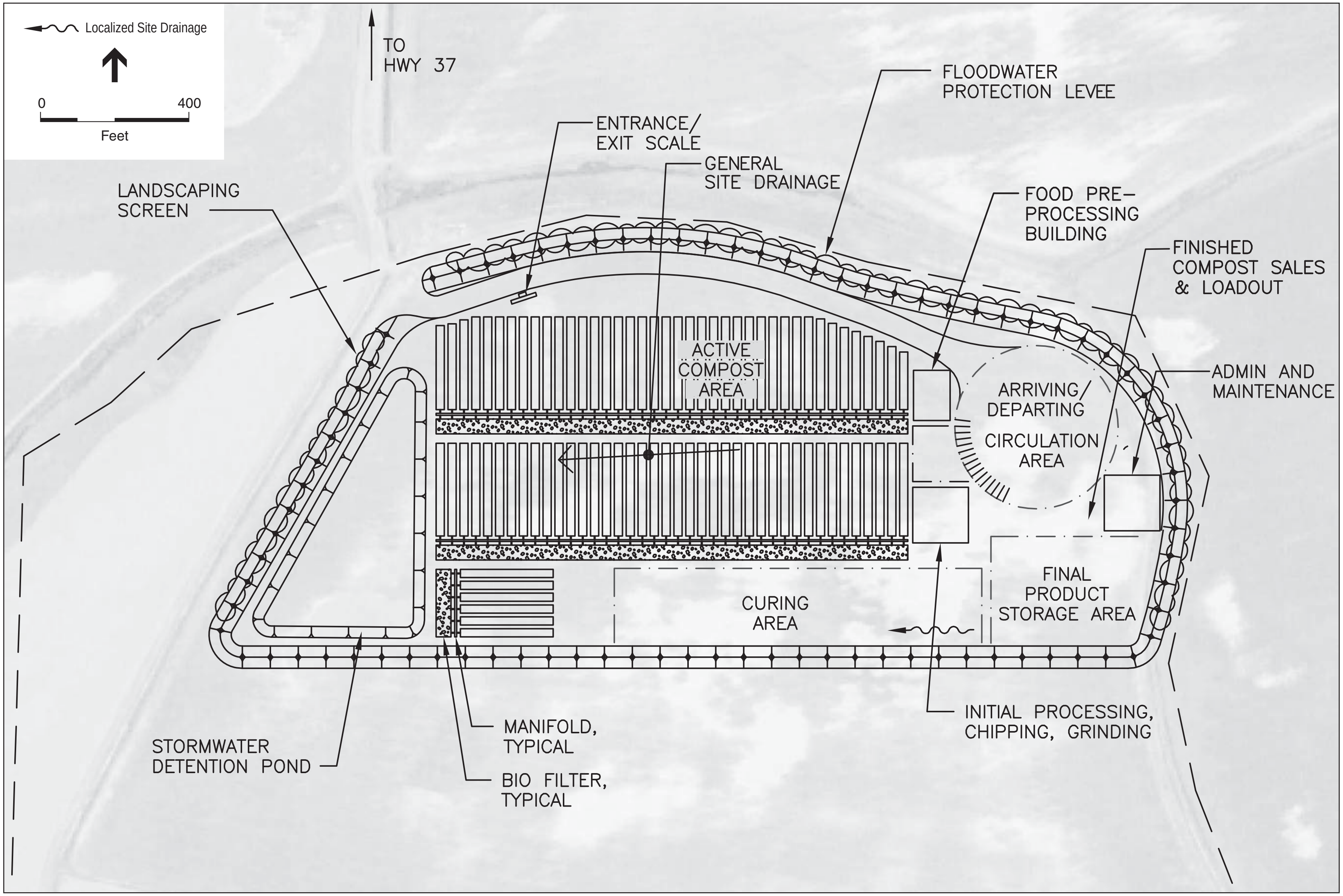
SOURCE: NAIP, 2006; ESRI, 2007; and ESA, 2009

Figure 4-5
Site 13 Alternative Vicinity



SOURCE: HDR, 2009; and ESA, 2009

Figure 4-6
Site 13 Windrow Layout



SOURCE: HDR, 2009; and ESA, 2009

Figure 4-7
Site 13 ASP Layout

Environmental Analysis

The following impact analysis is provided in order to compare the impacts of the proposed project site (Site 5A) to the Site 13 Alternative.

Aesthetics

Aesthetic impacts from the Site 13 Alternative would be similar to the proposed project site. Both consist of development in an agricultural area with few developed uses. The site is visible from State Route 37 and could create new sources of light and glare. The impacts on aesthetics would be comparable to those for the proposed project site.

Air Quality

Impacts on air quality and greenhouse gas emissions would be similar to the proposed project since the Site 13 Alternative includes the same facilities and thus would generate similar emissions during construction and operation. The nearest residence is located over 2,700 feet north of the Site 13 composting area. The risk for impacts from toxic air contaminants (TACs) would be potentially greater than the proposed project; however, implementation of pseudobiofilter mitigation or use of ASP technology would reduce impacts to a less than significant level. In addition, another mitigation for Site 13 to reduce TAC exposure would be to move the planned location of composting operations further south on the parcel.

Biological Resources

Terrain within Site 13 is generally flat with the exception of agricultural canals. Vegetation communities within this site include irrigated row and field crops, seasonal freshwater emergent wetlands (within artificial canals/agricultural channels), barren, and ruderal. Site 13 is highly disturbed by the seasonal rotation of crops and tilling activities. Row and field crops are irrigated by water from agricultural channels surrounding and bisecting Site 13. These channels support seasonal wetlands and associated native plant species, including narrowleaf cattail (*Typha angustifolia*) and saltgrass (*Distichlis spicata*). The agricultural channels and seasonal wetlands within the channels are potentially jurisdictional waters of the United States. Ruderal areas that are not actively tilled are compacted and support various non-native annual grasses and forbs of Eurasian origin.

Similar to the proposed project site, the Site 13 Alternative composting area does not have mature trees that would support nesting raptor species. Additionally, due to the high disturbance from farming activities, there is low potential for burrowing mammals or burrowing bird species to occupy the site. Artificial canals (agricultural channels) within the site support relatively sparse vegetation; therefore, there is a low potential for many regionally occurring bird species to nest within seasonal freshwater emergent wetland areas. Similar to the proposed project site, Site 13 provides suitable foraging habitat for raptors as well as passerines and other bird species that are normally associated with open fields, farmlands, and ruderal habitats. The Site 13 Alternative is not likely to impact regionally occurring special status species (nesting raptors and special-status birds, mammals, fish, reptiles, invertebrates, and sensitive plant species) due to the site's existing degree of disturbance.

Based on the location of the composting area it is likely that impacts to waters of the United States and/or waters of the state could be avoided and thus the Site 13 Alternative would have less impact than the proposed project site on waters of the U.S. and associated special-status species.

Cultural Resources

Site 13 is located on Tubbs Island on the north side of San Pablo Bay. The site is located in an area mapped as Holocene San Francisco Bay Mud, a geologic formation that has a moderate potential for containing paleosols (old soils) that would have once been available for human use and occupation. Historically marshland, levees were constructed by at least 1916. However, due to site disturbance from agricultural activities it is unlikely that known archaeological, historic or paleontological resources are located within the proposed composting area. In consultation with the Graton Rancheria, they believe the Site 13 area to be less significant than the proposed project site with regard to cultural resources.

Hydrology and Water Quality

The Site 13 Alternative would have less impact to hydrology and water quality than the proposed project site because drainage canal realignment, which could result in sediment migration and offsite sedimentation, would not be required for Site 13. All other hydrology and water quality impacts associated with construction and operation would be similar or equal to those of the proposed project site.

Land Use Planning and Agriculture

The Site 13 Alternative would have less impact to land use planning and agriculture than the proposed project site since Site 13 is not located within the proximity of an airport. Unlike the proposed project site (located approximately 2 miles from Gnoss Field Airport), the Site 13 Alternative would be approximately 7 miles east of the Gnoss Field Airport and 5 miles south of the Sonoma Valley Airport. All other land use planning and agriculture impacts would be similar or equal to those of the proposed project site.

Noise

The Site 13 Alternative would have less noise impacts for construction and operation than the proposed project site off Twin House Ranch Road. The nearest sensitive receptor to Site 13 is 2,700 feet away, which is slightly further than for the proposed project site and would result in less noise exposure. In addition, the nearest sensitive receptor to Site 13 is located across State Route 37, which would be the primary noise source in the area and would mask much of the Site 13 construction and operational equipment noise.

Public Services and Utilities

Similar to the proposed project site, the Site 13 Alternative would not increase demands on public services or utilities. Analysis of the proposed project site found no impacts to be significant after mitigation for this issue area.

Traffic and Transportation

The Site 13 Alternative would generate traffic volumes similar or equal to the proposed project site. However, as described in Chapter 12, Traffic and Transportation, State Route 37 has much greater existing traffic volumes (average daily traffic (ADT) of 35,000 vehicles) when compared to Lakeville Road (ADT of 16,250 vehicles). Site 13 would increase the risk of traffic incidents and result in a greater traffic safety issues than the project for all vehicles turning left onto State Route 37 and heading back to Sonoma County due to the greater existing traffic and the higher traffic speeds on State Route 37, as well as the two lane configuration of State Route 37 at the intersection with Noble Road, which is the access road for the site. The ability to change State Route 37 to mitigate this impact is unlikely since the roadway is under Caltrans jurisdiction. The northbound approach (Noble Road) of the site access intersection with State Route 37 would also deteriorate substantially due to traffic queuing.

The Site 13 Alternative may result in reduced bicycle/pedestrian safety issues since State Route 37 is not a Class II bike lane. Also, in regards to site access and roadway wear, Noble Road may need to be improved to support project vehicles.

In summary, the Site 13 Alternative would result in greater traffic safety impacts than the proposed project site, but less than or similar impacts to LOS, bicycle/pedestrian safety, site access, and roadway wear.

4.7 Central Site Alternative

Overview

The Central Site Alternative proposes the construction of a new compost facility on a portion of the Central Disposal Site rather than the project site (Site 5A). As with the proposed project, the Central Site Alternative would replace the existing compost facility at the Central Disposal Site but would only have the capacity to process approximately 110,000 tons of incoming feedstock materials per year. Processing would include green material, food material, and agricultural materials. Because of limited space, this compost facility would use ASP technology. Under this alternative, no development is proposed on the project site (Site 5A).

Objectives

The Central Site Alternative would meet all but one of the primary objectives discussed above in Section 4.2. While it would keep the SCWMA's composting operations on the County's Central Disposal Site, the operations would be located in an area that was not previously used as a landfill. Additionally, this alternative would only be able to process 110,000 tons of material after completion of Phase 2, which could mean that there would not be enough space to compost the projected 200,000 tons anticipated by 2030.

Central Site and Vicinity

The Central Site Alternative would be at the Central Disposal Site (Assessor's Parcel Number 024-080-019), which includes approximately 400 acres in Sonoma County. The Central Site is located approximately 1.5 miles southwest of the City of Cotati, off of Mecham Road, as shown on **Figure 4-8**. An aerial photograph of the Central Site and the immediate vicinity is shown on **Figure 4-9**. The overall footprint size of this alternative would be approximately 37.5 acres and the composting area would occupy approximately 25 acres in the northwestern corner of the Central Disposal Site as shown on **Figure 4-9**. Locations for composting at the Central Disposal Site were not evaluated in the siting study prepared for SCWMA (HDR Engineering, Inc., 2008) because of the landfill divestiture in process at that time. The SCWMA decided to include analysis of the Central Disposal Site to this EIR February 17, 2010.

The site is owned by Sonoma County and currently used for the existing compost facility as well as recycling. The site was historically used as a landfill. Buildings associated with the recycle/reuse facility and household hazardous waste facility are currently located on the eastern portion of the site and may remain in operation under this alternative. The current composting facility is located in the northern portion of the Central Disposal Site and detention ponds collecting site runoff are located along the southern portion of the Central Disposal Site. Access to the site is off of Mecham Road. Regional access from major population centers in Sonoma County is provided by U.S. Highway 101.

The majority of land uses surrounding the Central Disposal Site are agricultural in nature with areas of open space. Single-family rural residences are scattered in the surrounding area and often present on sites with agricultural operations, such as dairy farming and grazing. The closest residence to the Central Site Alternative composting area is approximately 500 feet northeast. Other residences are approximately 1,000 feet to the south, 4,500 feet to the east and 5,000 feet to the southeast. Dunham Charter School is located approximately 4,000 feet north of the Central Site Alternative composting area. Urban development associated with the City of Cotati is located approximately 2.5 miles northeast of the Central Site. The Petaluma Municipal Airport is located approximately 8.5 miles southeast of the Central Site.

Central Site Alternative Characteristics

The Central Site Alternative would only include the ASP processing option due to limited space. Facility development would occur on the northwestern portion of the parcel (**Figure 4-9**). Build out of this site would occur over two phases as shown in **Figures 4-10** and **4-11**. Phase 1 would require approximately 150,000 cubic yards of cut and fill material, to allow for approximately 10 acres of usable space for operations, including a 3.2-acre detention pond. Under Phase 1, the composting area would be approximately 2.5 acres and the facility would be able to process approximately 40,000 tons of material. It is assumed construction of Phase 1 would start in 2010, as was assumed for the other alternatives. Because of size constraints, Phase 1 would not contain a food pre-processing building.

During Phase 2, an additional 400,000 cubic yards of material would be removed to expand the operational area to approximately 30 acres, and the detention pond to 4.6 acres. After Phase 2 is constructed, the facility would be able to process approximately 110,000 tons of material; it is anticipated that Phase 2 would be constructed in 2018. The compost-related facilities would be the same as the project after Phase 2, including an entrance/exit scale (this alternative would use the current entrance/exit scale), material sorting and processing areas, composting operations, wood chipping and grinding areas, on-site access roads, buffer zones, a sales area for wood and compost, an administrative and maintenance building, a food pre-processing building (this building could not be constructed during Phase 1 because of space limitations), compost curing areas, storage areas, and a stormwater detention pond.

The site footprint (operational area of approximately 30 acres after construction of Phase 2) is smaller than the other alternatives considered for this project. As a result, the arriving/departing circulation area would be smaller on this site compared to the other alternatives. Storage of the final product would need to occur at another location; either the finished product would remain on this site for a shorter period of time or another storage location would need to be determined at the Central Disposal Site. This site would be built in three tiers due to site topography. Access would continue to be provided off of Mecham Road.

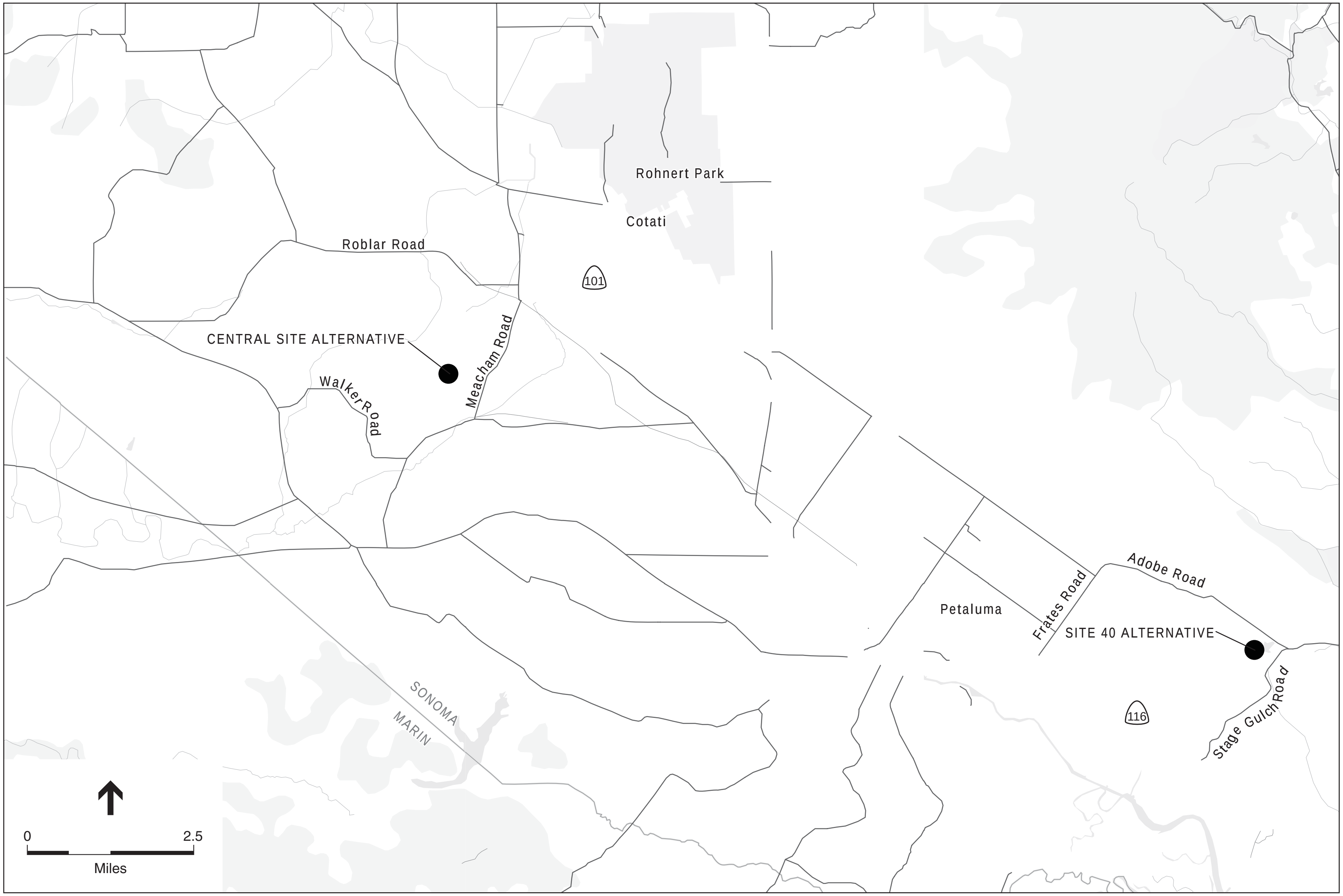
The proposed layout for the site after Phase 2 is presented in **Figure 4-11**. Under this alternative, the total composting area would occupy 6.5 acres. After Phase 2, the storm water detention pond would hold approximately 15 acre-feet. A description of operations associated with the ASP option is included in Chapter 3, Project Description, Section 3.5. In addition, the Central Site Alternative would be subject to similar entitlements, permits, and approvals described in Chapter 3, Project Description, Section 3.7., however a General Plan Amendment would not be necessary.

Environmental Analysis

The environmental impacts of the Central Site Alternative are analyzed in Chapters 24 through 32. Several environmental issues were determined to be less than significant for the project and were not analyzed further in this EIR for the proposed project site (Site 5A) or other alternatives. As the Central Site Alternative was analyzed to an equal level of analysis as the proposed project these issues are discussed briefly below.

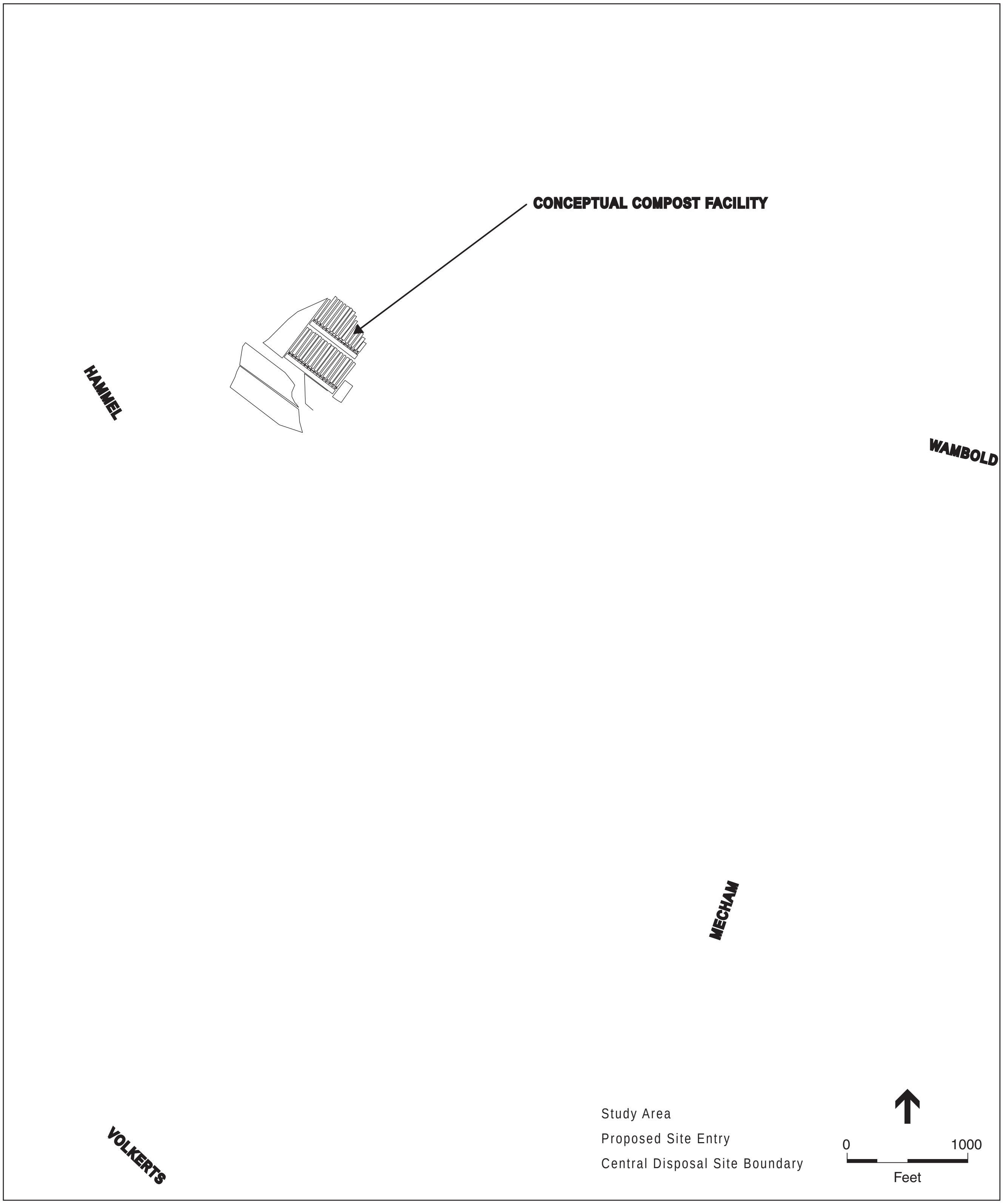
Geology and Soils

Based on the “Siting and Classification Study, Proposed Western Area Expansion” no faults on the Central Site would be considered active (GeoLogic Associates, 2003). Design would follow building codes and no impact would occur.



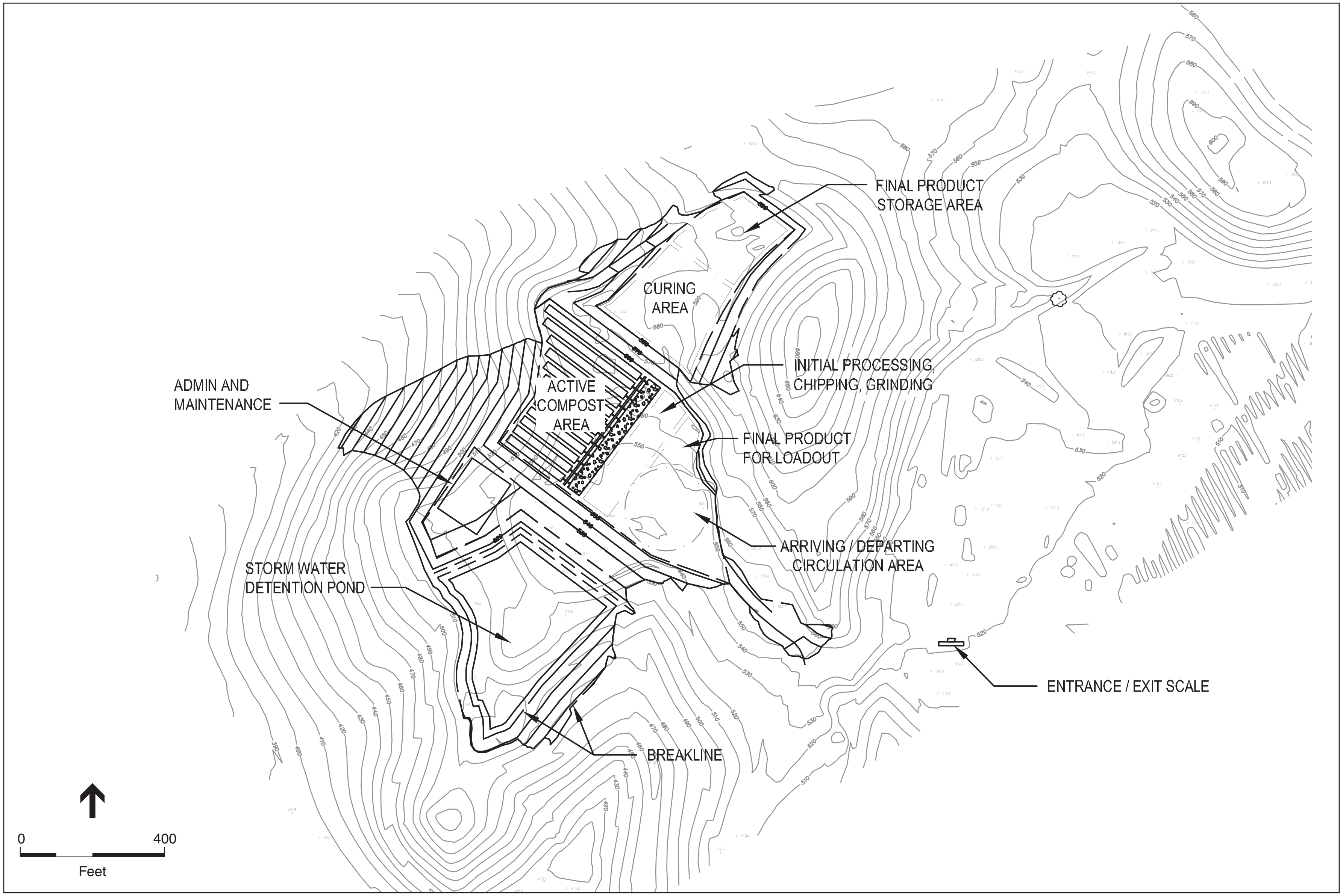
SOURCE: DeLorme Street Atlas, 2000; and ESA, 2010

Figure 4-8
Central Site Alternative



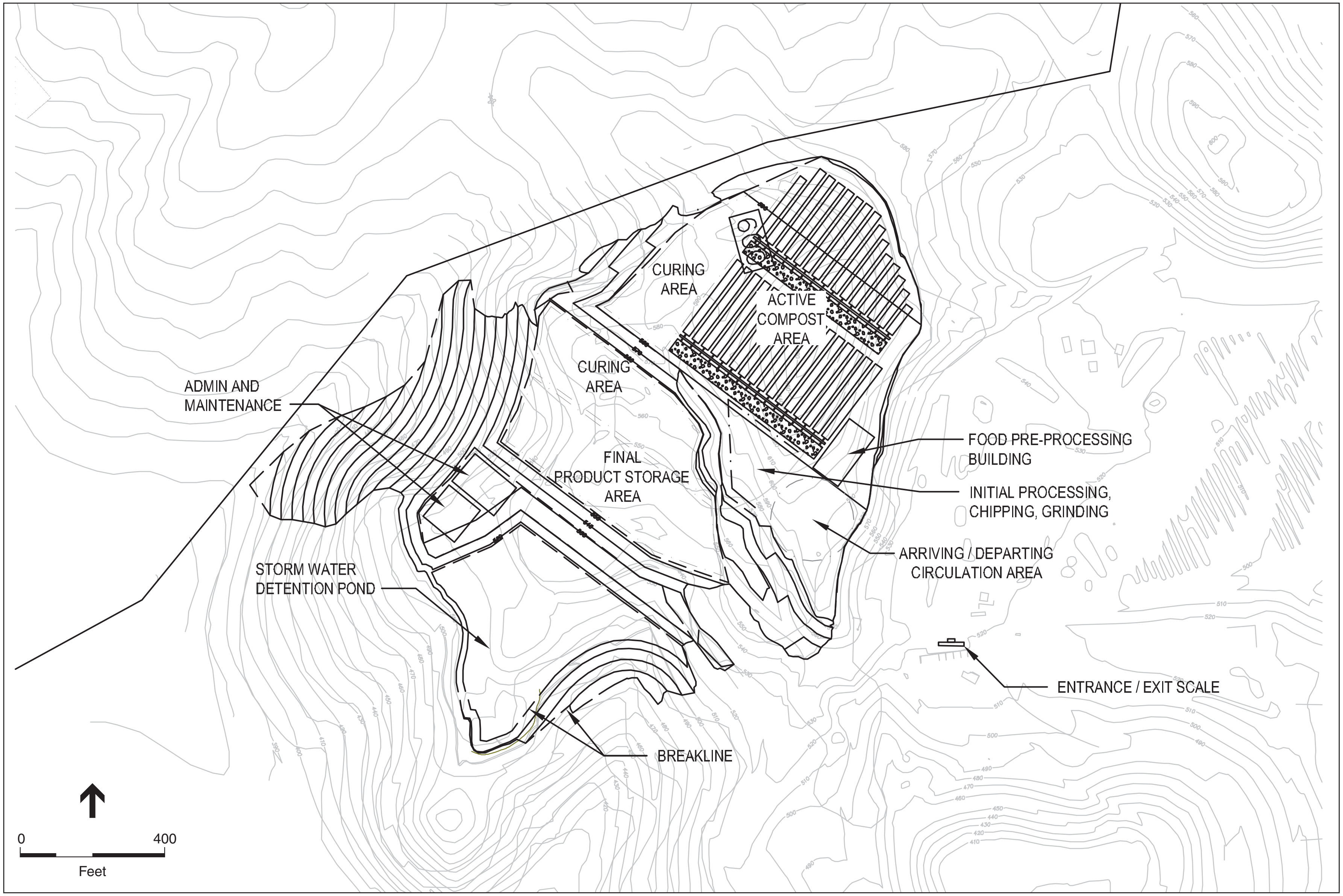
SOURCE: Bing Maps, 2009; and ESA, 2010

Figure 4-9
Central Site Alternative Vicinity



SOURCE: HDR, 2010; and ESA, 2010

Figure 4-10
Central Site ASP Layout – Phase 1



SOURCE: HDR, 2010; and ESA, 2010

Figure 4-11
Central Site ASP Layout

Hazards and Hazardous Materials

As with the project, the only hazardous materials associated with composting operations would be required for the maintenance of the processing equipment, such as diesel fuel, lubricants, and antifreeze. These materials would be controlled by following Best Management Practices. This impact would be less than significant.

Mineral Resources

Sonoma County includes a Mining Resource (MR) combining district for the conservation and protection of land that is necessary for future mineral resource production. The Central Site Alternative is not located in an area with a zoning designation for mineral resources.

Population and Housing

As with the project, the Central Site Alternative would not create population growth as it would simply relocate existing operations. Any road or infrastructure improvements are designed to provide capacity for the project and are not designed with excess capacity. The project would not displace existing housing.

Recreation

The establishment of composting operations at the Central Site Alternative would not increase demands on recreational facilities nor would it include the construction of recreational facilities.

4.8 Limited Public Access Alternative

The Limited Public Access Alternative proposes the construction of the proposed project facilities, but would restrict public (self-haul vehicle) access to these facilities. This alternative to the facility operations could be implemented at Site 5A or any of the alternative sites. This limitation would apply to both delivery of materials to the compost facility and also on-site sales to the general public. While most of the sales of the finished compost are expected to be delivered by large transfer vehicles to large agricultural buyers, this limitation may require development of off-site areas for retail sales to the public. Off-site areas would be expected to be more centrally located to the high population areas of the County and such locations would be expected to reduce overall traffic and traffic-related impacts (i.e., air quality and noise). Off-site areas would need to be permitted for such retail uses, and thus would be expected to have existing infrastructure to support the retail sales.

Self-haul vehicles are projected to account for approximately 50 percent and 91 percent of traffic volumes for the weekday and Saturday peak hour, respectively. Since the Limited Public Access Alternative would primarily affect traffic (and subsequently air quality and noise), the majority of project information and impact analysis included in Chapter 3 and Chapters 5 through 33 of this EIR would apply to this alternative as well.

Environmental Impacts

The following impact analysis is provided in order to compare the impacts of the proposed project (Site 5A), the Site 40 Alternative or the Central Site Alternative to the Limited Public Access Alternative.

Aesthetics

The Limited Public Access Alternative would result in the same aesthetic impacts identified for the project.

Air Quality

The Limited Public Access Alternative would result in less air quality impacts than the project due to the reduction in 50 to 91 percent of vehicles at the project site for the weekday and Saturday peak hour, respectively, from the restriction of self-haul vehicles. This reduction in traffic volumes would result in less localized and regional air pollutant emissions, including GHGs. Construction would still result in air quality significant unavoidable impacts.

Biological Resources

The Limited Public Access Alternative would result in the same biological resource impacts identified for the project.

Cultural Resources

The Limited Public Access Alternative would result in the same cultural resources impacts identified for the project.

Hydrology and Water Quality

The Limited Public Access Alternative would result in the same hydrology and water quality impacts identified for the project.

Land Use Planning and Agriculture

The Limited Public Access Alternative would result in the same land use planning and agriculture impacts identified for the project.

Noise

The Limited Public Access Alternative would result in less traffic noise impacts than the project due to the reduction in 50 to 91 percent of vehicles at the project site for the weekday and Saturday peak hour, respectively, from the restriction of self-haul vehicles. This reduction in traffic volumes would result in less noise along the roadway network.

Public Services and Utilities

The Limited Public Access Alternative would result in the same public services and utilities impacts identified for the project.

Traffic and Transportation

The Limited Public Access Alternative would generate approximately 50 to 91 percent less traffic than the project during the weekday and Saturday peak hours, respectively, from the restriction of self-haul vehicles. This reduction in traffic volumes would also reduce the risk of accidents and result in greater traffic and bicycle/pedestrian safety, reduce roadway wear, and improve the LOS at the Lakeville Road and Twin House Ranch Road intersection and improve the LOS at the intersections in the immediate vicinity of Site 40 and the Central Site. Traffic safety impacts would be reduced, but not to a less than significant level at the Lakeville Road and Twin House Ranch Road intersection (under the development of Site 5A). This alternative would create the same level of increased hazards due to design features or incompatible uses as the project would at the preferred project site (Site 5A).

4.9 Summary Comparison of Alternatives

The relative impacts of the various project alternatives (in comparison to the proposed project at Site 5A) are shown in **Table 4-1**.

TABLE 4-1
PROJECT ALTERNATIVES COMPARISON

EIR Chapter/Project Impact	No Project A	No Project B	Site 40	Site 13	Central Site	Limited Public Access
Air Quality	L/E	L/G	G (S/U)	G (S/U)	L	L (S/U)
Biological Resources	L	L	L	L	L	E
Cultural Resources	L	L	L	L	L	E
Hydrology And Water Quality	L/G	L	L	L	L	E
Land Use Planning And Agriculture	L	L	E (S/U)	L (S/U)	L	E
Noise	L	L	E	L	G (S/U)	L
Public Services And Utilities	E	E	E	E	E	E
Traffic And Transportation	L/G	L	L	G (S/U)	L	L/E (S/U)
Aesthetics	L	L	E/G	E/G	L	E

KEY:
L = Less impact than the project
E = Equal or similar impacts as the project
G = Greater impact than the project
S/U = Significant, unavoidable impact likely to occur.

SOURCE: Environmental Science Associates, 2011

Table 4-2 shows the ability of each alternative to achieve the project objectives. As shown by the table, the No Project A and B Alternatives fail to meet the majority of the project objectives. The Site 40, Site 13, and Limited Public Access Alternatives meet all of the project objectives. The Central Site Alternative meets project objectives 1 and 3, but fails to meet project objective 2 because of its limited capacity. The three objectives of the project are listed below:

Objective 1. Relocate SCWMA's composting operations from its current location at the County's Central Disposal Site.

Objective 2. Establish a permanent composting facility in Sonoma County with sufficient capacity for current and future quantities.

Objective 3. Provide a facility to assist jurisdictions within SCWMA's service area in meeting the goals and objectives for waste diversion as set forth in the California Integrated Waste Management Act of 1989 (AB 939).

TABLE 4-2
PROJECT ALTERNATIVES: COMPARISON OF ABILITY TO ACHIEVE PROJECT OBJECTIVES

Objectives	No Project A	No Project B	Site 40	Site 13	Central Site	Limited Public Access
Objective 1			✓	✓	✓	✓
Objective 2			✓	✓		✓/o
Objective 3	✓		✓	✓	✓	✓

KEY:
✓ = Alternative substantially achieves objective
✓/o = The Limited Public Access Alternative would meet Objective 2 at Sites 5A, 13 and 40. This alternative would not meet Objective 2 at the Central Site.

SOURCE: Environmental Science Associates, 2011

4.10 Environmentally Superior Alternative

Site 40 and Site 13 each meet the three project objectives (as depicted in Table 4-2). Site 40 and Site 13 have specific impacts that would be greater than the project (as shown in Table 4-1). Site 40 would require substantial grading during construction and would result in greater TAC health risk during operations. Site 13 would also result in potentially greater air quality impacts; however, the primary drawback for this alternative is that the safety issues would be greatly increased compared to the proposed project at Site 5A. Importantly, the Site 40 Alternative would avoid any impacts to the 100-year flood plain. The Site 40 Alternative also would avoid the need for safety improvements on Lakeville Road that would be required for the development of the proposed project at Site 5A. In contrast, the safety improvements for Highway 37 required for development of Site 13 would potentially be more expensive and less feasible than the safety improvements needed on Lakeville Road for Site 5A. Given these concerns the Site 40 Alternative is the environmentally preferred alternative to the project.

4.11 Other Site Challenges/Difficulties/Infeasibilities

Challenges related to development of a compost facility meeting the County objectives and other financial considerations at the various sites include the following:

Site 5A:

- The cost of roadway improvements to Lakeville Road and to private Twin House Ranch Road has been estimated at $3.7 million. The cost of these roadway improvements are significantly higher than the estimated costs ($1.5 -$2 million) for purchasing the project site. This substantial cost exists for this project but not the other project-level alternatives. (likely financially infeasible)
- Would require general plan amendment, zoning change, dealing with Williamson Act contract.
- The site would be inconsistent with the County of Sonoma's policies on net fill in a floodplain. (likely procedurally infeasible)
- The County of Sonoma discourages the development of on-site wastewater systems in locations such as Site 5A. (likely procedurally infeasible)

Site 13:

- The same issues as Site 5a, only roadway improvements on Highway 37 would likely be more expensive.

Central Disposal Site:

- The 110,000 tons per year (tpy) capacity would be only about half of the 200,000 tpy goal for the facility.
- The length of time for full buildout (and limited operational area in Phase I) would limit the materials that could be composed at this site.

Site 40:

- Would require general plan amendment, zoning change, dealing with Williamson Act contract.
- An Aerated Static Pile (ASP) composting system would be required to mitigate potential air quality impacts. Windrow composting would probably not be acceptable.

4.12 References

EBA Engineering, 2008. Phase I Environmental Site Assessment, Teixeira Property, 1035 Stage Gulch Road, Petaluma, California. January 2008.

CalRecycle, 2011. Statewide Anaerobic Digester Facilities for the Treatment of Municipal Organic Solid Waste. Final Program Environmental Impact Report.

Geologic Associated, 2003. Siting and Classification Study Proposed West Area Expansion, Central Disposal Site, Sonoma California. March 2003.

HDR Engineering, Inc. Composting Facility Siting Study for Sonoma County, CA. June, 2008.

Sonoma Compost Company, LLC., 2009, http://www.sonomacompost.com, accessed September 13, 2009.

CHAPTER 5
Air Quality

5.1 Introduction

This chapter evaluates the potential impacts of the project on regional and local air quality from both stationary and mobile sources of air emissions. Development of this chapter was based on a review of existing documentation of air quality conditions in the region, air quality regulations from the United States Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), the Bay Area Air Quality Management District (BAAQMD), and information related to the project description.

5.2 Setting

Topography, Climate and Meteorology

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality.

The project site is located in southern Sonoma County, within the boundaries of the San Francisco Bay Area Air Basin (Bay Area Air Basin). The Bay Area Air Basin encompasses all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo and Santa Clara Counties, and the southern portions of Solano and Sonoma Counties.

The region from the Estero Lowlands to the San Pablo Bay is known as the Petaluma Gap. Wind patterns in the Petaluma and Cotati Valleys are strongly influenced by the Petaluma Gap, with winds flowing predominantly from the west. As marine air travels through the Petaluma Gap, it splits into northward and southward paths moving into the Cotati and Petaluma valleys. The southward path crosses San Pablo Bay and moves eastward through the Carquinez Strait. The northward path contributes to Santa Rosa’s prevailing winds from the south and southeast. Petaluma’s prevailing winds are from the northwest.

Air temperatures are very similar in the two valleys. The project site is located in the Petaluma Valley. Summer maximum temperatures are in the low-to-mid-80’s, while winter maximum temperatures are in the high-50’s to low-60’s. Summer minimum temperatures are around 50 degrees, and winter minimum temperatures are in the high 30’s (CARB, 1992).

Regulatory Context

Established federal, state, and regional regulations provide the framework for analyzing and controlling air pollutant emissions and thus general air quality. The U.S. EPA is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal ambient air quality standards and judging the adequacy of State Implementation Plans (SIP). However, the U.S. EPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented. In California, the CARB is responsible for establishing and reviewing the state ambient air quality standards, developing and managing the California SIP, securing approval of this plan from the U.S. EPA, and identifying toxic air contaminants (TACs). CARB also regulates mobile emissions sources in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality management districts, which are organized at the county or regional level. An air quality management district is primarily responsible for regulating stationary emissions sources at facilities within its geographic areas and for preparing the air quality plans that are required under the federal Clean Air Act and California Clean Air Act. The BAAQMD is the regional agency with regulatory authority over emission sources in the nine county San Francisco Bay Area (Bay Area), which includes all of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin, and Napa counties and the southern half of Sonoma and southwestern half of Solano counties.

The regulatory settings for the following classes of air pollutants: criteria pollutants, odiferous compounds, TACs, and greenhouse gases (GHGs), are discussed below.

Regulatory Setting for Criteria Pollutants

As required by the federal Clean Air Act passed in 1970, the U.S. EPA has identified six criteria air pollutants that are pervasive in urban environments and for which state and national health-based ambient air quality standards have been established. EPA calls these pollutants criteria air pollutants because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead are the six criteria air pollutants.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly 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, also called reactive organic gases (ROG)), such as xylene, and nitrogen oxides (NOx), such as nitric oxide. ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NOx under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. Ground level ozone in conjunction with suspended particulate matter in the atmosphere leads to hazy conditions generally termed as “smog”.

Nitrogen Dioxide

Nitrogen dioxide is an air quality concern because it acts as a respiratory irritant and is a precursor of ozone. Nitrogen dioxide is produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit.

Sulfur Dioxide (SO_2)

Sulfur dioxide is a combustion product of sulfur or sulfur-containing fuels such as coal and oil, which are restricted in the Bay Area. Its health effects include breathing problems and may cause permanent damage to lungs. SO_2 is an ingredient in acid rain (acid aerosols), which can damage trees, lakes and property. Acid aerosols can also reduce visibility.

Particulate Matter

PM10 and PM2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. A micron is one-millionth of a meter, or less than one-25,000th of an inch. For comparison, human hair is 50 microns or larger in diameter. PM10 and PM2.5 represent particulate matter of sizes that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of aerosol-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles (PM2.5) of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested 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. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM10 and PM2.5 because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope 2006). The CARB has estimated that achieving the ambient air quality standards for PM10 could reduce premature mortality rates by 6,500 cases per year (CARB, 2002).

PM10 emissions in the project area are mainly from urban sources, dust suspended by vehicle traffic and secondary aerosols formed by reactions in the atmosphere. Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly emitted contaminants.

Lead

Leaded gasoline (currently phased out), paint (houses, cars), smelters (metal refineries), manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects; children are at special risk. Some lead-containing chemicals cause cancer in animals.

Carbon Monoxide

Ambient carbon monoxide concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence carbon monoxide concentrations. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

Carbon monoxide concentrations have declined dramatically in California due to existing controls and programs and most areas of the state including the project region have no problem meeting the carbon monoxide state and federal standards. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas* (CARB, 2004), shown below:

> "The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard."

Ambient Air Quality Standards

Regulation of criteria air pollutants is achieved through both national and state ambient air quality standards and emissions limits for individual sources. Regulations implementing the federal Clean Air Act and its subsequent amendments established national ambient air quality standards (national standards) for the six criteria pollutants. California has adopted more stringent state ambient air quality standards for most of the criteria air pollutants. In addition, California has established state ambient air quality standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Because of the meteorological conditions in the state, there is considerable difference between state and federal standards in California, as shown in **Table 5-1**. The table also summarizes the related health effects and principal sources for each pollutant.

The ambient air quality standards are intended to protect the public health and welfare, and they incorporate an adequate margin of safety. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

Attainment Status

Under amendments to the federal Clean Air Act, U.S. EPA has classified air basins or portions thereof, as either "attainment" or "non-attainment" for each criteria air pollutant, based on whether or not the national standards have been achieved. The California Clean Air Act, which is patterned after the federal Clean Air Act, also requires areas to be designated as "attainment" or "non-attainment" for the state standards. Thus, areas in California have two sets of attainment / non-attainment designations: one set with respect to the national standards and one set with respect to the state standards.

The Bay Area is currently designated "non-attainment" for state 1-hour and 8-hour ozone standards, the national 8-hour ozone standard, the state PM10 standards, and the state (annual and 24-hour) and national (24-hour) PM2.5 standards. The Bay Area is "attainment" or "unclassified" with respect to the other ambient air quality standards. **Table 5-1** also shows the attainment status of the Bay Area with respect to the national and state ambient air quality standards for different criteria pollutants.

Air Quality Plans

The 1977 Clean Air Act amendments require that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans and strategies to meet state air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the state PM standards). Maintenance plans are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as State Implementation Plans.

TABLE 5-1
AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS

Pollutant	Averaging Time	State Standard	Bay Area Attainment Status for California Standard	Federal Primary Standard	Bay Area Attainment Status for Federal Standard	Major Pollutant Sources
Ozone	8 hour	0.070 ppm	Non-Attainment	0.075 ppm	Non-Attainment	Formed when ROG and NOx react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/ industrial mobile equipment.
	1 hour	0.090 ppm	Non-Attainment	---	---	
Carbon Monoxide	8 hour	9.0 ppm	Attainment	9.0 ppm	Attainment	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	Attainment	35 ppm	Attainment	
Nitrogen Dioxide	Annual Average	0.030 ppm	---	0.053 ppm	Attainment	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads
	1 Hour	0.180 ppm	Attainment	---	---	
Sulfur Dioxide	Annual Average	---	---	0.03 ppm	Attainment	Fuel combustion, chemical plants, sulfur recovery plants and metal processing
	24 Hour	0.04 ppm	Attainment	0.14 ppm	Attainment	
	1 Hour	0.25 ppm	Attainment	---	---	
Particulate Matter (PM10)	Annual Arithmetic Mean	20 μg/m3	Non-Attainment	---	---	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 μg/m3	Non-Attainment	150 μg/m3	Unclassified	
Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 μg/m3	Non-Attainment	15 μg/m3	Attainment	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	24 hour	---	---	35 μg/m3	Non-Attainment	
Lead	Calendar Quarter	---	---	1.5 μg/m3	Attainment	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	30 Day Average	1.5 μg/m3	Attainment	---	---	

NOTE: ppm=parts per million; and μg/m3=micrograms per cubic meter

SOURCE: Bay Area Air Quality Management District, 2008a, available at http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm as of December 30, 2008,; California Air Resources Board, 2001. *ARB Fact Sheet: Air Pollution Sources, Effects and Control,* http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last updated December 2009.

For state air quality planning purposes, the Bay Area is classified as a serious non-attainment area for the 1-hour ozone standard. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the Bay Area update the Clean Air Plan (CAP) every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area's record of progress in implementing previous measures must also be reviewed. Bay Area plans are prepared with the cooperation of the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On September 15, 2010, the BAAQMD adopted the most recent revision to the Clean Air Plan - the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010a). The *Bay Area 2010 CAP* serves to:

- Update the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2010 – 2012 timeframe.

Due to the Bay Area's recent designation as non-attainment for the national 24-hour PM2.5 standard, the BAAQMD will be required to prepare a PM2.5 SIP pursuant to federal air quality guidelines by December 2012. The Bay Area 2010 CAP is not a SIP document and does not respond to federal requirements for PM2.5 or ozone planning. However, in anticipation of future PM2.5 planning requirements, the CAP control strategy also aims to reduce particulate matter emissions and concentrations (BAAQMD, 2010a).

Bay Area Air Quality Management District Rules and Regulations

The BAAQMD is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in the Bay Area. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various activities, and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants, but also toxic emissions and acutely hazardous non-radioactive materials emissions.

Emissions sources subject to these rules are regulated through the BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, the BAAQMD monitors generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of a project would be subject to the BAAQMD *Rules and Regulations*. Both federal and state ozone plans rely upon stationary source control measures set forth in BAAQMD's *Rules and Regulations.*

With respect to the construction activities associated with project development, applicable BAAQMD regulations would relate to portable equipment (e.g., concrete batch plants, and gasoline- or diesel-powered engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Equipment used during project construction would be subject to the requirements of BAAQMD Regulation 2 (Permits), Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts). With respect to the operational phase of the project, BAAQMD Regulation 2, *Permits,* would apply to any new or modified stationary sources.

Regulatory Setting for Odors and Nuisances

As described by the BAAQMD (BAAQMD, 2010b), odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources.

Regulatory Setting for Toxic Air Contaminants (TACs)

TACs are regulated under both state and federal laws. Federal laws use the term "Hazardous Air Pollutants" (HAPs) to refer to the same types of compounds that are referred to as TACs under state law. Both terms encompass essentially the same compounds. Under the 1990 Clean Air Act Amendments, 189 substances are regulated as HAPs.

With respect to state law, in 1983 the California legislature adopted Assembly Bill 1807 (AB 1807), which establishes a process for identifying TACs and provides the authority for developing retrofit air toxics control measures on a statewide basis. Air toxics in California may also be regulated because of another state law, the Air Toxics "Hot Spots" Information and Assessment Act of 1987, or Assembly Bill 2588 (AB 2588). Under AB 2588, TACs from individual facilities must be quantified and reported to the local air pollution control agency. The facilities are then prioritized by the local agencies based on the quantity and toxicity of these emissions, and on their proximity to areas where the public may be exposed. In establishing priorities, the air districts are to consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the air district determines may indicate that the facility may pose a significant risk. High priority facilities are required to perform a Health Risk Screening Assessment (HRSA), and if specific risk thresholds are exceeded, they are required to communicate the results to the public in the form of notices and public meetings. Depending on the health risk levels, emitting facilities can be required to implement varying levels of risk reduction measures. CARB identified approximately 200 TACs, including the 189 federal HAPs, under AB 2588.

BAAQMD is responsible for administering federal and state regulations related to TACs. Under federal law, these regulations include National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technology (MACT) for affected sources. BAAQMD also administers the state regulations AB1807 and AB2588 which were discussed above. In addition, the agency requires that new or modified facilities that emit TACs perform air toxics screening analyses as part of the permit application. TAC emissions from new and modified sources are limited through the air toxics new source review program, which superseded the BAAQMD Risk Management Policy, in BAAQMD Regulation 2, Rule 5 for New Source Review of Toxic Air Contaminants. Sources must use the Best Available Control Technology for Toxics (T-BACT) if an individual source cancer risk of greater than 1 in a million, or a chronic hazard index greater than 0.20, is identified in health risk modeling.

The CARB adopted the *Air Quality and Land Use Handbook* (CARB, 2005) to provide guidance to planning agencies and air districts for considering potential impacts to sensitive land uses proposed in proximity to TACs emission source(s). The goal of the guidance document is to protect sensitive receptors, such as children, seniors, and acutely ill and chronically ill persons, from exposure to TACs emissions. CARB's siting guidelines recommend the following: (1) avoid siting sensitive receptors within 500 feet of freeways and high-traffic roads (i.e., roads within urbanized areas carrying more than 100,000 vehicles per day); (2) avoid siting sensitive receptors within 1,000 feet of an applicable distribution center; and (3) avoid siting sensitive receptors within 300 feet of a dry cleaning facility that use the chemical perchloroethylene. The recommendations provided are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts. In addition, reducing diesel particulate matter (DPM) is one of the CARB's highest public health priorities and the focus of a comprehensive statewide control program that is reducing DPM emissions each year. The CARB's long-term goal is to reduce DPM emissions 85 percent by 2020.

Regulatory Setting for Greenhouse Gases

Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). Increases in GHGs are causing global climate change. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, most agree that there is a link between increased emission of GHGs and long-term global temperature. What GHGs have in common is that they allow sunlight to enter the atmosphere, but they also trap a portion of the outward-bound infrared radiation and warm up the air. The process is similar to the effect greenhouses have in raising their internal temperature, hence the name GHGs. Both natural processes and human activities emit GHGs.

The accumulation of GHGs in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and motor vehicles have elevated the concentration of GHGs in the atmosphere. This accumulation of GHGs has contributed to an increase in the temperature of the earth's atmosphere and contributed to global climate change. GHGs include all of the following naturally-occurring and anthropogenic (man-made) gases: carbon dioxide (CO_2), methane, nitrous oxide (N_2O), sulfur hexafluoride, perfluorocarbons, hydrofluorocarbons, and nitrogen trifluoride (NF_3) (California Health and Safety Code §38505(g). CO_2 is the reference gas for climate change. To account for the warming potential of GHGs, and to combine emissions of gases with differing properties, GHG emissions are typically quantified and reported as CO_2 equivalents (CO_2e).

In September 2002, Governor Gray Davis signed Assembly Bill (AB) 1493 requiring the development and adoption of regulations to achieve “the maximum feasible reduction of greenhouse gases” emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state. In 2005, in recognition of California’s vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gas would be progressively reduced, as follows:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020, reduce greenhouse gas emissions to 1990 levels; and
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

Assembly Bill 32 (AB 32)

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the CARB to design and implement emission limits, regulations, and other measures, such that statewide greenhouse gas emissions will be reduced to 1990 levels by 2020.

In December 2007, CARB approved the 2020 emission limit of 427 million metric tons of CO_2 equivalents (CO_2e) of greenhouse gases. The 2020 target of 427 million metric tons of CO_2e requires the reduction of 169 million metric tons of CO_2e, or approximately 30 percent, from the state’s projected 2020 emissions of 596 million metric tons of CO_2e (business-as-usual).

AB 32 required development of a mandatory reporting rule for major sources of GHGs. The CARB reporting rule (California Code of Regulations Title 17, Subchapter 10, Article 2, §95100 to 95133) became effective in January 2009. The rule requires reporting of GHG emissions for:

- Cement plants;
- Petroleum refineries ($\geq$ 25,000 metric tons of CO_2e in any calendar year);
- Hydrogen plants ($\geq$ 25,000 metric tons of CO_2e in any calendar year);
- Electric generating facilities and cogeneration facilities (> 1 MW capacity and > 2,500 metric tons of CO_2e in any year);
- Electricity retail providers and marketers; and
- Other facilities that emit >25,000 metric tons of CO_2e, for stationary combustion sources, in any calendar year.

Cement plants, oil refineries, fossil-fueled electric-generating facilities/providers, cogeneration facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons/year CO_2e, make up 94 percent of the point source CO_2e emissions in California.

In June 2008, CARB published its *Climate Change Draft Scoping Plan* (CARB, 2008a) that was approved and adopted by the CARB Board on December 11, 2008 as the *Climate Change Scoping Plan* (CARB, 2008b). The *Climate Change Draft Scoping Plan* reported that CARB met the first milestones set by AB 32 in 2007: developing a list of early actions to begin sharply reducing GHG emissions; assembling an inventory of historic emissions; and establishing the 2020 emissions limit. Key elements of the *Climate Change Scoping Plan* include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation (CARB, 2008b).

CARB has not yet determined what amount of GHG emissions reductions it recommends from local government land use decisions; however, the *Climate Change Scoping Plan* does state that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. CARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors.

The *Climate Change Scoping Plan* also includes recommended measures that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately impact low-income and minority communities. These measures, shown below in **Table 5-2** by sector, also put the state on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels.

The total reduction for the recommended measures is 174 million metric tons/year of CO_2e, slightly exceeding the 169 million metric tons/year of CO_2e reductions estimated to be needed in the *Climate Change Draft Scoping Plan*. The measures in the *Climate Change Scoping Plan* approved by the Board continue to be developed and are scheduled to be in place by 2012.

TABLE 5-2
LIST OF RECOMMENDED ACTIONS BY SECTOR

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
Transportation		
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards	31.7
T-2	Low Carbon Fuel Standard (Discrete Early Action)	15
T-3[1]	Regional Transportation-Related Greenhouse Gas Targets	5
T-4	Vehicle Efficiency Measures	4.5
T-5	Ship Electrification at Ports (Discrete Early Action)	0.2
T-6	Goods Movement Efficiency Measures. • Ship Electrification at Ports • System-Wide Efficiency Improvements	3.5
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	0.93
T-8	Medium- and Heavy-Duty Vehicle Hybridization	0.5
T-9	High Speed Rail	1
Electricity and Natural Gas		
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) • Increased Utility Energy Efficiency Programs • More Stringent Building & Appliance Standards Additional Efficiency and Conservation Programs	15.2
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)	6.7
E-3	Renewables Portfolio Standard (33% by 2020)	21.3
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities) • Target of 3000 MW Total Installation by 2020	2.1
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) • Utility Energy Efficiency Programs • Building and Appliance Standards • Additional Efficiency and Conservation Programs	4.3
CR-2	Solar Water Heating (AB 1470 goal)	0.1
Green Buildings		
GB-1	Green Buildings	26
Water		
W-1	Water Use Efficiency	1.4†
W-2	Water Recycling	0.3†
W-3	Water System Energy Efficiency	2.0†
W-4	Reuse Urban Runoff	0.2†
W-5	Increase Renewable Energy Production	0.9†
W-6	Public Goods Charge (Water)	TBD†
Industry		
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	TBD
I-2	Oil and Gas Extraction GHG Emission Reduction	0.2
I-3	GHG Leak Reduction from Oil and Gas Transmission	0.9
I-4	Refinery Flare Recovery Process Improvements	0.3
I-5	Removal of Methane Exemption from Existing Refinery Regulations	0.01
Recycling and Water Management		
RW-1	Landfill Methane Control (Discrete Early Action)	1
RW-2	Additional Reductions in Landfill Methane • Increase the Efficiency of Landfill Methane Capture	TBD†

TABLE 5-2
LIST OF RECOMMENDED ACTIONS BY SECTOR

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
RW-3	High Recycling/Zero Waste • Commercial Recycling • Increase Production and Markets for Compost • Anaerobic Digestion • Extended Producer Responsibility • Environmentally Preferable Purchasing	9†
Forests		
F-1	Sustainable Forest Target	5
High Global Warming Potential (GWP) Gases		
H-1	Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Services (Discrete Early Action)	0.26
H-2	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	0.3
H-3	Reduction of Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)	0.15
H-4	Limit High GWP Use in Consumer Products Discrete Early Action (Adopted June 2008)	0.25
H-5	High GWP Reductions from Mobile Sources • Low GWP Refrigerants for New Motor Vehicle Air Conditioning Systems • Air Conditioner Refrigerant Leak Test During Vehicle Smog Check • Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers • Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems	3.3
H-6	High GWP Reductions from Stationary Sources • High GWP Stationary Equipment Refrigerant Management Program: - Refrigerant Tracking/Reporting/Repair Deposit Program - Specifications for Commercial and Industrial Refrigeration Systems • Foam Recovery and Destruction Program • SF Leak Reduction and Recycling in Electrical Applications • Alternative Suppressants in Fire Protection Systems • Residential Refrigeration Early Retirement Program	10.9
H-7	Mitigation Fee on High GWP Gases	5
Agriculture		
A-1	Methane Capture at Large Dairies	1.0†

1 This is not the SB 375 regional target. CARB will establish regional targets for each Metropolitan Planning Organization (MPO) region following the input of the regional targets advisory committee and a consultation process with MPO's and other stakeholders per SB 375

† GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target

OPR Amendments to the CEQA Guidelines

On April 13, 2009, the Governor's Office of Planning and Research (OPR) submitted to the Secretary for Natural Resources its proposed amendments to the state CEQA Guidelines for GHG emissions, as required by Public Resources Code section 21083.05 (Senate Bill 97) (OPR, 2009) to provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The Natural Resources Agency adopted the CEQA Guidelines Amendments with minor, non-substantial changes on December 31, 2009, and the adopted guidelines became effective on March 18, 2010.

The amendments suggest relatively modest changes to various portions of the existing CEQA Guidelines. Modifications address those issues where analysis of GHG emissions may differ in some respects from more traditional CEQA analysis.

Amendments include a new section (15064.4) to assist lead agencies in determining the significance of the GHG impacts. This section urges lead agencies to quantify, where possible, the GHG emissions of projects. In addition to quantification, this section recommends consideration of several other qualitative factors that may be used in determination of significance including:

1. the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. whether the GHG emissions exceed a threshold of significance that the lead agency determines applies to the project; and
3. the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The amendments include a new subdivision 15064.7(c) to clarify that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, including the BAAQMD’s recommended CEQA Thresholds, or suggested by other experts, such as the California Air Pollution Control Officers Association (CAPCOA), so long as any threshold chosen is supported by substantial evidence.

The amendments also include a new subdivision 15130(f) to emphasize that the effects of GHG emissions are cumulative, and should be analyzed when the incremental contribution of those emissions may be cumulatively considerable.

In addition, the amendments add a new set of environmental checklist questions (VII. Greenhouse Gas Emissions) to the CEQA Guidelines Appendix G. The new set includes the following two questions:

a. Would the project: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

California Air Pollution Control Officers Association (CAPCOA)

In January 2008, the California Air Pollution Control Officers Association (CAPCOA) issued a “white paper” on evaluating and addressing GHGs under CEQA (CAPCOA, 2008). This resource guide was prepared to support local governments as they develop their programs and policies around climate change issues. The paper is not a guidance document. It is not intended to dictate or direct how any agency chooses to address GHG emissions. Rather, it is intended to provide a common platform of information about key elements of CEQA as they pertain to GHG, including an analysis of different approaches to setting significance thresholds.

The paper notes that for a variety of reasons local agencies may decide not to have a CEQA threshold. Local agencies may also decide to assess projects on a case-by-case basis when the projects come forward. The paper also discussed a range of GHG emission thresholds that could be used. The range of thresholds discusses includes a GHG threshold of zero and several non-zero thresholds. Non-zero thresholds include percentage reductions for new projects that would allow the state to meet its goals for GHG emissions reductions by 2020 and perhaps 2050. These would be determined by a comparison of new emissions versus business as usual emissions and the reductions required would be approximately 30 percent to achieve 2020 goals and 90 percent (effectively immediately) to achieve the more aggressive 2050 goals. These goals could be varied to apply differently to new project, by economic sector, or by region in the state.

Other non-zero thresholds are discussed in the paper include:

- 900 metric tons/year CO_2e (a market capture approach);
- 10,000 metric tons/year CO_2e (potential CARB mandatory reporting level with Cap and Trade);
- 25,000 metric tons/year CO_2e (the CARB mandatory reporting level for the statewide emissions inventory);
- 40,000 to 50,000 metric tons/year CO_2e (regulated emissions inventory capture – using percentages equivalent to those used in air districts for criteria air pollutants),
- Projects of statewide importance (9,000 metric tons/year CO_2e for residential, 13,000 metric tons/year CO_2e for office project, and 41,000 metric tons/year CO_2e for retail projects), and
- Unit-based thresholds and efficiency-based thresholds that were not quantified in the report.

Carbon Credits: Mandatory and Voluntary

The AB 32 Scoping Plan identifies cap-and-trade as a key strategy for helping California reduce its GHG emissions (CARB, 2008b). A cap-and-trade program sets the total amount of greenhouse gas emissions allowable for facilities under the cap and allows covered sources, including producers and consumers of energy, to determine the least expensive strategies to comply. CARB adopted the final cap-and-trade regulation on October 20, 2011, and AB 32 requires the program to begin in 2013.

While considerable uncertainty remains in the details of cap-and-trade, carbon offset credits are one potential option for achieving emissions reductions. Carbon offset credits are created through the development of projects, such as renewable energy generation or carbon sequestration projects, that achieve the reduction of emissions from activities not otherwise regulated, covered under an emissions cap, or resulting from government incentives. Offsets are verified reductions of emissions whose ownership can be transferred to others. As required by AB 32, any reduction of GHG emissions used for compliance purposes must be real, permanent, quantifiable, verifiable, enforceable, and additional. Offsets used to meet regulatory requirements must be quantified according to CARB-adopted methodologies, and CARB must adopt a regulation to verify and enforce the reductions. The criteria developed will ensure that the reductions are quantified accurately and are not double-counted within the system (CARB, 2008b).

Several registries of carbon offset credits have emerged in the United States in recent years. In the absence of mandatory GHG reduction requirements, these registries record and transfer ownership of offset credits for the voluntary market. The voluntary market has developed to serve those individuals, businesses, and institutions wishing to offset their own emissions, even in the absence of a regulatory requirement, or who are preparing for anticipated regulatory requirements. Registries facilitate and give legitimacy to carbon offset credit tracking and trading. One of the leading registries, the Climate Action Reserve (CAR), is expected to serve as a source of regulatory offsets under the future California cap-and-trade program. CAR is a spin-off program of the California Climate Action Registry (CCAR) which was created by California state legislation in 2001. It has been closely involved with CARB throughout the AB 32 implementation process, including the development of its reporting rule, verification scheme, and several sector-specific accounting protocols. CAR is respected as a national project registry that sets standards, accredits verifiers, and registers and tracks projects using sophisticated software to serialize and transfer emission reduction credits. In 2009, CAR transactions accounted for the majority of the U.S. offset market value, and CAR Climate Reserve Tons (CRTs) usually command a premium over the general voluntary offset market.

The Climate Registry

Another organization that has grown out of the California Climate Action Registry is The Climate Registry (TCR).[1] TCR is a non-profit collaboration among North American states, provinces, territories, and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report GHG emissions into a single registry. TCR does not register or trade carbon offset credits, but rather focuses on both voluntary and mandatory reporting programs and provides comprehensive, accurate data to reduce GHG emissions. TCR encourages voluntary early actions to increase energy efficiency and decrease GHG emissions. TCR accounting infrastructure supports a wide variety of programs that reduce GHG emissions including voluntary, regulatory and market-based programs.

Members of TCR agree to calculate, verify and publicly report their GHG emissions annually, which includes the following steps:

- Identify all sources of GHG emissions;
- Calculate emissions according to TCR protocols;
- Verify emissions with an ANSI-accredited and TCR-recognized verification body;
- Report verified, entity-wide emissions data to the public through TCR.

Annual third-party verification of reported GHG emissions data is intended to ensure that reporting members' GHG inventories are accurate, complete, and transparent. The concept of verification is similar to the concept of a regular financial audit: an annual external assessment of reported financial information (or GHG emissions) provides useful and credible information to an organization's stakeholders.

TCR has partnered with the American National Standards Institute (ANSI) to administer the accreditation of "verification bodies" for TCR's Voluntary Reporting Program. Verification bodies are private companies with expertise in calculating GHG emissions. The accreditation

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1 The following is based on information from The Climate Registry's website: http://www.theclimateregistry.org Accessed June 8, 2010.

process is based on the internationally-recognized ISO 14065 standard. All verification bodies seeking to conduct verification activities for TCR's Voluntary Reporting Program must be accredited by this standard. Verification bodies that successfully complete ANSI's GHG Accreditation Program and that are accredited to both ISO 14065 and TCR's own protocols are eligible to conduct verification activities for TCR Members.

Local Regulatory Setting

Sonoma County General Plan

The Air Resources section of the Open Space and Resource Conservation Element of the General Plan (Sonoma County, 2008) contains the following air quality goals, objectives, and policies that would apply to the project:

Objective OSRC-14.4: Reduce greenhouse gas emissions by 25 percent below 1990 levels by 2015.

Policy OSRC-14a: Continue to support education programs that promote energy conservation; energy efficiency; and solid waste reduction, reuse, and recycling opportunities for County operations, residents and businesses, and local utilities.

Policy OSRC-14b: Continue to provide strategic planning for energy conservation and efficiency in County operations.

Policy OSRC-14c: Continue to purchase and utilize hybrid, electric, or other alternative fuel vehicles for the County vehicle fleet; and encourage County residents and businesses to do the same.

Policy OSRC-14d: Support project applicants in incorporating cost effective energy efficiency that may exceed State standards.

Policy OSRC-14e: Develop energy conservation and efficiency design standards for new development.

Policy OSRC-14f: Use the latest green building certification standards, such as the Leadership in Energy and Environmental Design (LEED) standards, for new development.

Policy OSRC-14g: Develop a Greenhouse Gas Emissions Reduction Program, as a high priority, to include the following:

(1) A methodology to measure baseline and future VMT and greenhouse gas emissions

(2) Targets for various sectors including existing development and potential future development of commercial, industrial, residential, transportation, and utility sources

(3) Collaboration with local, regional, and State agencies and other community groups to identify effective greenhouse gas reduction policies and programs in compliance with new State and Federal standards

(4) Adoption of development policies or standards that substantially reduce emissions for new development

(5) Creation of a task force of key department and agency staff to develop action plans, including identified capital improvements and other programs to reduce greenhouse gases and a funding mechanism for implementation

(6) Monitoring and annual reporting of progress in meeting emission reduction targets

Policy OSRC-14h: Continue to participate in the International Council of Local Environmental Initiatives (ICLEI) Program.

Policy OSRC-14i: Manage timberlands for their value both in timber production and offsetting greenhouse gas emissions.

Policy OSRC-14j: Encourage the Sonoma County Water Agency and other water and wastewater service providers to reduce energy demand from their operations.

Goal OSRC-16: Preserve and maintain good air quality and provide for an air quality standard that will protect human health and preclude crop, plant, and property damage in accordance with the requirements of the Federal and State Clean Air Acts.

Objective OSRC-16.1: Minimize air pollution and greenhouse gas emissions.

Objective OSRC-16.2: Encourage reduced motor vehicle use as a means of reducing resultant air pollution.

Policy OSRC-16a: Require that development projects be designed to minimize air emissions. Reduce direct emissions by utilizing construction techniques that decrease the need for space heating and cooling.

Policy OSRC-16b: Encourage public transit, ridesharing and van pooling, shortened and combined motor vehicle trips to work and services, use of bicycles, and walking. Minimize single passenger motor vehicle use.

Policy OSRC-16c: Refer projects to the local air quality districts for their review.

Policy OSRC-16d: Review proposed changes in land use designations for potential deterioration of air quality and deny them unless they are consistent with the air quality levels projected in the general plan EIR.

Policy OSRC-16i: Ensure that any proposed new sources of toxic air contaminants or odors provide adequate buffers to protect sensitive receptors and comply with applicable health standards. Promote land use compatibility for new development by using buffering techniques such as landscaping, setbacks, and screening in areas where such land uses abut one another.

Policy OSRC-16j: Require consideration of odor impacts when evaluating discretionary land uses and development projects near wastewater treatment plant or similar uses.

Policy OSRC-16l: Work with the applicable Air Quality districts to adopt a diesel particulate ordinance. The ordinance should prioritize on site over off site mitigation of diesel particulate emissions in order to protect neighboring sensitive receptors from these emissions.

Sonoma County has taken a leadership role in climate protection by being the first county in the nation where 100 percent of its cities and the county pledged by resolution to reduce both greenhouse gas and air pollution emissions throughout the community, and by being the first county in the nation where 100 percent of its cities and the county determined their baseline greenhouse gas emissions for municipal operations. Sonoma County released its Community Climate Action Plan in October 2008. This plan presents a number of solutions to reduce countywide GHG emissions by 25 percent below 1990 levels by 2015. These solutions focus on reductions in four sections: Electricity and Natural Gas, Transportation and Land Use, Agriculture and Forests, and Solid Waste. Solutions focusing on solid waste include the following (Climate Protection Campaign, 2008):

1. Reducing the amount of waste generated.
2. Reuse products and packaging.
3. Recycle or compost discards including products, packing, and organic matter.
4. Landfill remaining “waste” locally and produce energy.
5. Fully implement the Countywide Integrated Waste Management Plan.
6. Track progress and issue an annual report card on the amount of GHG emissions reduced in the Solid Waste sector in Sonoma County.

Existing Air Quality

Criteria Air Pollutants

The BAAQMD operates a regional monitoring network that measures the ambient concentrations of the six criteria air pollutants within the Bay Area. Existing levels of air quality in the project area can generally be inferred from ambient air quality measurements conducted by the BAAQMD at its nearby monitoring stations. The nearest station in Sonoma County is the Santa Rosa station, approximately 22 miles northwest of the project, which measures criteria pollutants, including ozone, PM10, and PM2.5. The nearest station to the project is in Marin County, San Rafael station, approximately 13 miles south of the project. **Table 5-3** shows a five-year summary of monitoring data for ozone and particulates at these stations. The table also compares these measured concentrations with state and federal ambient air quality standards.

Motor vehicle transportation, including automobiles, trucks, transit buses, and other modes of transportation, is the major contributor to regional air pollution. Stationary sources were once important contributors to both regional and local pollution, and remain significant contributors in other parts of the state and country. Their role has been substantially reduced in recent years by pollution control programs, such as those of the BAAQMD. Any further progress in air quality improvement now focuses heavily on transportation sources.

TABLE 5-3
AIR QUALITY DATA SUMMARY (2004-2008) FOR THE PROJECT AREA

		Monitoring Data by Year				
Pollutant	**Standard**[a]	**2004**	**2005**	**2006**	**2007**	**2008**
Ozone (Santa Rosa – 5th Street Station)						
Highest 1 Hour Average (ppm) [b]		0.076	0.072	0.077	0.071	0.076
Days over State Standard	0.09	0	0	0	0	0
Highest 8 Hour Average (ppm) [b]		0.061	0.051	0.058	0.060	0.065
Days over State Standard	0.07	0	0	0	0	0
Days over National Standard	0.075	0	0	0	0	0
Ozone (San Rafael Station)						
Highest 1 Hour Average (ppm) [b]		0.091[e]	0.081	0.089	0.072	0.085
Days over State Standard	0.09	0	0	0	0	0
Highest 8 Hour Average (ppm) [b]		0.063	0.060	0.058	0.058	0.070
Days over State Standard	0.07	0	0	0	0	0
Days over National Standard	0.075	0	0	0	0	0
Particulate Matter (PM10) (Santa Rosa – 5th Street Station)						
Highest 24 Hour Average – State/National ($\mu g/m^3$) [b]		48.1/47.4	38.9/36.5	**89.5**/87.1	37.2/36.6	49.9/48.5
Estimated days over State Standard [c]	50	0	0	11.8	0	NA
Estimated days over National Standard [c]	150	0	0	0	0	NA
State Annual Average [d]	20	18.0	15.9	18.8	17.1	NA
Particulate Matter (PM10) (San Rafael Station)						
Highest 24 Hour Average – State/National ($\mu g/m^3$) [b]		**52.3**/51.0	39.1/37.2	**68.2**/64.8	**55.6**/52.6	41.0/38.9
Estimated days over State Standard [c]	50	6.1	0	5.8	6.0	NA
Estimated days over National Standard [c]	150	0	0	0	0	NA
State Annual Average [d]	20	17.9	16.5	18.1	17.5	NA
Particulate Matter (PM2.5) (Santa Rosa – 5th Street Station)						
Highest 24 Hour Average – National ($\mu g/m^3$) [b]		26.6	33.6	**59.0**	32.0	30.8
Estimated days over National Standard [c]	35	0	0	3.1	0	NA
State Annual Average [d]	12	8.3	7.6	9.2	7.6	NA
National Annual Average [d]	15	8.3	7.6	9.2	7.6	NA

a Generally, state standards are not to be exceeded and federal standards are not to be exceeded more than once per year.
b ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
c PM10 and PM2.5 are not measured every day of the year.
d State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.
e Although this value exceeds the state standard, the CARB does not list it as an exceedance.

Note: NA = Adequate data was not available. Values in **Bold** exceed the respective air quality standard.

SOURCE: California Air Resources Board, 2009. *Summaries of Air Quality Data*, 2004 through 2008;http://www.arb.ca.gov/adam.

The principal sources of ozone precursors ROG and NOx in the Bay Area include:

- on-road motor vehicles (approximately 35 percent for ROG and 48 percent for NOx),
- other mobile sources (approximately 22 percent for ROG and 39 percent for NOx),
- solvent evaporation (approximately 19 percent for ROG),
- fuel combustion (approximately 9 percent NOx),
- cleaning and surface coating (approximately 9 percent ROG); and
- petroleum production and marketing (approximately 6 percent for ROG).

Bay Area emissions of the ozone precursors ROG and NOx are expected to decrease by approximately 21 and 39 percent, respectively, between 2006 and 2020 largely as a result of the state's on-road motor vehicle emission control program (BAAQMD, 2006). The Bay Area has a number of motor vehicles and these projected reductions are based on an increased number of vehicles meeting more stringent emission standards entering the fleet, the use of cleaner burning gasoline by all vehicles, and the increased use of alternative fuels. Reductions would also result from the use of improved evaporative emission control systems, computerized fuel injection, engine management systems, cleaner gasoline and the Smog Check program. ROG and NOx emissions from other mobile and stationary sources are also projected to decline as more stringent emission standards and control technologies are adopted and implemented.

Toxic Air Contaminants

The ambient background of TACs is the combined result of many diverse human activities, including gasoline stations, automobiles, dry cleaners, industrial operations, hospital sterilizers, and painting operations. In general, mobile sources contribute more significantly to health risks than do stationary sources. Both BAAQMD and CARB operate a network of monitoring stations that measure ambient concentrations of certain TACs that are associated with strong health-related effects and are present in appreciable concentrations in the Bay Area, as in all urban areas. Ambient concentrations of TACs are similar throughout the urbanized areas of the Bay Area.

Of the pollutants for which monitoring data are available, benzene and 1,3-butadiene (which are emitted primarily from motor vehicles) account for over one half of the average calculated cancer risk (BAAQMD, 2007). Benzene levels have declined dramatically since 1996 with the advent of Phase 2 reformulated gasoline. The use of reformulated gasoline also appears to have led to significant decreases in 1,3-butadiene. Due largely to these observed reductions in ambient benzene and 1,3-butadiene levels, the calculated network average cancer risk has been significantly reduced in recent years. Based on 2003 ambient monitoring data, the BAAQMD reported a calculated lifetime cancer risk from measured concentrations of TACs, excluding diesel particulate matter, to be 143 in one million averaged over all Bay Area locations (BAAQMD, 2007). This is 53 percent less than what was observed in 1995 (BAAQMD, 2007).

There is growing evidence that indicates that exposure to emissions from diesel-fueled engines, about 95 percent of which come from diesel-fueled mobile sources, may result in cancer risks that exceed those attributed to other measured TACs. In 1998, OEHHA issued a health risk assessment that included estimates of the cancer potency of diesel particulate matter (DPM). Because DPM cannot be directly monitored in the ambient air, however, estimates of cancer risk resulting from diesel PM exposure must be based on concentration estimates made using indirect methods (e.g., derivation from ambient measurements of a surrogate compound). Based on CARB, estimates of the population-weighted average ambient DPM concentration for the Bay Area, and the best-estimate cancer potency factor adopted by OEHHA, the approximate cancer risk associated with exposure to diesel PM for 2003 is about 500 to 700 in one million (BAAQMD, 2007).

Greenhouse Gases

The California Energy Commission reports that California is the 12th to 16th largest emitter of CO_2 in the world and produced 492 million metric tons of CO_2e in 2004 (California Energy Commission, 2006). Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state. This category was followed by the electric power sector (including both in-state and out-of-state sources) (22.2 percent) and the industrial sector (20.5 percent). Methane, a highly potent GHG, results from off-gassing associated with agricultural practices and landfills.

Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include age, health problems, proximity to the emissions source, and duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The majority of the area surrounding the project site is agricultural and open space. Land uses in the immediate vicinity of the project are limited to the Riverside Equestrian Center located approximately 2,000 feet south of the project site and Sleepy Hollow Dairy approximately 3,000 feet east of the project site. Although neither of these land uses contains a residence, for purposes of this report, they will be used as distance references for air quality impacts. The closest residence is approximately 3,600 feet from the project site.

5.3 Impacts and Mitigation Measures

Significance Criteria

According to Appendix G of the CEQA *Guidelines*, a project would have a significant effect on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any nonattainment pollutant (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG.

Criteria Pollutants

Updated BAAQMD *CEQA Air Quality Guidelines* (BAAQMD, 2010b) were adopted June 2, 2010, and establish the following quantitative and qualitative thresholds of significance for criteria pollutant emissions:

- Result in total construction or operational emissions of ROG, NOx, or PM2.5 (exhaust) of 10 tons per year or greater, or 54 pounds per day or greater.
- Exceed a construction or operational emission threshold for PM10 (exhaust) of 15 tons per year or greater, or 82 pounds per day.
- For PM10 and PM2.5 as part of fugitive dust generated during construction, the BAAQMD Guidelines specify compliance with Best Management Practices as the threshold.
- CO concentrations of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average).

According to the BAAQMD *CEQA Air Quality Guidelines*, a project's contribution to cumulative impacts for criteria pollutants should be considered significant if the project's impact individually would be significant (i.e. exceeds the BAAQMD's quantitative thresholds).

Odors

For odors, the operational threshold is based on complaint history, whereby five confirmed (by the BAAQMD or the Local Enforcement Agency (LEA)) complaints per year averaged over three years would be considered significant. Notably, composting facilities, which are regulated by CalRecycle, are required to have an Odor Impact Minimization Plan (OIMP) in place and have procedures that establish fence line odor detection thresholds. The BAAQMD recognizes a Lead Agency's discretion under CEQA to use established odor detection thresholds as thresholds of significance for CEQA review for CalRecycle regulated facilities with an adopted OIMP.

Toxic Air Contaminants

The operation of any project with the potential to expose sensitive receptors to substantial levels of TACs (such as DPM) would be deemed to have a potentially significant impact. More specifically, proposed projects that have the potential to expose the public to TACs in excess of the following BAAQMD CEQA thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million people for 70 year exposure.
- Ground-level concentrations of non-carcinogenic TACs would exceed a Hazard Index greater than 1 for the MEI.
- Result in an incremental increase in localized annual average concentrations of PM2.5 exceeding 0.3 micrograms per cubic meter from either project construction or operations.

Under the new BAAQMD *CEQA Air Quality Guidelines*, the project would result in a significant TAC cumulative impact to air quality if it would:

- Result in potential to expose persons to substantial levels of TACs, such that the probability of contracting cancer for the Maximally Exposed Individual considering all existing sources within 1,000 feet of the project fenceline and proposed project sources exceeds 100 in one million; or
- Result in an incremental increase in localized annual average concentrations of PM2.5 exceeding 0.8 micrograms per cubic meter considering all existing sources within 1,000 feet of the project fenceline and proposed project sources.

Greenhouse Gas Emissions

The project's construction-related (temporary, short-term) and operation-related (long-term) emissions of GHGs and whether they would result in a cumulatively considerable contribution to global climate change are described below. This EIR does discuss, for consideration by decision makers, estimated GHG emissions of the project, project-related activities that could contribute to the generation of increased GHG emissions, the project design features that would avoid or minimize those emissions, and the approaches to further reduce those emissions.

The impact analysis approach employed in this EIR is both quantitative and qualitative. The quantitative approach is used to answer the first question of the OPR revisions to the CEQA Guidelines identified above (i.e., will the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment). In accordance with the BAAQMD *CEQA Air*

Quality Guidelines, this project would be considered to have a significant impact if the project would emit GHGs greater than 1,100 metric tons per year CO_2e from sources other than permitted stationary sources. If a project does not exceed the quantifiable threshold in the first of the OPR proposed revisions, the qualitative approach addresses the second of the OPR revisions to the CEQA Guidelines identified above (i.e., will the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs). Theoretically, if a project implements reduction strategies identified in AB 32, the Governor's Executive Order S-3-05, or other strategies to help reduce GHGs to the level proposed by the governor, it could reasonably follow that the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Alternatively, a project could reduce a potential cumulative contribution to GHG emissions through energy efficiency features, density and locale (e.g., compact development near transit and activity nodes of work or shopping) and by contributing to available mitigation programs, such as reforestation, tree planting, or carbon trading. However, the analysis in this EIR considers that, because the quantifiable threshold was formulated based on AB 32 reduction strategies, a project cannot exceed the numeric threshold after mitigation and fully comply with the second of the OPR revisions and not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Impact Discussion

The project includes processing of green materials, food scraps and wood waste. Composting would utilize either an outdoor windrow system or aerated static piles (ASP). Windrow composting is the production of compost by piling organic matter or biodegradable waste, such as green materials and food scraps in long rows (*windrows*). This method is suited to producing large volumes of compost. The piles are generally turned to improve porosity and oxygen content, to maintain an optimal moisture level, and to redistribute cooler and hotter portions of the pile. ASPs are closely managed piles or windrows that are either outside in the open (in the case of this project) or covered by a structure. This option would use forced aeration, whereby the piles are aerated by a fan that pulls air down through the pile to an air collection plenum (or piping network) and then discharges the air to the atmosphere or to an odor control system. The air quality impacts of these two options are described below.

Impact 5.1: Construction of the project (associated with either windrow or ASP option) could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, PM10, and PM2.5 that could contribute to existing nonattainment conditions and further degrade air quality. (Significant)

Construction activities would be similar for the windrow or ASP options and would include site preparation, earthmoving and general construction. Site preparation includes activities such as general land clearing and grubbing. Earthmoving activities include cut-and-fill operations, soil compaction and grading. General construction includes adding improvements such as roadway surfaces, structures, and facilities. The emissions generated from these construction activities include:

- Dust (including PM10 and PM2.5), primarily from fugitive sources such as soil disturbance and vehicle travel over unpaved surfaces

- Combustion emissions of criteria air pollutants (including ROG, NOx, CO, PM10, and PM2.5), primarily from the operation of heavy construction machinery (primarily diesel operated), portable auxiliary equipment, and construction worker automobile and haul truck trips
- Evaporative emissions (ROG) from asphalt paving
- Combustion emissions of greenhouse gases, discussed in Cumulative Impacts 5.8 and 5.9 below.

Construction-related fugitive dust emissions at the project site would vary from day to day, depending on the level and type of activity, silt content of the soil and the weather. Without mitigation, construction activities would result in significant quantities of dust and as a result, local visibility and PM10 and PM2.5 concentrations would be adversely affected, temporarily and intermittently, during the construction period. In addition, the fugitive dust generated by construction would include not only PM10, but also larger particles, which would fall out of the atmosphere, potentially as far as several hundred feet from the site and could result in nuisance impacts. Construction activities would also result in the emission of other criteria pollutants from equipment exhaust, construction-related vehicular activity and construction worker automobile trips. Emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers and haul trucks. Criteria pollutant emissions of ROG and NOx from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during project construction.

BAAQMD has adopted new daily mass significance thresholds for construction-related activities in its *CEQA Air Quality Guidelines*. These thresholds are 54 pounds per day of ROG, NOx, or PM2.5 and 82 pounds per day for PM10. The URBEMIS2007 model was used to quantify construction emissions. Unmitigated and mitigated construction-related emissions for the project are presented in **Table 5-4**. As can be seen from the data in **Table 5-4**, NOx emissions would exceed the BAAQMD thresholds, even after implementation of mitigation. This impact would be significant and unavoidable.

TABLE 5-4
PEAK DAY CONSTRUCTION-RELATED POLLUTANT EMISSIONS (Pounds/Day)[a]

Year	ROG	NOx	CO	SO_2	Exhaust PM10[b]	Exhaust PM2.5[b]
2010 (Unmitigated Emissions)	9	69	39	<1	4	4
2010 (Mitigated Emissions)[c]	9	58	39	<1	2	2
BAAQMD Construction Threshold	54	54	None	None	82	54
Significant Impact?	No	Yes	No	No	No	No

a. Emissions were modeled using URBEMIS2007 and assuming 17.5 acres of the total 70 acre-site would be disturbed on the worse-case day. Default URBEMIS2007 equipment assumptions were assumed for construction. 100,000 cubic yards of soil was assumed to be imported for berm development. Construction activities were assumed to occur for a duration of one year. Additional information is included in Appendix AIR-1.
b BAAQMD's proposed construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.
c Mitigation measures were incorporated into the URBEMIS2007 model as surrogates for the Basic and Additional Control Measures described below under Mitigation Measure 5.1, per the BAAQMD *CEQA Air Quality Guidelines*.

Mitigation Measure

Mitigation Measure 5.1: Construction Emission Controls. During construction, the SCWMA shall require the construction contractor to implement the measures that are specified under BAAQMD's basic and additional construction mitigation procedures. These include:

- Basic Control Measures. These measures are required for all construction projects in the BAAQMD jurisdiction:
  - All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
  - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  - All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All vehicle speeds on unpaved roads shall be limited to 15 mph. Signage with this speed restriction shall be imposed where appropriate and applicable.
  - All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
  - Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
  - All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
  - Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
- Additional Control Measures. Since unmitigated construction emissions would exceed the BAAQMD thresholds, the SCWMA and its contractors shall implement the following additional control measures during project construction:
  - All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
  - All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
  - Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.

- o Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
- o The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
- o All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- o Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
- o Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- o Minimizing the idling time of diesel powered construction equipment to two minutes.
- o The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.
- o Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
- o Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.
- o Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines.

Significance after Mitigation: Significant and Unavoidable.

As depicted in **Table 5-4**, even with mitigation implementation, NOx emissions during project construction would exceed the BAAQMD threshold. This impact would be significant and unavoidable.

Impact 5.2: Operation of the project (windrow composting option) would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. (Significant)

Project-related operational air quality impacts fall into two categories: fugitive dust impacts (re-entrainment on local roadways and on-site disturbed areas) and criteria pollutant impacts due to off-road equipment, on-road vehicles, area sources (natural gas combustion, landscaping equipment, architectural coatings), and composting off-gas emissions.

Emission factors for the emission-generating operations associated with the project were determined based on methodology found in publications and databases including EPA's *Compilation of Air Pollutant Emission Factors* (AP-42) (U.S. EPA, 2001) for re-entrained dust, CARB's URBEMIS2007 emission model for off-road equipment exhaust, area source emissions, and disturbed area fugitive dust, CARB's EMFAC2007 emission model for on-road motor vehicles, and the CIWMB emission factor for VOCs from windrow composting (CIWMB, 2007)[2]. Detailed information concerning the emission factors and other pertinent assumptions are contained in Appendix AIR-1.

Conditions were assessed for the Existing Sonoma Compost facility and projected into the future (for year 2011), and for the project's assumed first year of operation (year 2011) and maximum projected throughput (year 2030). The project and existing facility would not overlap operations. **Table 5-5**, below, presents estimated maximum (worst-case) daily emissions of criteria pollutants, and comparison to the applicable regulatory threshold. Table 5-5 shows that the estimated unmitigated net emissions (project minus Existing emissions) of all pollutants would not exceed the applicable BAAQMD significance thresholds during operations starting in 2011. For operations in 2030, unmitigated net emissions of ROG and PM10 would exceed the BAAQMD thresholds. This would be a significant impact without mitigation.

TABLE 5-5
ESTIMATED MAXIMUM DAILY PROJECT (WINDROW COMPOSTING) EMISSIONS

	Criteria Pollutant Emissions (lbs/day)[1]				
	ROG	**CO**	**NOx**	**PM10**	**PM2.5**
Existing Operations – Projected Year 2011					
Off-road Equipment Exhaust	4	16	38	1	1
On-road Vehicle Exhaust	1	21	5	0	0
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	712	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (3 acres)	0	0	0	39	7
Total Emissions (pounds/day)	**717**	**39**	**43**	**40**	**8**
Project Operations - Year 2011					
Off-road Equipment Exhaust	4	16	38	1	1
On-road Vehicle Exhaust	2	55	8	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	712	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (3 acres)	0	0	0	87	14
Total Unmitigated Emissions (pounds/day)	**718**	**73**	**46**	**89**	**16**
Total Net Emissions (Unmitigated Project minus Existing)	**1**	**34**	**3**	**49**	**8**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***
Total Mitigated Emissions (pounds/day)[2]	**184**	**73**	**46**	**42**	**8**
Total Net Emissions (Mitigated Project minus Existing)[3]	**(533)**	**34**	**3**	**2**	**0**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***

[2] The CIWMB emission factor was used based on recommendations by the CIWMB (Horowitz, 2009).

TABLE 5-5
ESTIMATED MAXIMUM DAILY PROJECT (WINDROW COMPOSTING) EMISSIONS

	Criteria Pollutant Emissions (lbs/day)[1]				
	ROG	**CO**	**NOx**	**PM10**	**PM2.5**
Project Operations - Year 2030					
Off-road Equipment Exhaust	4	27	6[5]	0	0
On-road Vehicle Exhaust	0	24	3	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	1,425	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (6 acres)	0	0	0	172	28
Total Unmitigated Emissions (pounds/day)	**1,429**	**53**	**9**	**173**	**29**
Total Net Emissions (Unmitigated Project minus Existing)	**712**	**14**	**(34)**	**133**	**21**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***Yes***	***NA***	***No***	***Yes***	***No***
Total Mitigated Emissions (pounds/day) [2]	**360**	**53**	**9**	**81**	**14**
Total Net Emissions (Mitigated Project minus Existing) [3]	**(357)**	**14**	**(34)**	**41**	**6**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***

1. Emissions were modeled using several models and emission factors, including the URBEMIS2007 model (for off-road equipment, area sources, and fugitive dust from actively disturbed areas), EMFAC2007 for on-road vehicle exhaust, the CIWMB emission factor for VOC emissions, and U.S. EPA AP-42 (for paved roads (section 13.2.1 - Paved Roads)). Existing emissions of fugitive dust were assumed to be controlled by watering 2x per day and reducing speed on unpaved roads. These emission factors and modeling are described in more detail in Appendix AIR-1.
2. These values include implementation of Mitigation Measures 5.2a and 5.2b described below. The fugitive dust reduction is based on the URBEMIS2007 defaults.
3. Values in (parentheses) represent a net reduction from the Existing scenario.
4. BAAQMD has established mass thresholds of significance for ROG, NOx, PM10, and PM2.5. The BAAQMD thresholds for CO are localized concentrations, which is described below under Impact 5.4
5. Even though off-road equipment operations were assumed to double to process double the compost during year 2030 operations, NOx is estimated to substantially drop during that time due to assumed new equipment purchases or rebuilding the equipment in the year 2025, which would meet more stringent regulatory requirements.

Mitigation Measures

Mitigation Measure 5.2a: Composting VOC Reduction via Pseudo-Biofilters. The SCWMA shall implement the following control measure to reduce off-gas emissions from composting organic materials:

- Apply finished compost as a pseudo-biofilter to cap active windrows. Estimated VOC reduction of 75 percent (CIWMB, 2007).

Mitigation Measure 5.2b: Fugitive Dust Control. The SCWMA shall implement best management practices for fugitive dust emission control, including, but not limited to the following:

- Water exposed surfaces two times per day, except during rainy days.
- All vehicle speeds on unpaved roads shall be limited to 15 mph. Signage with this speed restriction shall be imposed where appropriate and applicable.

Significance after Mitigation: Less than Significant.

Implementation of the above mitigation measures would reduce net daily ROG and PM10 emissions to a less than significant level for 2011 and 2030 operations.

Impact 5.3: Operation of the project (ASP composting option) would result in emissions of criteria air pollutants at levels that would not substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. (Significant)

Emission factors and methodology for the emission-generating operations associated with the ASP option were determined based on similar methodology to the windrow option discussed in Impact 5.2. The primary differences are that several pieces of equipment (windrow turners) would not be required, the disturbed area would be decreased (since the piles would be covered rather than turned), and the VOC capture rate is based on preliminary testing results for an ASP system (Krauter, 2009), since published factors could not be found. Detailed information concerning the emission factors and other pertinent assumptions are contained in Appendix AIR-1.

Conditions were assessed for the Existing Sonoma Compost facility (for year 2011), and for the project's assumed first year of operation (year 2011) and maximum projected throughput (year 2030). **Table 5-6**, below, presents estimated maximum (worst-case) daily emissions of criteria pollutants, and comparison to the applicable regulatory threshold. **Table 5-6** shows that the estimated net emissions (project minus Existing emissions) of all pollutants would not exceed the applicable BAAQMD significance thresholds during operations starting in 2011. For operations in 2030, unmitigated net emissions of PM10 would exceed the BAAQMD threshold. This would be a significant impact without mitigation.

TABLE 5-6
ESTIMATED MAXIMUM DAILY PROJECT (ASP COMPOSTING) EMISSIONS

	Criteria Pollutant Emissions (lbs/day)[1]				
	ROG	**CO**	**NOx**	**PM10**	**PM2.5**
Existing Operations – Projected Year 2011					
Off-road Equipment Exhaust	4	16	38	1	1
On-road Vehicle Exhaust	1	21	5	0	0
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	712	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (3 acres)	0	0	0	39	7
Total Emissions (pounds/day)	**717**	**39**	**43**	**40**	**8**
Project Operations - Year 2011					
Off-road Equipment Exhaust	4	15	36	1	1
On-road Vehicle Exhaust	2	55	8	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Aerated Static Pile Emissions	36	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (2 acres)	0	0	0	67	10
Total Unmitigated Emissions (pounds/day)	**42**	**72**	**44**	**69**	**12**
Total Net Emissions (Unmitigated Project minus Existing)	**(675)**	**33**	**1**	**29**	**4**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***
Total Mitigated Emissions (pounds/day) [2]	**42**	**72**	**44**	**32**	**6**
Total Net Emissions (Mitigated Project minus Existing) [3]	**(675)**	**33**	**1**	**(8)**	**(2)**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***

TABLE 5-6
ESTIMATED MAXIMUM DAILY PROJECT (ASP COMPOSTING) EMISSIONS

	Criteria Pollutant Emissions (lbs/day)[1]				
	ROG	**CO**	**NOx**	**PM10**	**PM2.5**
Project Operations - Year 2030					
Off-road Equipment Exhaust	4	25	6[5]	0	0
On-road Vehicle Exhaust	0	24	3	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Aerated Static Pile Emissions	71	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (4 acres)	0	0	0	132	20
Total Unmitigated Emissions (pounds/day)	**75**	**51**	**9**	**133**	**21**
Total Net Emissions (Unmitigated Project minus Existing)	**(642)**	**12**	**(34)**	**93**	**13**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***Yes***	***No***
Total Mitigated Emissions (pounds/day)[2]	**75**	**51**	**9**	**63**	**10**
Total Net Emissions (Mitigated Project minus Existing)[3]	**(642)**	**12**	**(34)**	**23**	**2**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***

1. Emissions were modeled using several models and emission factors, including the URBEMIS2007 model (for off-road equipment, area sources, and fugitive dust from actively disturbed areas), EMFAC2007 for on-road vehicle exhaust, the CIWMB emission factor for VOC emissions with a 95% reduction from ASP system (based on preliminary data), and U.S. EPA AP-42 (for paved roads (section 13.2.1 - Paved Roads)). Existing emissions of fugitive dust were assumed to be controlled by watering 2x per day and reducing speed on unpaved roads. These emission factors and modeling are described in more detail in Appendix AIR-1.
2. These values include implementation of Mitigation Measure 5.3 described below. The fugitive dust reduction is based on the URBEMIS2007 defaults.
3. Values in (parentheses) represent a net reduction from the Existing scenario.
4. BAAQMD has established mass thresholds of significance for ROG, NOx, PM10, and PM2.5. The BAAQMD thresholds for CO are localized concentrations, which is described below under Impact 5.4.
5. Even though off-road equipment operations were assumed to double to process double the compost during year 2030 operations, NOx is estimated to substantially drop during that time due to assumed new equipment purchases or rebuilding the equipment in the year 2025, which would meet more stringent regulatory requirements.

Mitigation Measures

Mitigation Measure 5.3: Implement Mitigation Measure 5.2b (Fugitive Dust Control)**.**

Significance after Mitigation: Less than Significant.

Implementation of the above mitigation measures would reduce net daily PM10 emissions to a less than significant level under full build-out.

Impact 5.4: Project traffic (associated with either windrow or ASP composting option) would generate localized CO emissions on roadways and at intersections in the project vicinity. (Less than Significant)

Project-generated CO emissions were determined based on the amount of peak daily traffic that would be generated by the project for either the windrow or ASP composting option. A conservative average trip distance of 56 miles (roundtrip) for Mixed Organic Material (MOM) trucks and 44 miles (roundtrip) for all other traffic (employees, haul trucks, self-haul vehicles, bio fuel/agricultural use vehicles, and compost sales) were used. Project-generated CO emissions from peak daily traffic, which would be associated with Saturday operations, would be approximately 55 pounds per day in 2011, and 24 pounds per day in 2030 (see **Tables 5-5** and **5-6**).

According to the BAAQMD *CEQA Air Quality Guidelines*, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

1. Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The project would not conflict with the Sonoma County Comprehensive Transportation Plan established by the Sonoma County Transportation Authority. In regards to the second and third criteria, intersection traffic volumes would be substantially less than 44,000 and 24,000 vehicles per hour, respectively. The estimated increase in traffic volumes caused by project-related traffic would not be substantial relative to background traffic conditions, nor would project traffic significantly disrupt daily traffic flow on area roadways.

Based on the BAAQMD's criteria, project-related traffic would not lead to violations of the carbon monoxide standards and therefore, no further analysis was conducted for carbon monoxide impacts of the project at these intersections. This impact would be considered less than significant on a project-level and cumulative basis.

Mitigation: None required.

Impact 5.5: Operation of the project (associated with either windrow or ASP composting option) could create objectionable odors affecting a substantial number of people. (Significant)

Types of land uses that typically pose potential odor problems include agriculture, wastewater treatment plants, food processing and rendering facilities, chemical plants, composting facilities, landfills, waste transfer stations, and dairies. In addition, the occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they can still be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

In order to determine whether there have been odor complaints associated with operation of the existing Sonoma Compost facility on Mecham Road, a Public Records Request form was submitted to the BAAQMD on February 24, 2009. In response to the request, the BAAQMD indicated that no records of odor complaints were found for the last two years. A copy of the response is included in Appendix AIR-7. In addition, the LEA was contacted and stated that three odor complaints occurred in 2006, but there have been no complaints since (Anderson, 2009). Although there haven't been odor complaints in the past few years at the existing facility and the existing facility wouldn't currently trigger the threshold of five confirmed complaints per year averaged over three years criteria specified by the BAAQMD, the project would locate composting operations in the vicinity of different receptors, as well as increase the permitted maximum tonnage of processed compost from 100,000 tons per year (under existing) up to 200,000 tons per year for the project. Thus, odors associated with the project would be potentially significant without processes in place to mitigate odor. The BAAQMD also has several rules regarding odors (Regulation 1-301 (Public Nuisance) and Regulation 7 (Odorous Substances)) that the project must meet. The SCWMA would be required to implement an Odor Impact Minimization Plan (OIMP) as required by law and codified in the California Code of Regulations, Title 14 (Natural Resources), Division 7 (CIWMB), Chapter 3.1 (Compostable Materials Handling Operations and Facilities Regulatory Requirements), Article 3 (Report of Facility Information), Section 17863.4 (Odor Impact Minimization Plan) for either composting option (windrow or ASP). The OIMP includes two major components, a Complaint Response Protocol and an Odor Complaint Reporting Format. The Odor Complaint Response Protocol describes the procedures to follow upon receiving a complaint. The protocol includes measures to identify the odor and requires appropriate adjustments to storage, process control, and facility improvements to reduce odors.

Mitigation Measure

Mitigation Measure 5.5: Odor Control. The SCWMA shall develop and comply with an Odor Impact Minimization Plan (OIMP) pursuant to the requirements of the California Code of Regulations, Title 14, Division 7, Chapter 3.1, Article 3, Section 17863.4.

Significance after Mitigation: Less than Significant.

Compliance with the OIMP would assure that odor impacts from composting would be less than significant.

Impact 5.6: Implementation of the project (windrow composting option) may lead to increases in exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources. (Significant)

Exposure levels of TACs generated by operation of the proposed facility were estimated by conducting dispersion modeling of potential TAC sources at the project site. Additional information is included in the Health Risk Assessment (HRA) as part of Appendix AIR-2. TAC emission sources evaluated include: diesel exhaust from heavy duty equipment used onsite; diesel exhaust from on-road haul trucks; and fugitive TAC emissions from composting activities. The emissions from these sources were input to the USEPA approved dispersion model AERMOD (Version 09292) to calculate ambient air concentrations in the area surrounding the project site. **Table 5-7** depicts the TACs of concern and their sources.

TABLE 5-7
SOURCES OF TACS AT THE PROJECT

TAC[1]	Source	Acute	Chronic	Carcinogen
Diesel Particulate Matter (DPM)	Heavy duty equipment; haul trucks	No	Yes	Yes
Ammonia	Composting piles	Yes	Yes	No
Methylene Chloride	Composting piles	Yes	Yes	Yes
Methyl Ethyl Ketone (MEK)	Composting piles	Yes	No	No
Methyl Chloroform	Composting piles	Yes	Yes	No
Toluene	Composting piles	Yes	Yes	No
Xylene	Composting piles	Yes	Yes	No
Benzyl Chloride	Composting piles	Yes	No	Yes
Formaldehyde	Composting piles	Yes	Yes	Yes
Acetaldehyde	Composting piles	Yes	Yes	Yes

1. Acrolien was not included in this list since acrolien emissions from composting activities are estimated to be ND or zero.
SOURCES: Environmental Science Associates, 2009; OEHHA, 2003; and OEHHA, 2008.

The nearest workers would be located at the Riverside Equestrian Center approximately 2,000 feet south of the project and at the Sleepy Hollow Dairy approximately 3,000 feet east of the site. The closest residential receptor would be located approximately 3,600 feet northeast of the site.

Acute and Chronic Risk

Non-cancer adverse health risk, both for acute (short-term) and chronic (long-term) risk, is measured against a hazard index (HI), which is defined as the ratio of the predicted incremental exposure concentration from the project to a published reference exposure level (REL) that could cause adverse health effects as established by OEHHA. The ratio (referred to as the Hazard Quotient [HQ]) of each non-carcinogenic substance that affects a certain organ system is added to produce an overall HI for that organ system. The overall HI is calculated for each organ system. If the overall HI for the highest-impacted organ system is greater than one, then the impact is considered to be significant. **Table 5-8** presents acute and chronic RELs and target organs for each of these TACs that would be emitted under implementation of the project.

The maximum exposed worker receptor was modeled at the Riverside Equestrian Center. The maximum HI would target the eyes. For the maximum exposed worker, the acute HI under the windrow option would be 1.59, which would exceed the BAAQMD threshold of 1 and would therefore constitute a **significant impact**. For the maximum exposed residence, the acute HI under the windrow option would be 0.15, which is well below the BAAQMD threshold of 1 and would be **less than significant**.

As with acute risk, the maximum exposed worker receptor was modeled at the Riverside Equestrian Center for chronic effects. The maximum chronic HI would target the respiratory system. For the maximum exposed worker, the chronic HI under the windrow option would be 0.031. For the maximum exposed residence, the chronic HI under the windrow option would be 0.0047. The chronic risk for the maximum exposed worker and residential receptors are well below the BAAQMD threshold of 1 and would be **less than significant**.

TABLE 5-8
ACUTE AND CHRONIC REFERENCE EXPOSURE LEVELS

Compound	Acute REL ($\mu g/m^3$)	Acute Target Organs	Chronic REL ($\mu g/m^3$)	Chronic Target Organs
Ammonia	3,200	Eyes; Respiratory	200	Respiratory
Methylene Chloride	14,000	Cardiovascular; Nervous	400	Cardiovascular; Nervous
MEK	13,000	Eyes; Respiratory	--	--
Methyl Chloroform	68,000	Nervous	1,000	Nervous
Toluene	37,000	Nervous; Eyes; Respiratory; Reproductive	300	Developmental; Nervous; Respiratory
Xylene	22,000	Nervous; Respiratory; Eyes	700	Nervous; Respiratory; Eyes
Benzyl Chloride	240	Respiratory; Eyes	--	--
Formaldehyde	55	Sensory; Eyes	9	Respiratory
Acetaldehyde	470	Sensory; Bronchi; Eyes; Nose; Throat	140	Respiratory
DPM	--	--	5	Respiratory

-- No REL.
SOURCE: OEHHA, 2008.

Cancer Risk

The following five carcinogens would be emitted under the project: (1) DPM; (2) methylene chloride; (3) benzyl chloride; (4) formaldehyde; and (5) acetaldehyde. Cancer risks at worker receptors were analyzed assuming an exposure frequency of 245 days per year (5 days per week/49 weeks per year) for 40 years with a worker breathing rate of 149 L/kg bodyweight – day. Cancer risks at residential receptors were analyzed based on the 80th percentile adult breathing rate of 302 L/kg-day. Exposure frequency for residents was assumed to be 350 days per year and exposure duration was assumed to be 70 years. The maximum cancer risk under the windrow option for the worker and residential receptors would be 4.9 and 3.8 per million, respectively, which would not exceed the BAAQMD threshold of 10 in one million and would be **less than significant**.

PM2.5 Concentration

The maximum annual PM2.5 concentration as a result of the project construction would be 0.02 $\mu g/m^3$, which would not exceed the BAAQMD threshold of 0.3 $\mu g/m^3$ and would therefore constitute a **less than significant** impact. The maximum annual PM2.5 concentration as a result of the project operations would be 0.07 $\mu g/m^3$, which would not exceed the BAAQMD threshold of 0.3 $\mu g/m^3$ and would therefore constitute a **less than significant** impact.

Mitigation Measure

Mitigation Measure 5.6: Implement Mitigation Measure 5.2a (Pseudo-Biofilters)**.**

Significance after Mitigation: Less than Significant.

The acute risk for the maximum exposed residential receptor, the chronic risk for the worker and residential receptors, and the cancer risk for the worker and residential receptors would be less-than-significant under the windrow option. Implementation of the pseudo-biofilter would reduce the acute risk at the maximum worker and residential receptor to 0.43 and 0.040, respectively; the chronic risk at the maximum worker and residential receptor would be reduced to 0.009 and 0.0014, respectively; and the cancer risk of the maximum worker and residential receptor would be reduced to 1.55 and 1.36, respectively. With implementation of the pseudo-biofilter mitigation, the acute risk of the maximum exposed worker would be reduced to **less-than-significant**.

Impact 5.7: Implementation of the project (ASP composting option) may lead to increases in exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources. (Less than Significant)

Please see introductory information in Impact 5.6, which is the same for Impact 5.7.

Acute and Chronic Risk

The maximum exposed worker receptor was modeled at the Riverside Equestrian Center. The maximum HI would target the eyes. For the maximum exposed worker, the acute HI under the ASP option would be 0.085. For the maximum exposed residence, the acute HI under the ASP option would be 0.0079. The acute risk for the maximum exposed worker and residential receptors are well below the BAAQMD threshold of 1 and would be **less than significant**.

As with acute risk, the maximum exposed worker receptor was modeled at the Riverside Equestrian Center. The maximum chronic HI would target the respiratory system. For the maximum exposed worker, the chronic HI under the ASP option would be 0.0029. For the maximum exposed residence, the chronic HI under the ASP option would be 0.00056. The chronic risk for the maximum exposed worker and residential receptors are well below the BAAQMD threshold of 1 and would be **less than significant**.

Cancer Risk

The following five carcinogens would be emitted under the project: (1) DPM; (2) methylene chloride; (3) benzyl chloride; (4) formaldehyde; and (5) acetaldehyde. Cancer risks at worker receptors were analyzed assuming an exposure frequency of 245 days per year (5 days per week/49 weeks per year) for 40 years with a worker breathing rate of 149 L/kg bodyweight – day. Cancer risks at residential receptors were analyzed based on the 80th percentile adult breathing rate of 302 L/kg-day. Exposure frequency for residents was assumed to be 350 days per year and exposure duration was assumed to be 70 years. The maximum cancer risk under the ASP option for the worker and residential receptors would be 0.68 and 0.70 per million, respectively, which would not exceed the BAAQMD threshold of 10 in one million and would be **less than significant**.

PM2.5 Concentration

The maximum annual PM2.5 concentration as a result of the project construction would be 0.02 µg/m^3, which would not exceed the BAAQMD threshold of 0.3 µg/m^3 and would therefore constitute a **less than significant** impact. The maximum annual PM2.5 concentration as a result of the project operations would be 0.07 μg/m^3, which would not exceed the BAAQMD threshold of 0.3 μg/m^3 and would therefore constitute a **less than significant** impact.

Mitigation: None required.

Impact 5.8: Construction and operation of the project (windrow composting option) could result in a cumulatively considerable increase in greenhouse gas emissions. (Significant)

The California Energy Commission (CEC) estimated that in 2004 California produced 500 million gross metric tons (about 550 million U.S. tons) of carbon dioxide-equivalent GHG emissions.[3] The CEC found that transportation is the source of 38 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent and industrial sources at 13 percent (CEC, 2006).

In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the greatest source of the Bay Area's GHG emissions, accounting for approximately 40.6 percent of the Bay Area's 102.6 million metric tons of GHG emissions in 2007. Industrial and commercial sources were the second largest contributors of GHG emissions with about 34 percent of total emissions. The other contributors in descending order include electricity and co-generation (14.8 percent), residential fuel usage (6.6 percent), off-road equipment (2.8 percent), and agriculture and farming (1.1 percent) (BAAQMD, 2008b).

Project Contribution to Cumulative Climate Change Effects from Greenhouse Gas Emissions

"The most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide" (OPR, 2008). State law defines GHG to also include hydrofluorocarbons, perfluorocarbons, nitrogen triflouride and sulfur hexafluoride. These latter GHG compounds are usually emitted in industrial processes, and therefore not applicable to the project. The calculation presented below includes annual CO_2e GHG emissions from off-road equipment (CO_2), vehicular traffic (CO_2), energy consumption (CO_2, N_2O, CH_4), area sources (natural gas combustion and landscape equipment) (CO_2), and off-gas emissions (CH_4) from composting. Appendix AIR-1 contains information regarding assumptions and emissions calculations used in this analysis.

GHG emissions associated with the construction phase of the project would result in a maximum annual generation of 654 metric tons of CO_2e. In addition, in light of the considerations outlined above**,** **Table 5-9** presents an estimate of the project's operational CO_2e emissions. Data in Table 5-9 indicate that GHG emissions that would result from the project would exceed the 1,100 metric tons per year threshold established by BAAQMD by 2,126 metric tons of CO_2e per year. This would represent a cumulatively significant impact.

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3 Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

TABLE 5-9
PROJECT OPERATIONS (WINDROW COMPOSTING OPTION) GREENHOUSE GAS EMISSIONS

	Greenhouse Gas Emissions (metric tons/year)[1] CO_2e
Existing Operations – Projected Year 2011	
Off-road Equipment	786
On-road Vehicles	418
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	7
Total Unmitigated Emissions	**2,123**
Project Operations - Year 2011	
Off-road Equipment	786
On-road Vehicles	931
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	145
Total Unmitigated Emissions	**2,774**
Net Emissions (Project minus Existing)[2]	**651**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**No**
Project Operations - Year 2030	
Off-road Equipment	1,578
On-road Vehicles	1,849
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	1,732
Indirect Emissions from Electricity Generation	145
Total Unmitigated Emissions	**5,349**
Net Emissions (Project minus Existing)[2]	**3,226**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**Yes**

1. Emissions were modeled using several models and emission factors, which is described in more detail in Appendix AIR-1. These models and emission factors include URBEMIS2007 model (for off-road equipment and area sources), EMFAC2007 for on-road vehicle exhaust, GHG emission factors from the California Climate Action Registry *General Reporting Protocol* (California Climate Action Registry, 2009) for indirect emissions from electricity generation, and a CH_4 emission factor from the South Coast Air Quality Management District (SCAQMD, 2001) from green waste composting.
2. The "Net Emissions" are estimates of the project operational GHG emissions minus the Existing Sonoma Compost facility operational GHG emissions. These estimates represent the incremental increase in GHGs from the project.

The methodology applied here does not account for the shift in emissions from diverting the organic waste from out-of-County landfills. The project would process organic materials (that might otherwise be disposed of as waste) from Sonoma County sources and produce a renewable resource within the County. Compost could be used in the County as a replacement for alternative products, such as fertilizers, that also require energy for production as well as transport to the County from the manufacturing facilities or distribution centers. Thus, the project would be inherently energy efficient by providing a local source of soil enrichment materials and reduce the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. In addition, because the effects of GHGs are global, if the project merely shifts the location of the GHG-emitting activities (off-road equipment, trucks, waste degradation) from landfills to the project site, there would not likely be a net new increase of emissions.

With regard to any potential conflict with applicable Sonoma County plans, policies, or regulations adopted to reduce GHGs, Sonoma County has established a *Sonoma County Community Climate Protection Action Plan* (Climate Protection Campaign, 2008), which incorporates the target reduction goal of 25 percent below the 1990 level by the year 2015. The project would comply with the strategies presented in the Plan to reduce GHGs through increased recycling of organic materials via composting processes (described under the Agriculture and Forests, as well as Solid Waste subsections of the Plan). Therefore, the project would not conflict with any local regulations pertaining to GHGs.

Even with the above considerations, the project would exceed the BAAQMD threshold for GHGs and would be cumulatively significant without mitigation.

Mitigation Measures

Mitigation Measure 5.8a: Develop Annual GHG Inventory. The applicant shall become a reporting member of The Climate Registry. Beginning with the first year of composting and continuing for the duration of the project operations, the SCWMA shall conduct an annual inventory of GHG emissions, and report these to The Climate Registry. The annual inventory shall be conducted according to The Climate Registry protocols and third-party verified by a verification body accredited through The Climate Registry.

Mitigation Measure 5.8b: Greenhouse Gas Emissions Reduction Plan. SCWMA shall prepare and make available to the public a Greenhouse Gas Emissions Reduction Plan (GHG plan) containing strategies to ensure that GHG emissions do not exceed 1,100 MT CO_2e per year. The SCWMA shall implement the approved GHG plan, which will include, but not be limited to, the following measures:

- The SCWMA shall power on-road and off-road vehicles with electricity and/or alternative fuels (such as biodiesel and compressed natural gas) where available.
- If the SCWMA is unable to reduce emissions to below 1,100 MT CO_2e per year using the above measures, the SCWMA shall offset all remaining project emissions above that threshold. Any offset of project emissions shall be demonstrated to be real, permanent, verifiable, enforceable, and additional. To the maximum extent feasible, as determined by the SCWMA in coordination with the BAAQMD, offsets shall be implemented locally. Offsets may include but are not limited to, the following (in order of preference):
    1. Onsite offset of project emissions, for example through development of a renewable energy generation facility or a carbon sequestration project (such as a forestry or wetlands project for which inventory and reporting protocols have been adopted). If the SCWMA develops an offset project, it must be registered with the Climate Action Reserve or otherwise approved by the BAAQMD in order to be used to offset project emissions. The number of offset credits produced would then be included in the annual inventory, and the net (emissions minus offsets) calculated.
    2. Funding of local projects, subject to review and approval by the BAAQMD, that will result in real, permanent, verifiable, enforceable, and additional reduction in GHG emissions. If the BAAQMD or Sonoma County develops a GHG mitigation fund, the applicant may instead pay into this fund to offset GHG emissions in excess of the significance threshold.

3. Purchase of carbon credits to offset emissions to below the significance threshold. Only carbon offset credits that are verified and registered with the Climate Action Reserve, or available through a County-approved local GHG mitigation bank or fund, may be used to offset project emissions.

Significance after Mitigation: Each year, the SCWMA will report actual emissions, in accordance with Mitigation Measure 5.8a. The annual inventory must demonstrate how the emissions threshold is achieved. In this way, Mitigation Measure 5.8a and 5.8b would together result in the reduction and offset of project GHG emissions to below the BAAQMD threshold of significance. Further, by implementing local offsets first, the project as mitigated would help to achieve Sonoma County's target for reducing GHG emissions. Notably, although enclosing the compost operations would potentially result in reduced GHGs, the intensive capital required for this measure would likely rule it infeasible. Overall, however, the impact after mitigation would be reduced to less than significant without enclosing the facility.

Impact 5.9: Construction and operation of the project (ASP composting option) could result in a cumulatively considerable increase in greenhouse gas emissions. (Significant)

Please see introductory information in Impact 5.8, which is the same for Impact 5.9.

Project Contribution to Cumulative Climate Change Effects from Greenhouse Gas Emissions

The calculation presented below includes annual CO_2e GHG emissions from off-road equipment (CO_2), vehicular traffic (CO_2), energy consumption (CO_2, N_2O, CH_4), area sources (natural gas combustion and landscape equipment) (CO_2), and off-gas emissions (CH_4) from composting. Appendix AIR-1 contains information regarding assumptions and emissions calculations used in this analysis.

GHG emissions associated with the construction phase of the project would result in a maximum annual generation of 1,076 metric tons of CO_2e. In addition, in light of the considerations outlined above**, Table 5-10** presents an estimate of the project's operational CO_2e emissions. Data in Table 5-10 indicate that GHG emissions that would result from the project would exceed the 1,100 metric tons per year threshold established by BAAQMD by 2,236 metric tons of CO_2e per year. This would represent a cumulatively significant impact.

TABLE 5-10
PROJECT OPERATIONS (ASP COMPOSTING OPTION) GREENHOUSE GAS EMISSIONS

	Greenhouse Gas Emissions (metric tons/year)[1] CO_2e
Existing Operations – Projected Year 2011	
Off-road Equipment	786
On-road Vehicles	418
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	7
Total Unmitigated Emissions	**2,123**

TABLE 5-10
PROJECT OPERATIONS (ASP COMPOSTING OPTION) GREENHOUSE GAS EMISSIONS

	Greenhouse Gas Emissions (metric tons/year)[1] CO_2e
Project Operations - Year 2011	
Off-road Equipment	711
On-road Vehicles	931
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	275
Total Unmitigated Emissions	**2,829**
Net Emissions (Project minus Existing)2	**706**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**No**
Project Operations - Year 2030	
Off-road Equipment	1,427
On-road Vehicles	1,849
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	1,732
Indirect Emissions from Electricity Generation	405
Total Unmitigated Emissions	**5,459**
Net Emissions (Project minus Existing)2	**3,336**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**Yes**

1. Emissions were modeled using several models and emission factors, which is described in more detail in Appendix AIR-1. These models and emission factors include URBEMIS2007 model (for off-road equipment and area sources), EMFAC2007 for on-road vehicle exhaust, GHG emission factors from the California Climate Action Registry *General Reporting Protocol* (California Climate Action Registry, 2009) for indirect emissions from electricity generation, and a CH_4 emission factor from the SCAQMD (SCAQMD, 2001) from green waste composting.
2. The "Net Emissions" are estimates of the project operational GHG emissions minus the Existing Sonoma Compost facility operational GHG emissions. These estimates represent the incremental increase in GHGs from the project.

As with the windrow processing technique, the methodology applied here does not account for the shift in emissions from diverting the organic waste from out-of-County landfills. The project would process organic materials (that might otherwise be disposed of as waste) from Sonoma County sources and produce a renewable resource within the County. Compost could be used in the County as a replacement for alternative products, such as fertilizers, that also require energy for production as well as transport to the County from the manufacturing facilities or distribution centers. Thus, the project would be inherently energy efficient by providing a local source of soil enrichment materials and reduce the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. In addition, because the effects of GHGs are global, if the project merely shifts the location of the GHG-emitting activities (off-road equipment, trucks, waste degradation) from landfills to the project site, there would not likely be a net new increase of emissions.

With regard to any potential conflict with applicable Sonoma County plans, policies, or regulations adopted to reduce GHGs, Sonoma County has established a *Sonoma County Community Climate Protection Action Plan* (Climate Protection Campaign, 2008), which incorporates the target reduction goal of 25 percent below the 1990 level by the year 2015. The project would comply with the strategies presented in the Plan to reduce GHGs through increased recycling of organic materials via composting processes (described under the Agriculture and Forests, as well as Solid Waste subsections of the Plan). Therefore, the project would not conflict with any local regulations pertaining to GHGs.

Even with the above considerations, the project would exceed the BAAQMD threshold for GHGs and would be cumulatively significant without mitigation.

Mitigation Measures

> **Mitigation Measure 5.9:** Implement Mitigation Measures 5.8a (Develop Annual GHG Inventory) and 5.8b (Greenhouse Gas Emissions Reduction Plan).
>
> **Significance after Mitigation:** Each year, the SCWMA will report actual emissions, in accordance with Mitigation Measure 5.8a. The annual inventory must demonstrate how the emissions threshold is achieved. In this way, Mitigation Measure 5.8a and 5.8b would together result in the reduction and offset of project GHG emissions to below the BAAQMD threshold of significance. Further, by implementing local offsets first, the project as mitigated would help to achieve Sonoma County's target for reducing GHG emissions. Notably, although enclosing the compost operations would potentially result in reduced GHGs, the intensive capital required for this measure would likely rule it infeasible. Overall, however, the impact after mitigation would be reduced to less than significant without enclosing the facility.

Impact 5.10: The project (windrow composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants. (Significant)

According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD, 2010b). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As described above in Impact 5.1, construction of the project would result in significant and unavoidable emissions of NOx. Therefore, NOx emissions associated with construction activities would be cumulatively considerable and the impact would be **significant**.

As discussed in Impact 5.2 and 5.4, with mitigations, the project operations would result in less than significant impact from criteria pollutant emissions with implementation of mitigation. Therefore, the project would not have a considerable contribution to cumulative air quality (criteria air pollutants) during operations, and the impact would be considered less than significant.

Mitigation Measure

Mitigation Measure 5.10: Implement Mitigation Measures 5.1 (Construction Emission Controls), 5.2a (Composting VOC Reduction via Pseudo-Biofilters), and 5.2b (Fugitive Dust Control).

Significance after Mitigation: Significant and unavoidable during project construction for NOx.

Impact 5.11: The project (ASP composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants. (Significant)

According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD, 2010b). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As described above in Impact 5.1, construction of the project would result in significant and unavoidable emissions of NOx. Therefore, NOx emissions associated with construction activities would be cumulatively considerable and the impact would be **significant**.

As discussed in Impact 5.3 and 5.4, the project would result in less than significant project impact from criteria pollutant emissions with implementation of mitigation. Therefore, the project would not have a considerable contribution to cumulative air quality (criteria air pollutants) during operations, and the impact would be considered less than significant.

Mitigation Measure

Mitigation Measure 5.11: Implement Mitigation Measures 5.1 (Construction Emission Controls) and 5.2b (Fugitive Dust Control).

Significance after Mitigation: Significant and unavoidable during project construction for NOx.

Impact 5.12: Cumulative risk from all past, present and reasonably foreseeable sources within 1,000 feet of the project (associated with either windrow or ASP composting option) would expose sensitive receptors to PM2.5 and TACs which may lead to adverse health effects. (Less than Significant)

The BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD, 2010b) provides estimated impacts from significant roadway within Sonoma County such as Routes 1, 12, 37, 101, 116, 121, and 128. Estimated impacts within a distance of 1,000 feet were developed for each of these roadways. The project is not located within 1,000 feet of any of these roadways. Thus, the impact from these roadways is not expected to significantly contribute to the overall impact at the receptors of interest in the project vicinity.

Mitigation: None required.

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CHAPTER 6
Biological Resources

6.1 Introduction

This chapter provides background information on the biological resources and natural communities occurring within the Sonoma County Compost Facility Project site, outlines potential impacts to biological resources that may result from the project, and proposes mitigation measures to reduce those impacts to a less than significant level. These mitigation measures have been developed to focus on avoiding, reducing, or compensating for significant impacts on biological resources. A discussion of federal, state, and local laws, policies, and regulations that influence biological resources also is presented in this chapter.

6.2 Setting

Regional Setting

The project site is located in the Northern California Coast ecological region and the San Pablo Bay Flats subsection. The project site is located on parts of the plain north and west of San Pablo Bay, in an area that is generally less than 10 feet above mean sea level. This subsection is on a tidal flat, with high tides inundating most of the area. Fresh water flows onto the flats during winter. Deltas of the Napa River and Sonoma, Petaluma, and Novato Creeks are in this subsection (Miles and Goudey, 1997).

The predominant natural plant community is pickleweed series. Other dominant plant communities include saltgrass series in the inland margin of salt marshes and sedge meadow communities and emergent aquatic communities on the inner edges of the subsection, away from the bay. The climate is temperate and subhumid. Average annual precipitation in the site vicinity is approximately 20 to 30 inches, with some summer fog. Mean maximum temperature is approximately 56° to 58° F (Miles and Goudey, 1997).

Project Site Setting

The approximately 70-acre project site is located in an unincorporated area of Sonoma County, approximately 2.5 miles north of Hwy 37 and 0.25 miles east of Lakeville Road (**see Figure 3-1 and Figure 3-2**). This location corresponds to Township 4N, Range 6W, Sections 27, 28, 29, 33, and 34 of the Petaluma River, CA U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (USGS, 1980). The project site is currently undeveloped and used for hay farming and sheep grazing.

Terrain within the project site is relatively flat with the exception of agricultural canals. Site elevation ranges from approximately 0 to 2.62 feet above mean sea level at certain areas; however, the project site overall slopes very gently from east to west towards the Petaluma River and is approximately 5 feet lower than the elevation of the Petaluma River. Lands adjacent to the Petaluma River, including the project site, are protected by man-made levees. The site has natural and artificial canals, which are used for stormwater and irrigation water conveyance to support agricultural activities. These canals range from small ephemeral canals to larger seasonal drainages that hold water during most of the year and support emergent vegetation.

Methodology

This evaluation of biological resources includes a review of potentially occurring special-status species,[1] wildlife habitats, vegetation communities, and potential jurisdictional waters of the U.S. The results of this assessment are based upon field reconnaissance, literature searches and database queries. The primary sources of data referenced for this report included the following:

- Petaluma River, California, 7.5-minute topographic quadrangle (USGS, 1980);
- "Federal Endangered and Threatened Species that may be Affected by Projects in the Petaluma River, California 7.5-Minute Topographic Quadrangle" (USFWS, 2009a);
- California Natural Diversity Database (CNDDB), Rarefind 3.1 computer program (CDFG, 2009);
- Threatened and Endangered Plants List (CDFG, 2009b);
- Threatened and Endangered Animals List (CDFG, 2009c);
- California Native Plant Society: Inventory of Rare and Endangered Plants (CNPS, 2009)
- Ecological Subregions of California (Miles and Goudey, 1997);
- Review of color aerial photography for vegetative, topographic, and hydrologic signatures;
- Review of Natural Resources Conservation Service (NRCS) web soil survey data (NRCS, 2009) for information about soils and geomorphology;
- Review of the National Wetlands Inventory (NWI) map (U.S. Fish and Wildlife Service [USFWS], 2009b) for information on wetlands and natural water features previously delineated in the project site;
- Sonoma County General Plan (Sonoma County, 2008)

General biological surveys of the project site were completed by ESA Biologist LeChi Huynh on October 17, 2008 and April 16, 2009. The surveys included identification of plant communities and wildlife habitats, and a reconnaissance-level wildlife and botanical survey. All of the project site was accessible during the surveys, and weather conditions did not hamper survey efforts. General wildlife and botanical surveys were completed by walking meandering transects through all habitats

1 Species that are protected pursuant to Federal or State endangered species laws, or have been designated as Species of Concern by the USFWS or Species of Special Concern by the CDFG, or species that are not included on any agency listing but meet the definition of rare, endangered or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species."

and recording data in a field notebook. Although field surveys focused on identifying and delineating habitat suitable for special status plant and wildlife species, general habitat conditions were noted and incidental species observations were recorded. Plant communities were mapped via GIS and aerial photography and confirmed during the field reconnaissance.

Vegetation Communities and Wildlife Habitats

Vegetation communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. Upland plant communities and habitats within the project site include annual grassland, fallow cropland, and ruderal. Plant communities and habitats associated with aquatic settings include seasonal wetland, freshwater emergent wetland, and saline emergent wetland. The vegetation community descriptions and nomenclature used in this section generally correlate to wildlife habitat types described in *A Guide to Wildlife Habitats of California* or California Wildlife Habitats Relationships (CWHR) (Mayer and Laudenslayer, 1988) and the classification provided in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). The types of wildlife habitat (in accordance with the CWHR classification system) present on the project site can be found in **Table 6-1** and **Figure 6-1**. Freshwater emergent wetlands, saline emergent wetlands, and seasonal wetlands have not been formally delineated. These aquatic plant communities are distributed within the ephemeral, seasonal, and perennial canals and do not exceed the total area of drainages listed in **Table 6-1**.

TABLE 6-1
VEGETATION COMMUNITIES WITHIN THE PROJECT SITE

Vegetation Community	Acres / Percent of Project site
Non-Native Annual Grassland	33.56 / 47.9%
Fallow Cropland	31.97 / 45.6%
Disturbed/Ruderal	4.02 / 5.7%
Agricultural Canals (and Habitats within Agricultural Canals: Freshwater Emergent Wetland, Saline Emergent Wetland, Seasonal Wetland)	0.55 / 0.8%
Total	**70.1/100%**

SOURCE: ESA, 2009.

Upland Plant Communities

Annual Grassland

Annual grassland occupies 33.56 acres of the project site and is one of the dominant plant communities within the project site. It occurs on the northern half of the project site (**Figure 6-1**). Annual grassland in the project site is primarily used as ranching/grazing land and undeveloped lands. This community is dominated by nonnative Mediterranean annual grasses. An assemblage of native and nonnative forbs was noted in the grassland areas, including Italian ryegrass (*Lolium multiflorum*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), ripgut brome (Bromus diandrus), foxtail barley (*Hordeum murinum ssp. leporinum*), spring vetch (*Vicia* sativa), and milk thistle (*Silybum murianum*), among others. Vegetative cover is dense with vegetation height ranging from a few inches to a foot tall. No animal burrows or trees are present within this habitat type.

SOURCE: ESRI, 2009; and ESA, 2010

SCWMA Compost Facility EIR . 207312

Figure 6-1
Plant Communities and Habitats within the Project Site Composting Area

Annual grassland provides habitat for a variety of wildlife species, many of which use this habitat for foraging. Annual grassland that contains a mosaic of important wildlife habitat features (e.g., cliffs, crevices, caves, rocks, woody debris, ponds, etc.) may provide cover, foraging, and breeding habitat for wildlife as well. Common wildlife species that use annual grassland include western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), California ground squirrel (*Spermophilus beecheyi*), western meadowlark (*Sturnella neglecta*), and a variety of raptors such as northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). The project site lacks unique habitat features associated with annual grassland; therefore, species diversity within project site annual grasslands is generally lower.

Fallow Cropland

The project site contains 31.97 acres of cropland habitat, which is dominated by annuals that are planted during the spring and harvested in the summer or fall and generally occur in areas with flat or gently rolling terrain. Within the project site, fallow cropland habitats are located in the southern portion of the project site (**Figure 6-1**) and in the past primarily consisted of row crops. The field is currently fallow with very dense vegetation. Plant species encountered within fallow cropland habitat include common fiddleneck (*Amsinckia menziesii* var. *intermedia*), field mustard (*brassica rapa*), spring vetch (*Vicia sativa*), and non-native annual grasses.

Diversity of wildlife species in croplands is typically low and limited to rodents and birds such as the California ground squirrel, American crow (*Corvus brachyrhynchos*), and rock pigeon *(Columba livia*). Several raptor species use croplands as foraging grounds including the northern harrier, red-tailed hawk, American kestrel, and Swainson's hawk (*Buteo swainsoni*). Wildlife species encountered within or in the general vicinity of fallow cropland habitat during the reconnaissance surveys include redwing blackbird (*Agelaius pheoniceus*), American crow (*Corvus brachyrhynchos*), turkey vulture (*Cathartes aura*), and red-tailed hawk.

Disturbed/Ruderal

Ruderal vegetation comprises 4.02 acres of the site and occurs in a disturbed area located southwest of the project site (**Figure 6-1**). This vegetation type is subjected to ongoing or past disturbances (e.g., vehicle use, mowing, and herbicide application). Due to the disturbance regime, assemblages of native and introduced weedy species have established which the majority consists of various annual grasses and forbs of Eurasian origin; many of which also occur in the grasslands. Plant species found in the ruderal community within the project site include non-native annual grasses, prickly lettuce (*Lactuca serriola*), shortpod mustard (*Hirchfeldia incana*), milk thistle (*Silybum marianum*), radish (*Raphanus sativus*), and bristly ox-tongue (*Picris echioides*). The ruderal area within the project site did not support any native species commonly found in ruderal areas such as turkey mullein (*Eremocarpus setigerus*), hayfield tarweed (*Hemizonia congesta*), and California poppy (*Eschscholzia californica*).

Diversity of wildlife species in ruderal areas is typically low and limited to those species that are associated with human activity, such as rock pigeon (*Columba livia*), American crow (*Corvus brachyrhynchos*), house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*).

The relatively small ruderal habitat within the project site is surrounded by annual grassland and fallow fields. In result, wildlife species that are found within those habitats will generally occur in this ruderal area. No mammal burrows were found in this habitat type.

Aquatic Plant Communities and Habitats

Freshwater Emergent Wetland

A few wetlands supporting freshwater emergent wetland plant species occur within the agricultural canals located within the project site. Freshwater emergent wetlands within the project site are limited in extent (less than 0.55 acres) and are characterized by erect, rooted herbaceous plants that are hydrophytic and can withstand the anaerobic soil conditions created by extended periods of inundation. Vegetation cover is typically continuous and dense. Common hydrophytic species found within the on-site freshwater emergent wetlands include cattails (*Typha angustifolia*), common tule (*Scirpus acutus* var. *acutus*), rough cocklebur (*Xanthium strumarium*), and common spikerush (*Eleocharis macrostachya*).

Wildlife using the freshwater emergent wetland largely includes wading birds and waterfowl species such as great blue heron (*Ardea herodias*), great egret (*Ardea alba*), American coot (*Fulica americana*), and mallard (*Anas platyrhynchos*). Red-winged blackbirds (*Agelaius phoeniceus*), and aquatic reptiles and amphibians such as garter snake (*Thamnophis* sp.), pond turtle (*Clemmys marmorata*), and Pacific chorus frogs (*Pseudacris regilla*) also use this habitat. Wildlife species found within this habitat during the field reconnaissance include mallard, red-winged blackbirds, and other passerines.

Seasonal Wetland

Seasonal wetlands are extremely limited within the project site (not exceeding 0.55 acres) and are located completely within the seasonal agricultural canals within the project site. Seasonal wetlands are ephemeral wetlands that pond or remain flooded for extended periods during a portion of the year, often the wet season, then may dry in spring or early summer. These features are typically associated with constructed drainage features or disturbed areas. Seasonal wetlands in the project site occur in the shallow portions of agricultural canals and support native and non-native species. Common facultative wetland species in these features include rough cocklebur (*Xanthium strumarium*), sedges (*Carex spp.*), and curly dock (*Rumex crispus*).

Seasonal wetlands may support a diversity of birds, invertebrates, amphibians, and few reptiles which may use the wetland for foraging, cover, and/or breeding. Common wildlife species that may use the seasonal wetlands within the project site include common garter snake (*Thamnophis sirtalis*), Pacific chorus frog, and black phoebe (*Sayornis nigricans*).

Saline Emergent Wetland

Saline emergent wetlands, including Northern Coastal Salt Marsh and Coastal Brackish Marsh, are characterized by salt or brackish marshes that support perennial graminoids and succulent forbs ranging from 0.2 to 2 m in height. These wetlands occur above intertidal sand and mud flats and below upland communities not subject to tidal action. Distinctive vascular plant species found in these wetlands depend on elevation, salinity, and amount of inundation. Species found in saline emergent wetlands include cordgrass (*Spartina spp.*), jaumea (*Jaumea carnosa*), pickleweed/glasswort/saltwort (*Salicornia spp.*), California seablite (*Suaeda californica*), seaside arrowgrass (*Triglochin maritima*), alkali heath (*Frankenia salina*), seashore saltgrass (*Distichlis spicata*), among others. Algal mats on moist soils at the base of vascular plant stems are common.

Saline emergent wetlands within the project site are dominated by pickleweed (*Salicornia virginica*), are limited in area (less than 0.55 acres), and are confined to areas within agricultural canals. The Petaluma River located approximately one mile west and southwest of the project site, is connected to San Pablo Bay and is influenced by tidal action and high salinity levels. The project site's agricultural canals do not receive surface water from the Petaluma River; however, the canals likely receive salty groundwater through infiltration from the Petaluma River thereby supporting limited patches of saline emergent wetland. Additionally, the canals receive freshwater influences from a natural watershed located to the northeast of the project site; therefore Saline emergent wetlands within the project site can be classified as Coastal Brackish Marsh.

Saline emergent wetlands provide food, cover and nesting and roosting habitat for a variety of birds, mammals, reptiles, and amphibians, some of which are endemic to California. Common birds that roost or feed in these wetlands include herons, egrets, ducks, hawks, Virginia rail (*Rallus limicola*), American coot shorebirds, swallows, and marsh wrens (*Cistothorus palustris*). Mammals that use dense salt marshlands include the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*), as well as raccoon (*Procyon lotor*), mink (*Neovison vison*), river otter (*Lontra canadensis*), and harbor seal (*Phoca vitulina*). Numerous upland species also visit the wetlands to feed. As the saline emergent wetlands within the project site are limited and fragmented, they will generally support a lower number of species than what may be found in the adjacent salt marshlands.

Irrigation Canals

The project site hydrology consists of flows which originate from a natural watershed located to the northeast and groundwater infiltration from the Petaluma River which seeps from the south.

Irrigation canals located northeast of the project site are fed from a natural watershed which originates northeast of the project site and consists of a few square miles of rolling hills. Natural topography creates erosional swales that direct runoff and rainwater into manmade canals used for both stormwater conveyance and agricultural irrigation. Within the project site, water is diverted from these manmade canals into three earthen canals which meander south through the project site. The canals located within the north and northeastern portions of the project site are fed by runoff water during the rainy season and remain dry during the summer months.

The earthen canals range from ephemeral (northern section of Canal A) and seasonal (Canal C and southern section of Canal A) to perennial (Canal B) in character (**Figure 6-1**). The canals support freshwater and saline emergent vegetation at various reaches. Canals within the annual grassland habitat provide water for grazing sheep, while canals within the fallow fields are mainly used for agricultural irrigation purposes. No burrows were found within the banks of the canals.

The canals located south of and in the southern portion of the project site are influenced by groundwater intrusion throughout the year from the Petaluma River as the river is approximately five feet higher in elevation then the project site (refer to Chapter 8 Hydrology and Water Quality). Project site hydrology is controlled by pumping water out of the canals and into the Petaluma River via pumps located at the southern terminus of each canal. There is no direct surface connection between the Petaluma River and canals.

Special Status Species

Definitions of Special Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special status species" in this study following a convention that has developed in practice but has no official sanction. For the purposes of this assessment, the term "special-status" includes the following:

- Federally listed or proposed under the Federal Endangered Species Act (50 Code of Federal Regulations [CFR] 17.11-17.12). They are the only species that are specifically regulated by the U.S. Fish and Wildlife Service on tribal lands.
- Candidates for listing under the Federal Endangered Species Act (61 FR 7596-7613)
- State listed or proposed under the California Endangered Species Act (14 California Code of Regulations [CCR] 670.5)
- Species listed by the USFWS as a species of concern and rare or by California Department of Fish and Game (CDFG) as a species of special concern
- Fully protected animals, as defined by the State of California (CDFG Code Section 3511, 4700, and 5050)
- Species that meet the definition of threatened, endangered, or rare under California Environmental Quality Act (CEQA Guidelines Section 15380)
- Plants listed as rare or endangered under the California Native Plant Protection Act (CDFG Code Section 1900 et seq.)

Potentially Affected Listed and Proposed Species

A list of special-status plant and animal species that have the potential to occur within the vicinity of the project site was compiled based on data in the California Natural Diversity Database (CNDDB) (CDFG, 2009), California Native Plant Society (CNPS) literature (CNPS, 2009), and the USFWS List of Federal Endangered and Threatened Species that may be Affected by Projects in the Petaluma River Quad (USFWS, 2009a). Conclusions regarding habitat suitability and species occurrence are based on a reconnaissance-level area assessment conducted by ESA biologists, as well as existing literature and databases described previously. Species-specific and protocol surveys were not conducted for the project site.

A list of special-status plants and animals with medium to high potential to occur within the project site and the project's potential to impact each species listed is presented in **Table 6-2**. A complete list of species, including the species unlikely and with low potential on the project site, is presented as **Table 6-3** in **Appendix BIO-1**. Using information from CNDDB occurrences within five miles of the project site, ESA identified six (6) species with a low potential, three (3) species with a medium potential, and one (1) species with a high potential to occur in the vicinity of the project site. The "Potential for Occurrence" category is defined as follows:

- Unlikely: The project site and/or immediate area do not support suitable habitat for a particular species. Project site is outside of the species known range.
- Low Potential: Project site and/or immediate area only provide limited habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate project site.
- Medium Potential: The project site and/or immediate area provide suitable habitat for a particular species, and habitat for the species may be impacted.
- High Potential: The project site and/or immediate area provide ideal habitat conditions for a particular species and/or known populations occur in immediate area and within the potential area of impact.

Life history and distribution of species with medium to high potential to occur within the vicinity of the project site are described in detail below.

Birds

Tricolored Blackbird

Tricolored blackbirds are permanent residents of California and are considered a California Bird Species of Special Concern. This species is also found locally in Oregon, Washington, Nevada, and coastal Baja California. However, most of the global population is concentrated in California, and specifically, within the Central Valley. Although a local resident of California, this species move extensively throughout their range in the non-breeding season (winter) (Shuford and Gardali, 2008).

The tricolored blackbird forms breeding colonies that comprise up to 20,000 to 30,000 nests. Nests are built on cattail within freshwater marshes, willows and trees in riparian areas, and rarely on the ground. Additional habitat requirements include open accessible water, protected nesting substrate (flooded or thorny/spiny vegetation), and foraging habitat containing adequate insect prey populations within a few miles of the nesting colony (Shuford and Gardali, 2008).

Wintering tricolored blackbirds congregate with other blackbird species and forage in low-growing grassland and agricultural fields. Dairies and feeding lots also provide foraging opportunities. In February, tricolored blackbirds segregate into pure flocks of the same species, sometimes further divided into age- and sex- specific flocks to find suitable nesting substrates with nearby food source. The most important prey species for adult tricolored blackbirds include beetles, grasshoppers, locusts, true bugs (Hemipterans), larval insects, and spiders. However, due to loss of natural flooding cycle and native wetland and upland habitats in the Central Valley, tricolored blackbirds now forage in artificial habitats. Most suitable foraging conditions include shallow flood-irrigation, mowed, or grazed vegetation less than 15 cm. Crops such as rice, alfalfa, irrigated pastures, ripening or cut grain

TABLE 6-2
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	State Status (CDFG/CNPS)	Listing Status (USFWS)	Habitat Association	Potential for Project to Impact
Birds				
Agelaius tricolor Tricolored blackbird	CSC	None	Largely endemic to California, most numerous in the Central Valley and nearby vicinity. Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water. Also nests in agricultural crops (e.g. silage), where colonies are threatened during harvest.	High. Suitable habitat for this species is present within the project site. Tricolor blackbirds were observed near freshwater emergent wetlands during field reconnaissance surveys of the project site. The nearest CNDDB occurrence is 1.5 miles SE of the project site.
Plants				
Cordylanthus maritimus ssp. palustris Point Reyes bird's-beak	None/1B.2	None	Usually in coastal salt marshes with Salicornia, Distichlis, Jaumea, Spartina, etc. 0-15m. Blooms June-Oct.	Medium. Limited suitable habitat present in project site. The nearest CNDDB occurrence is approximately 2 mile north of the project site.
Cordylanthus mollis ssp. mollis Soft bird's-beak	SR/1B.2	FE	Hemiparasitic, annual herb occurring in coastal salt marshes and swamps. Found at 0-3 meters elevation. Blooms Jul-Nov.	Medium. Limited suitable habitat present in project site. The nearest CNDDB occurrence is approximately 1 mile from the project site.
Polygonum marinense Marin knotweed	None/3.1	None	Occurs in salt or brackish marsh from 0-10 m elevation. Blooms May-Aug.	Medium. Limited suitable habitat is present within the project site and one CNDDB occurrence is located 1 mile from the project site.
Sensitive Habitats				
Coastal Brackish Marsh				
Northern Coastal Salt Marsh				

STATUS CODES:

STATE
California Department of Fish and Game:
SE Listed as Endangered by the State of California
ST Listed as Threatened by the State of California
SR Listed as Rare by the State of California (plants only)
CSC California species of special concern
CFP California fully protected bird species

California Native Plant Society (CNPS):
List 1A Plants believed extinct
List 1B Plants rare, threatened, or endangered in California and elsewhere
List 2 Plants rare, threatened, or endangered in California but more common elsewhere
List 3 Plants about which more information is needed
List 4 Plants of limited distribution

CNPS Code Extensions
.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Fairly endangered in California (20-80% occurrences threatened)
.3 Not very endangered in California (less than 20% of occurrences threatened or no current threats known)

FEDERAL
U.S. Fish and Wildlife Service:
BEPA Bald Eagle Protection Act
FE Listed as Endangered by the Federal Government
FT Listed as Threatened by the Federal Government
FPD Proposed for De-listing
FPE Proposed for Listing as Endangered
FPT Proposed for Listing as Threatened
FC Candidate for Federal listing

SOURCE: CNPS, 2009; CDFG, 2009; USFWS, 2009a fields, annual grasslands, cattle feedlots, and dairies provide food sources for this species. Remnant wet and dry vernal pools, seasonal wetlands, riparian scrub habitats, open marsh borders also provide important food sources (Shuford and Gardali, 2008).

The main threat to this species is direct loss and degradation of habitat from human activities. Urbanization and agricultural land conversion eliminated nesting and foraging habitats for this species (Shuford and Gardali, 2008).

Tricolored blackbirds were encountered within the project site during the reconnaissance surveys. These birds were found within freshwater emergent wetland habitat, located in larger sections of agricultural canals. The nearest CNDDB occurrence recorded is 1.5 miles SE of the project site (CDFG, 2009).

Plants

Point Reyes Bird's-Beak

Point Reyes bird's-beak is a hemiparasitic annual herb in the Scrophulariaceae family that blooms between July and November. This species has no state or federal status, but is listed as a 1B.2 species on the CNPS list. Point Reyes bird's-beak occurs in the following counties: Alameda, Humboldt, Marin, Santa Clara, San Francisco, San Mateo, Sonoma, Oregon. Coastal salt marshes and swamps provide suitable habitat for the Point Reyes bird's-beak. Suitable elevation for this species ranges between 0 and 15 meters (CNPS, 2009).

Coastal salt marshes and saline emergent wetlands offer similar habitat features which can support this species. Saline emergent wetlands along larger drainages within the project site may provide suitable habitat for the Point Reyes bird's-beak. The nearest CNDDB occurrence is located approximately two miles north of the project site (CDFG, 2009). This species was not observed during the reconnaissance level survey of the project site.

Soft Bird's-Beak

Soft bird's-beak is a hemiparasitic annual herb in the Scrophulariaceae family. This species is currently listed as California rare and federally endangered since 11/20/1997. Soft bird's-beak is also listed as 1B.2 on the CNPS plant list. This species occurs in Contra Costa, Marin, Napa, Sacramento, Solano, and Sonoma Counties. This species is known from fewer than fifteen occurrences, typically in marshes and swamps at elevations of 0-3 meters. Blooming period is July to November. Soft bird's-beak is threatened by non-native plants, erosion, feral pigs, trampling, and marsh drainage (CNPS, 2009).

This species has the potential to occur within the saline freshwater emergent wetlands located along drainages within the project site. The nearest known CNDDB occurrence is one mile from the project site (CDFG, 2009). This species was not observed during the reconnaissance level survey of the project site.

Marin Knotweed

Marin knotweed is an annual herb in the Polygonaceae that blooms from May through August. This species is a CNPS 3.1 species, with no state or federal status. Distribution of Marin knotweed includes Humboldt, Marin, Napa, Solano, and Sonoma Counties. Marin knotweed occurs in salt or brackish coastal marshes and swamps at elevations of 0-10 meters (CNPS, 2009).

Although Marin knotweed was not observed within the project site during the reconnaissance survey, saline emergent wetlands located along larger drainages within the project site have the potential to support this species. The nearest CNDDB occurrence is within one mile of the project site, along the Petaluma River and associated salt marshes (CDFG, 2009). This species was not observed during the reconnaissance level survey of the project site.

Sensitive Habitats

Northern Coastal Salt Marsh and Coastal Brackish Marsh

Northern Coastal Salt Marshes contain hydric soils that are subject to regular tidal inundation by salt water for at least part of each year and support vegetation adapted to high salinity levels. Coastal Brackish Marshes have similar hydric and vegetation properties; however, brackish marshes are also influenced by freshwater input through runoff or ground water intrusion. Dense Coastal brackish marshlands are located along the shores of the Petaluma River, approximately one mile from the project site. Northern Coastal Salt Marshes are located along the shores of San Pablo Bay, approximately four miles from the project site.

Brackish and salt marshlands provide food, cover and nesting and roosting habitat for a variety of birds, mammals, reptiles, and amphibians. The endemic California and light-footed clapper rails (*Rallus longirostris levipes*), California black rail (*Laterallus jamaicensis cotorniculus*), salt marsh yellowthroat (*Geothlypis trichas sinuosa*), and Belding's Savannah sparrow (*Passerculus sandwichensis beldingi*) use these types of wetlands. Other birds that roost or feed in these wetlands include herons, egrets, ducks, hawks, Virginia rail (*Rallus limicola*), American coot (*Fulica americana*), shorebirds, swallows, and marsh wrens (*Cistothorus palustris*). Mammals that use salt or brackish marshlands include the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*), as well as raccoon (*Procyon lotor*), mink (*Neovison vison*), river otter (*Lontra canadensis*), and harbor seal (*Phoca vitulina*). Numerous upland species also visit the wetlands to feed.

Regulatory Framework

Federal

Clean Water Act Section 404 Permit Guidelines

At the federal level, "waters of the United States" are regulated by the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act. The term "waters of the United States" is defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]), and includes waters that could be used in interstate or foreign commerce, interstate wetlands, and other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, sloughs, wet meadows, playa lakes, or natural ponds, where the use, degradation, or destruction of which could affect interstate or foreign commerce[2]. Waters of the United States do not include prior converted cropland, stock watering ponds, and agricultural irrigation ditches created in upland areas. Wetlands are defined by the federal government (CFR, Section 328.3(b), 1991) as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The canals located within the project site do not have a direct surface water connection to the Petaluma River but may be influenced by groundwater intrusion. Therefore, these canals may fall under the jurisdiction of the Corps.

Because Site 5a was one of four alternatives considered for the proposed project, a formal delineation of wetlands and other waters of the U.S. has not been performed. However, it was determined through Geographic Information System (GIS) and aerial photography that a total of approximately 0.55 acres of potential jurisdictional features occur within the approximately 70-acre project site. This includes potentially jurisdictional seasonal canals that support seasonal wetlands, freshwater emergent wetlands, and saline emergent wetlands (**Figure 6-1**). Jurisdictional status of these features will be determined by the Corps through verification of a wetland delineation, which can be performed when the site is selected.

U.S. Fish and Wildlife Service

The USFWS administers the Migratory Bird Treaty Act (16 USC Section 703-711), the Bald and Golden Eagle Protection Act (16 USC Section 668), and the federal Endangered Species Act (ESA, 16 USC Section 153 *et seq*). Projects that would result in adverse affects on any federally listed threatened or endangered species are required to consult with and mitigate through consultation with the USFWS. This consultation can be pursuant to either Section 7 or Section 10 of the ESA, depending on the involvement by the federal government. If a Section 404 permit is required for project approval, Section 7 consultation would be administered by the Corps.

Critical Habitat

The U.S. Fish and Wildlife Service designated Critical Habitats for wildlife species that are listed as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery. Projects that would result in the destruction or adverse modification of a critical habitat to the point that it does not aid in the recovery of a listed species are required to consult with and mitigate through consultation with USFWS. However,

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2 Since the SWANCC decision (Solid Waste Agency of Northern Cook County v. Corps), waters covered solely by this definition by virtue of their use as habitat by migratory birds are no longer considered “waters of the United States.” The Supreme Court’s opinion did not specifically address what other connections with interstate commerce might support the assertion of CWA jurisdiction over “nonnavigable, isolated, intrastate waters” under this definition, and the Corps is recommending case by case consideration. A factor that may be relevant to this consideration includes, but is not limited to, the following: Jurisdiction of isolated, intrastate, and nonnavigable waters may be possible if their use, degradation, or destruction could affect other “waters of the United States,” thus establishing a significant nexus between the water in question and other “waters of the United States” (Corps, undated memorandum).

projects are only required to consult with the USFWS if the project affects areas that contain the primary constituent elements required by the species. Primary constituent elements are those physical and biological features of a landscape in the appropriate scale and quantity arrangement that a species needs to survive and reproduce (USFWS, 2009).

The project site falls within the Central California Coast Steelhead Evolutionary Significant Unit (ESU), which is considered a critical habitat for this species (USFWS, 2009).

The next closest critical habitat is red-legged frog critical habitat, located approximately nine (9) miles west of the project site (USFWS, 2009).

State of California

California Department of Fish and Game

The CDFG administers a number of laws and programs designed to protect fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA – Fish and Game Code Section 2050 et seq), which regulates the listing and “take” of endangered and threatened species. A “take” of such a species may be permitted by CDFG through issuance of permits pursuant to Fish and Game Code Section 2081.

Prior to enactment of CESA, the designation of “Fully Protected” was used by CDFG to identify species that had been given special protection by the California Legislature by a series of statutes in the California Fish and Game Code. (See §§ 3503.5, 3505, 3511, 3513, 4700, 4800, 5050, 5515). Many fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations; however, the original statutes have not been repealed, and the legal protection they give the species identified within them remains in place. Fully Protected species may not be taken or possessed at any time; and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Because endangered or threatened species can be “taken” for development purposes with the issuance of a permit by CDFG, “fully protected species” actually enjoy a greater level of legal protection than “listed” species.

CDFG maintains lists for Candidate-Endangered Species and Candidate-Threatened Species. California candidate species are afforded the same level of protection as listed species. California also designates Species of Special Concern (CSC) which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species or fully protected species but may be added to official lists in the future. The CSC list is intended by CDFG as a management tool for consideration in future land use decisions. Fish and Game Code includes provisions for the protection of the nests of particular types of birds, including birds of prey (Section 3503.5).

The State’s authority in regulating activities in waters of the U.S. resides primarily with the CDFG and the State Water Resources Control Board (SWRCB). CDFG provides comments on Corps permit actions under the Fish and Wildlife Coordination Act. CDFG is also authorized under the California Fish and Game Code Sections 1600–1607 to develop mitigation measures and enter into

Streambed Alteration Agreements with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. The SWRCB, acting through the Regional Water Quality Control Board (RWQCB), must certify that a Corps permit action meets state water quality objectives (Section 401, Clean Water Act).

Movement Corridors

Movements of wildlife generally fall into three basic categories: a) movements along corridors or habitat linkages associated with home range activities such as foraging, territory defense, and breeding; b) dispersal movements—typically one-way movements (e.g., juvenile animals leaving their natal areas or individuals colonizing new areas), and; c) temporal migration movements—these movements are essentially dispersal actions which involve a return to the place of origin (e.g., deer moving from winter grounds to summer ranges and fawning areas).

The CDFG has not identified any areas within the vicinity of the project site as important wildlife movement corridors. However, Sonoma County General Plan 2020, Open Space and Resource Conservation Element, identified important wildlife movement corridors within lands south of Glen Ellen connecting Sonoma Mountain and the Mayacamas Range and lands connecting the Laguna de Santa Rosa to agricultural areas south of Highway 116 (Sonoma County, 2008). These wildlife movement corridors are located more than five miles north of the project site.

Porter-Cologne Water Quality Control Act

Under State law anybody discharging “waste” (including clean fill, riprap or other revetment, excavation sidecasting, dredge spoils, soil displaced while clearing vegetation, etc.) where it could affect waters of the State (any surface or sub-surface water) must first file a “report of waste discharge” with the appropriate RWQCB, which will regulate the discharge as necessary to protect the beneficial uses of the waters. This is completed during the Section 401 process for those waters of the State also covered under the CWA. For waters of the State not covered under the CWA, the RWQCB regulates discharges using the Porter-Cologne Water Quality Control Act.

County of Sonoma

The project is located in unincorporated Sonoma County, approximately 2.5 miles north of Hwy 37 and 0.25 miles east of Lakeville Road. Therefore, the project is covered under the Sonoma County General Plan and local ordinances/policies of Sonoma County.

Sonoma County General Plan

The Sonoma County General Plan 2020, adopted September 23, 2008, provides the following policies relevant to the project, as related to biological resources:

Policy OSRC-7b Rezone to the Biotic Resources combining district all lands designated as Biotic Habitat Areas. Prepare and adopt an ordinance that provides for protection of designated Biotic Habitat Areas in conformance with the following principles. Until the ordinance is adopted, require that land use and development in designated areas comply with these principles:

1. For discretionary projects, notify applicants of protected habitats and species and possible requirements of Federal and State regulatory agencies, request identification of known protected habitats and species, and:

    a. In designated Biotic Habitat Areas, require site assessment and adequate mitigation. The priorities for adequate mitigation are, in order of highest to lowest priority:

        - Avoid the habitat.
        - Mitigate on site to achieve no net loss.
        - Mitigate off site to achieve no net loss.
        - Create replacement habitat off site to achieve no net loss.
        - To the extent feasible, the mitigation required by the County should be consistent with permit requirements of Federal and State regulatory agencies.

    b. In designated Marshes and Wetlands, require a setback of 100 feet from the delineated edges of wetlands. The setback may be reduced based upon site assessment and appropriate mitigation.

    c. In designated Habitat Connectivity Corridors, encourage property owners to consult with CDFG, install wildlife friendly fencing, and provide for roadway undercrossings and oversized culverts and bridges to allow movement of terrestrial wildlife.

    d. The acreage required for adequate mitigation and replacement habitat shall be at least two times the acreage affected unless a lower level is acceptable to the applicable State and Federal agencies, with the amount depending on the habitat affected and the applicable mitigation priority value.

Policy OSRC-7d In all areas outside Urban Service Areas, encourage property owners to utilize wildlife friendly fencing and to minimize the use of outdoor lighting that could disrupt native wildlife movement activity.

Policy OSRC-7k Require the identification, preservation and protection of native trees and woodlands in the design of discretionary projects, and, to the maximum extent practicable, minimize the removal of native trees and fragmentation of woodlands, require any trees removed to be replaced, preferably on the site, and provide permanent protection of other existing woodlands where replacement planting does not provide adequate mitigation.

Policy OSRC-7m Designate important valley oak habitat areas, reevaluate current designations, and apply a Valley Oak Habitat combining district zoning that requires adequate mitigation for trees removed and monitoring of replacement tree survival.

Policy OSRC-7o Encourage the use of native plant species in landscaping. For discretionary projects, require the use of native or compatible non-native species for landscaping where consistent with fire safety. Prohibit the use of invasive exotic species.

6.3 Impacts and Mitigation Measures

Significance Criteria

Based on Section 15065 and Appendix G of the CEQA Guidelines, the project would result in a significant impact on the environment if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future. As species of plants and animals become restricted in range and limited in population numbers, species may become listed or candidates for listing as endangered or threatened and become recognized under CEQA as a significant resource. Examples of such species are vernal pool fairy shrimp and burrowing owl; the former listed by the federal government and the latter a Species of Special Concern.

In conducting the following impact analysis, three principal components of the Guidelines outlined above were considered:

- Magnitude of the impact (e.g., substantial/not substantial);
- Uniqueness of the affected resource (i.e., rarity of the resource); and
- Susceptibility of the affected resource to perturbation (i.e., sensitivity of the resource).

The evaluation of the significance of the following impacts considered the interrelationship of these three components. For example, a relatively small magnitude impact to a state or federally listed species would be considered significant because the species is very rare and is believed to be very susceptible to disturbance. Conversely, a plant community such as California annual grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to be classified as significant.

This impact analysis focuses on foreseeable changes to the baseline condition in the context of the significance criteria presented above. Impacts of the project in relation to these issues were assessed.

The project could have an impact on federally-protected wetlands, waters of the U.S. or waters of the state, and special status species, as described below. Through implementation of mitigation measures, the project would not conflict with any local policies or ordinances protecting biological resources. The project would not substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

Impact Discussion

Impact 6.1: Implementation of the project could result in indirect impacts to Coastal Brackish Marsh, a CDFG listed Sensitive Habitat and a USFWS-designated Critical Habitat for the Central California Coast Steelhead Evolutionary Significant Unit (ESU). (Significant)

Sensitive habitats located in the vicinity of the project site include coastal salt and brackish marshlands located along the Petaluma River and the Petaluma River itself as it provides habitat for several state and federally listed fish species and essential fish habitat for Central California Coast steelhead ESU (CDFG, 2009d). Water from canals within the project site is pumped into the Petaluma River by a mechanical pump. Construction activities associated with the project could result in the sedimentation and degradation of water quality in those canals which in turn could degrade the water quality of the Petaluma River and quality of the surrounding marshlands. Because coastal brackish marshlands and the Petaluma River provide important habitat functions and are subject to regulation by the Corps, RWQCB, CDFG and the USFWS, this impact is considered **significant**.

Mitigation Measures

Mitigation Measure 6.1: The SCWMA shall ensure the protection of the Coastal Brackish Marsh and Central California Coast Steelhead ESU habitats through Application of Best Management Practices (BMPs)[3] to Provide Effective Erosion and Sediment Control. BMPs would reduce indirect impacts to Coastal Brackish Marsh, Central California Coast Steelhead ESU habitats, and other waters of the U.S. that could occur as a result of sedimentation and siltation from construction activities. These BMPs shall be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. The performance and effectiveness of these BMPs shall be determined either by visual means, where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where the verification of containment reduction or elimination (inadvertent petroleum release) is required to determine adequacy

[3] The term “Best Management Practices” refers to a wide variety of measures taken to reduce pollutants in stormwater and other non-point source runoff. Measures range from source control, such as use of permeable pavement, to treatment of polluted runoff, such as detention basins and constructed wetlands. Further, the effectiveness of a particular BMP is highly contingent on the context in which it is applied and the method in which it is implemented. BMPs are best used in combination to most effectively remove target pollutants.

of the measure. BMPs to be implemented as part of this mitigation measure shall include, but are not limited to, the following measures:

- BMPs for temporary erosion control (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) shall be employed for disturbed areas, stockpiled soil, and along culverts and drainage ditches on the site and in downstream offsite areas that may be affected by construction activities. Requirements for the placement and monitoring of the BMPs shall become part of the contractor's project specifications. Performance and adequacy of the measures shall be determined visually by site construction management and verified by the SCWMA as appropriate.

- Dirt and debris shall be swept from paved areas in the construction zone on a daily basis as necessary to remove excessive accumulations of silt, mud or other debris. Sweeping and dust removal shall be implemented by the contractor and oversight of these operations shall be the responsibility of the construction site superintendent.

- On areas that would have vegetative cover, grass or other vegetative cover shall be established on bare soils within the construction site as soon as possible after disturbance. If grass is chosen, a native seed mix shall be used. At minimum, vegetative application shall be completed by September 15th to allow for plant establishment. No disturbed surfaces or stockpile areas would be left without erosion control measures in place during the period of October 1 through April 30. The application, schedule, and maintenance of the vegetative cover shall be the responsibility of the contractor and requirements to establish a vegetative cover shall be included in the construction contractor's project specifications.

- If discharges of sediment or hazardous substances to drainage ways are observed, construction shall be halted until the source of contamination is identified and remediated. Visual indications of such contamination would include an oily sheen or coating on water, and noticeable turbidity (lack of clarity) in the water.

Additional BMPs which would be implemented are listed under Mitigation Measure 8.1. BMPs would be reviewed and approved by the San Francisco Bay Regional Water Quality Control Board, as part of the NPDES General Permit for Discharges of Stormwater Associated with Construction Activities.

Significance after Mitigation: Less than significant.

Impact 6.2: Implementation of the project has the potential to result in a loss of waters of the United States and/or waters of the state, including drainages, saline emergent wetlands, freshwater emergent wetlands, and seasonal wetlands. (Significant)

The project would involve relocating all agricultural canals around the site perimeter, resulting in the potential loss of waters of the U.S., including wetlands. The project could potentially fill the entire 0.55 acres of agricultural canals, as identified by a qualified biologist during the site visit. Any agricultural canals filled would result in adverse permanent and temporary impacts to potentially jurisdictional wetlands and waters of the U.S. State and federal regulations require that the project avoid or minimize impacts to wetlands and waters and develop appropriate protection for wetlands. Wetlands that cannot be avoided must be compensated to result in "no net loss" of wetlands. If the Corps determines that wetlands or other waters of the U.S. are isolated waters and not subject to Corps regulations under the Clean Water Act, the RWQCB may choose to exert jurisdiction over these waters under the Porter-Cologne Act as waters of the state.

Prior to project construction the project would be required to conduct and have verified a formal wetland delineation and obtain and comply with a Section 404 permit from the Corps, a Section 401 Water Quality Certification from the RWQCB, and a Section 1600 Streambed Alteration Agreement from the CDFG. If the Corps determines the wetlands are isolated, then the project would be required to obtain a report of waste discharge, instead of Section 404 and 401 permits. Because wetlands and drainages provide important habitat and water quality functions, and are subject to regulation by the Corps, CDFG, and the RWQCB, this impact is considered **significant.**

Mitigation Measure 6.2 requires the preparation and verification of a wetland delineation, submittal of the appropriate permits (depending on the results of the wetland delineation), and avoidance, minimization and compensation for impacts on wetlands and other waters of the U.S. A project site has not yet been selected for this project, but this measure spells out the appropriate measures to ensure this impact is reduced to a less-than-significant level. The final terms and conditions of the permits will be determined in consultation with the agencies, following project approval.

Mitigation Measures

Mitigation Measure 6.2: Compensate for Loss and Disturbance of Jurisdictional Waters of the U.S. and/or Waters of the State Resulting from Construction Activities.

- The SCWMA shall prepare a wetland delineation prior to project construction, the results of which will determine the type and acreage of wetland habitat present on the project site, for verification by the Corps. Following the verification, if jurisdictional wetlands and/or other waters of the U.S. occur within the project site, the SCWMA shall obtain and comply with federal and state permit requirements pertaining to impacts to wetlands and/or waters of the U.S., including a Section 404 permit and a Section 401 Water Quality Certification. If it is determined that there are no Waters of the U.S. on the project site, SCWMA shall prepare a report of waste discharge under the Porter Cologne Act.
- The SCWMA shall protect wetland habitats that occur near the project site by installing environmentally sensitive area fencing at least 20 feet from the edge of the feature. Depending on site-specific conditions and permit requirements, this buffer may be wider than 20 feet. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.
- The SCWMA shall comply with the no net loss of wetland habitat and no significant impacts to potential jurisdictional features policy. The project shall compensate for the unavoidable loss of wetlands at a ratio no less than 1:1. Compensation shall take the form of wetland preservation or creation in accordance with Corps and CDFG mitigation requirements, as required under project permits. Preservation

and creation may occur onsite through a conservation agreement or offsite through purchasing credits at a Corps approved mitigation bank. Compensation may be a combination of onsite restoration/creation, off-site restoration, or mitigation credits. Final compensation will be determined in consultation with the Corps.

- A draft restoration, mitigation and monitoring plan shall be developed in accordance with the Corps' federal guidelines (33 CFR 332.4(c)/40 CFR 230.92.4(c). The plan shall describe how wetlands shall be created and monitored over a minimum period of time.

- If the results of the wetland delineation, as verified by the Corps, indicate that project activities may result in a substantial modification to a river, stream, or lake the SCWMA shall submit an application for a Section 1602 Streambed Alteration Agreement to the CDFG.

Significance after Mitigation: Less than significant.

Impact 6.3: Implementation of the project has the potential to result in adverse impacts to special status species as defined in this section. Implementation of the project could result in direct and indirect impacts to the tricolored blackbird, Point Reyes bird's-beak, soft bird's-beak, and Marin knotweed. (Significant)

Implementation of the project would result in the removal of wetland and canal habitat and may degrade the quality of coastal brackish marsh habitat. This could result in adverse permanent and temporary impacts to the tricolored blackbird, Point Reyes bird's-beak, soft bird's-beak, and Marin knotweed. This impact is considered **significant.**

Mitigation Measures

Mitigation Measure 6.3a: Perform Preconstruction Surveys for Sensitive Avian Species. Prior to the start of construction, SCWMA shall be required to conduct preconstruction surveys in areas containing suitable habitat for tricolored blackbirds within 0.5 miles of proposed project activities if the construction is scheduled to occur during the March 1 to October 31 of any given year.

Surveys shall be conducted in both the breeding and non-breeding season to confirm presence/absence of resident birds. Breeding season for tricolored blackbird is mid-March through mid-July.

If active nests or presence of special status avian species are recorded within 500 feet of project activities SCWMA shall consult with CDFG regarding suitable measures to avoid impacting breeding effort. Measures may include, but are not limited to:

1. Maintaining a 50-meter buffer around each active nest; no construction activities shall be permitted within this buffer except as approved by CDFG.

2. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned

within the buffer without impacting the breeding effort. In this case (to be determined in consultation with CDFG), bird behavior shall be monitored daily by a qualified biologist during construction within the buffer. The biologist shall have the authority to halt all construction within the buffer in the event that project activities are impacting the breeding effort. The biologist shall immediately inform the construction manager and CDFG. Construction activities within the buffer shall cease until the nest is no longer active as determined by the biologist.

Mitigation Measure 6.3b: Prior to project implementation, the SWCMA shall hire a qualified botanist to perform preconstruction surveys for rare plant species listed in **Table 6-3** (located in **Appendix BIO-1**) that have any potential to occur within the project site. The qualified botanist shall conduct preconstruction surveys for rare plants during the appropriate season, according to CDFG guidelines for rare plant surveys (CDFG, 2009d) (**Appendix BIO-2**), and within suitable habitat prior to construction. The general blooming period for the special-status plant species that have the highest potential to occur within the project site are as follows:

- Marine knotweed: May through August
- Point Reyes birds-beak: June through October
- Soft birds-beak: July through November

If rare plant species are found during these surveys, the project would propose avoidance, minimization, and/or compensation measures to CDFG and USFWS for their approval. These measures may include, but are not restricted, to the following:

1. Minimizing impacts by restricting removal of plants to a few individuals of a relatively large population;
2. Transplanting plants to suitable habitat outside the project site, either within SCWMA-owned land or off-site. SCWMA shall coordinate with the appropriate resource agencies and local experts to determine whether transplantation is feasible. If the agencies concur that transplantation is a feasible mitigation measure, a qualified botanist shall develop and implement a transplantation plan through coordination with the appropriate agencies. The special-status plant transplantation plan shall involve identifying a suitable transplant site; moving the plant material and seed bank to the transplant site; collecting seed material and propagating it in a nursery; and monitoring the transplant sites to document recruitment and survival rates.
3. Monitoring affected populations or relocated populations to document potential project-related impacts;
4. Restoring or enhancing occupied habitat on-site or at another location; and/or
5. Protecting occupied habitat for the species on-site or at another regional location. If special-status plants are protected on site, environmentally sensitive area fencing (orange construction barrier fencing) shall be installed around special-status plant populations. The environmentally sensitive area fencing shall be installed at least 20 feet from the edge of the population. The location of the fencing shall be marked in the field with stakes and flagging and shown on the construction drawings. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the fenced environmentally sensitive area.

Significance after Mitigation: Implementation of Mitigation Measures 6.3a and 6.3b would reduce the impact to less than significant.

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CHAPTER 7
Cultural Resources

7.1 Introduction

This analysis considers direct and indirect impacts of the project on both known cultural resources as well as inadvertent discoveries. Cultural resources include architectural/structural resources, archaeological resources, paleontological resources, and human remains. This chapter describes the cultural resources that might be present in the vicinity of the project, evaluates the potential impacts of the project on those resources, and prescribes mitigation measures to reduce impacts to a less-than-significant level.

7.2 Setting

Environmental Setting and Historical Background

Natural Setting

The project is located within the Petaluma Valley in the Coastal Hills—Santa Rosa Plain. This area is situated west of the Sonoma Mountains and south of the Santa Rosa Plain. The Coastal Hills—Santa Rosa Plain subsection consists of a broad northwest-southeast aligned valley and rolling hills between the Pacific Ocean and the Santa Rosa Plain. The climate is temperate to hot and humid, usually moderated by marine air advancing over the hills.

The terrain at the project site is generally level, with depressions occurring in natural waterways and agricultural ditches and canals. Elevation ranges from approximately 0 to 2.62 feet above mean sea level. Natural and artificial drainages/canals are used for stormwater/irrigation water conveyance or modified to support agricultural activities. These canals range from small ephemeral canals to larger seasonal drainages that hold water during most of the year and support emergent vegetation.

The project site is mapped as artificial fill over marsh deposits (Blake, Graymer, and Jones, 2000). This is consistent with information provided on historic maps. The earliest known map of the project site is from 1898 (Reynolds and Proctor). The map shows the project site within the waters of the Petaluma River, between the shoreline and Hog Island. The 1914 U.S. Geological Survey (USGS) topographic quadrangle also shows the project site within the water of the Petaluma River or False Bay. The levee that is a segment of Twin House Ranch Road was constructed by that year. The 1942 USGS topographic quadrangle shows a pumping station on Hog Island and the former False Bay as marshland. By 1954 additional levee construction, pumping, and artificial fill developed the modern landscape.

Paleontological Setting

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and coral marine), and fossils of microscopic plants and animals (microfossils). Paleontological resources are distinct from archeological resources in that they record past plant and animal life, and not human history. Fossil discoveries provide paleontologists with valuable evidence to help them reconstruct biological and geological histories. In order for an organism to be preserved, it must be buried and mineralized, which requires a specific set of favorable geologic conditions and a significant amount of time. When fossils are discovered at the earth's surface, it is because the material in which the organism was fossilized has been eroded away by natural processes or exhumed by humans.

The project site and vicinity is directly underlain by Holocene (less than 10,000 years old) San Francisco Bay Mud deposits, which refers to sediment deposited at or near sea level that is presently, or was historically a tidal marsh, mud flat or bay bottom (USGS, 2006). Holocene bay mud deposits are composed of loosely consolidated silt, clay, peat and fine sand that locally contain molluscan fossils (Helley and LaJoie, 1979). Such fossils are fairly abundant in similar geologic deposits and would not typically be considered unique or significant (such as a vertebrate fossil of an extinct mammal). The thickness of bay mud deposits is estimated to range from 120 feet in the center of the bay to less than 1 foot at the bay margins (Helley and LaJoie, 1979). While the thickness of the bay mud at the project site is unknown it is likely relatively thin and underlain by fine-grained early or middle Holocene fine-grained alluvium. These deposits are known to contain invertebrate fossils such as freshwater gastropod and pelecypod shells (Helley and LaJoie, 1979); however, vertebrate fossils within such young sediments are extremely rare. Within Sonoma County, there is only one record of a vertebrate fossil (a horse tooth) within Holocene sediment (University of California Museum of Paleontology, 2009).

On the whole, Holocene deposits are considered to have a low potential to yield unique or significant paleontological resources because many have not been buried and consolidated sufficiently for fossilization processes to take place, and there is little evidence in paleontological collections that they yield vertebrate fossils.

Prehistoric Background

A framework for the interpretation of the San Francisco Bay Area, including Sonoma County, is provided by Milliken et al. (2007), who have divided human history in California into three broad periods: the Early Period, the Middle Period, and the Late Period. Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

The Paleoindian period (11,500 to 8000 B.C.) was characterized by big-game hunters occupying broad geographic areas – evidence for this period has not yet been discovered in the San Francisco Bay or Sonoma County vicinity. During the Early period, consisting of the *Early Holocene* (8000 to 3500 B.C.) and *Early Period* (3500 B.C. to 500 B.C.), geographic mobility continued and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are first documented in burials during this period, indicating the beginning of a shift to sedentism. During the Middle period, which includes the *Lower Middle Period* (500 B.C. to A.D. 430), and *Upper Middle Period* (A.D. 430 to 1050), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Middle Period, mobility was being replaced by the development of numerous small villages. Around A.D. 430 a “dramatic cultural disruption” occurred evidenced by the sudden collapse of the *Olivella* saucer bead trade network. During the Initial Late period (A.D. 1050 to 1550), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched points, and a diversity of beads and ornaments.

Ethnographic Background

The project site is located within the ethnographic territory of the Coast Miwok (Barrett, 1908; Kelly, 1978; Kroeber, 1925). The Coast Miwok language, a member of the Miwokan subfamily of the Penutian family, is divided into two dialects: Western, or Bodega, and Southern, or Marin, which in turn is subdivided into valley and coast. *Miwok* refers to the entire language family that was spoken by Coast Miwok, as well as Lake, Valley, and Sierra Miwok. Coast Miwok territory encompassed all of present-day Marin County and parts of Sonoma County, from Duncan’s Point on the coast east to between the Sonoma and Napa Rivers. Each large village had a tribal leader but there does not appear to have been defined larger organization (Kelly, 1978:414).

Much of the information about post-contact Coast Miwok material cultural and lifestyles was gathered from two informants, Tom Smith (Bodega dialect) and María Copa (Marin dialect) (based on Kelly’s field notes from 1931 to 1932). Settlements focused on bays and estuaries, or along perennial interior watercourses. The economy was based on fishing, hunting, and gathering, revolving around a seasonal cycle during which people traveled throughout their territory to make use of resources as they became available. Marine foods, including kelp, clams, crabs, and especially fish, were a year-round staple. Acorns were gathered in season and stored for use throughout the year. Tobacco was generously used by most men.

Dwellings were conical in shape and grass-covered. Each large village had a circular, dug-out sweathouse. Basketry techniques included both coiled and twined forms often with the use of multicolored motifs and patterns. Beginning as early as 1600 A.D. the Coast Miwok began to produce and use clamshell disk beads as money (Stewart and Praetzellis, 2003:177). The obsidian trading network was established in the Early Holocene period. Coast Miwok had a powerful sense for the value of property. Some Coast Miwok villages defended their territory against trespassers. Although land was not considered privately owned certain food-producing trees as well as hunting, fishing, and clam-digging locations were (Kelly, 1978:418).

By the mid-1800s Spanish missionization, diseases, raids by Mexican slave traders, and dense immigrant settlement had disrupted Coast Miwok culture, dramatically reducing the population, and displacing the native people from their villages and land-based resources. By the time of California's initial integration into the United States in the late 1840s, the Coast Miwok population had dwindled from approximately 2,000 individuals to one-eighth of its size before European contact (Kelly, 1978:414).

In 1920 the Bureau of Indian Affairs purchased a 15.45-acre tract of land in Graton for the Marshall, Bodega, Tomales, and Sebastopol Indians. This land was put into a federal trust and these neighboring peoples that included both Coast Miwok and Southern Pomo were consolidated into one recognized group: the Graton Rancheria. In 1958 the U.S. government enacted the Rancheria Act of 1958, transferring tribal property into private ownership. Forty-four Rancherias in California were affected, including the Graton Rancheria.

Throughout the remaining century, tribal members continued to protect their cultural heritage and identity despite being essentially landless. On December 27, 2000 President Clinton signed into law the legislation restoring federal recognition to the Federated Indians of Graton Rancheria. The tribe currently has approximately 1,100 members.

Historical Background

European explorers first traveled the Petaluma River in 1776, when Ferdinand Quiros and his party passed through the area. In 1819 Father Mariano Payéras visited the Llano de los Petalumas, or the Plain of the Petaluma Indians. In 1834 Mariano Vallejo began the construction of his adobe home about 4 miles to the east of the present-day town, within his Rancho Petaluma. During the Gold Rush, hunters' camps and trading posts appeared on the banks of the river. The City of Petaluma is located 6 miles to the northwest of the project site. The town was laid out and the post office established in 1852, and the City was incorporated in 1858. In the early 1850s, the Petaluma Valley became an important production area for grain and vegetables due especially to the vicinity's proximity to San Francisco and the larger San Francisco Bay cities (Hoover et al., 1990:478, 482–483). Construction of levees to reign in the Petaluma River marshlands began in the early 1900s and continued into the 1950s in order to increase the agricultural land base of the region.

Records Search and Results

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on November 21, 2008 (File No. 08-0609). The records were accessed by utilizing the Petaluma River, California, U.S. Geological Survey 7.5-minute quadrangle base maps. The records search, which encompassed a one-half-mile radius around the project site, was conducted to: (1) determine whether known cultural resources had been recorded within or adjacent to the project site; (2) assess the likelihood of unrecorded cultural resources based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

During the records search, the following sources were reviewed: the *California Inventory of Historical Resources* (DPR, 1976), *California Historical Landmarks* (DPR, 1990), *California Points of Historical Interest*, and *Historic Properties Directory Listing* (OHP, 2008). The Historic Properties Directory includes listings of the National Register of Historic Places and the California Register of Historical Resources (California Register), and the most recent listings of California Historical Landmarks and California Points of Historical Interest. Historic maps including topographic maps (1911, 1914, 1942, 1946, and 1954) and the General Land Office Plat of the Petaluma Rancho were also reviewed.

The records search at the NWIC indicated that the approximate 70-acre project site was previously surveyed for cultural resources in 1997 (Beard, 1997). Sections of Twin House Ranch Road as well as several adjacent parcels have also been surveyed by archaeologists (Loyd and Origer, 1994; Roop, 1996; Roop, 1979a).

One prehistoric archaeological resource (CA-SON-202/H) has been recorded on the project site. Two additional recorded archaeological resources (CA-SON-201 and CA-SON-203) have been identified within a 0.5 mile radius of the project site. One prehistoric site (CA-SON-204) is located approximately 1.5 miles from the project site. No recorded architectural resources have been identified within the project site or within a 0.25 mile radius.

Cultural constituents noted in recent recordings of CA-SON-202/H include midden soil with shell fragments and heat-affected rock as well as fruit trees, metal pipe, and broken concrete indicating the historic-period settlement. The site has been re-recorded several times (Roop, 1979b; Loyd, 1994; and Origer and Associates, 1979a).

The prehistoric sites in this vicinity are situated on what would have once been the shoreline of the Petaluma River, False Bay, and marshland. The proximity to the San Pablo Bay as well as the Sonoma Mountain terraces and fresh water sources would have made these locations ideal for processing the abundant resources of the bay, river, and marshland. The high concentration of shell fragments yet low amount of lithic debitage are indicative of a food processing location but not a long-term campsite. These types of locations were often used for burial purposes as well.

Native American Consultation

On November 20, 2008, a sacred lands search request was submitted to the Native American Heritage Commission (NAHC) for the project site. A letter was also sent to Dr. Greg Sarris c/o Nick Tipon of the Federated Indians of the Graton Rancheria (FIGR). The project site is within the official territory of the FIGR. Mr. Tipon, Chairman of the Sacred Sites Protection Committee, responded on December 5, 2008 stating that the Tribe has knowledge of “cultural resources, traditional gathering places, or sacred sites either on the property or in the vicinity of this project.” He requested the lead agency (SCWMA) to begin “government to government” consultation regarding the project. The SCWMA is currently engaged in consultation with the Tribe.

Survey Results

The project area was surveyed on April 8 and April 21, 2009. The survey included the project site, Twin House Ranch Road with a 20-foot wide buffer on either side of the road and Lakeville Road, ½-mile section (¼-mile to southeast and northwest of intersection with Twin House Ranch Road) with a 20-foot wide buffer on either side of the highway.

Visibility along either side of Twin House Ranch Road and Lakeville Road was variable. Sections along Twin House Ranch Road planted with grape vines had been tilled so the ground surface was very visible. High grasses covered much of the remaining sections. Vegetation was periodically scraped and rodent holes were examined.

The natural ground surface within the 70-acre project site was almost completed obscured by various types of low and medium-high grasses. The eastern edge of the project site (what once would have been above the water line of the Petaluma River, False Bay, and marshland) was intensively surveyed in 10-meter-wide transects; vegetation was periodically scraped to reveal the ground surface. The remaining project site, what would have once been below water level, was less intensively surveyed in 40-meter-wide transects. Any exposed ground surface including rodent holes, the banks of water channels, and eroded areas were examined for cultural materials.

Archaeological site CA-SON-202 was found in its recorded location. The site consists of very visible midden soils with a high density of shell fragments. The site is approximately 125 by 100 meters (400 by 325 feet). Depth is unknown. Historic-period use of the area (structures are shown on the 1914, 1942, and 1948 USGS topographic maps) was also noted.

The current survey effort recognized the potential historical significance of the levee that also serves as a segment of Twin House Ranch Road. The levee is earthen and borders the project site on the southeast for approximately 2,000 feet. The height varies between a few feet in the northeast to up to 15 feet in the southwest. It is up to 50 feet wide at the base and 30 feet wide at the top.

Regulatory Framework

California Environmental Quality Act

CEQA, as codified at California Public Resources Code (PRC) Sections 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a project would have a significant effect on historical resources.

The CEQA Guidelines define a historical resource as: (1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

- Contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information;
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type; and/or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility to the California Register are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally eligible for or listed in the National Register.

To be eligible for the California Register as a historical resource, a prehistoric or historic-period resource must be significant at the local, state, and/or federal level under one or more of 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; or,
4. Has yielded, or may be likely to yield, information important in prehistory or history [14 CCR Section 4852(b)].

For a resource to be eligible for the California Register, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not retain sufficient integrity to meet the National Register criteria may still be eligible for listing in the California Register.

Paleontological Assessment Standards

The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources (SVP, 1995; 1996). Most practicing paleontologists in the nation adhere closely to the SVP's assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists. The SVP (1995) outlines criteria for screening the paleontological potential[1] of rock units and established assessment and mitigation procedures tailored to such potential. **Table 7-1** lists the criteria for high-potential, undetermined, and low-potential rock units.

TABLE 7-1
PALEONTOLOGICAL POTENTIAL CRITERIA

Paleontological Potential	Description
High	Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.
Undetermined	Geologic units for which little to no information is available.
Low	Geologic units that are not known to have produced a substantial body of significant paleontological material. This includes intrusive igneous rocks and most metamorphic and volcanic rocks.

SOURCE: SVP, 1995.

Local Regulations

Sonoma County

Sonoma County's General Plan 2020 contains the following goals, objectives, and policies pertaining to cultural resources within the Open Space & Resource Conservation Element:

Goal OSRC-19 Protect and preserve significant archaeological and historical sites that represent the ethnic, cultural, and economic groups that have lived and worked in Sonoma County, including Native American populations. Preserve unique or historically significant heritage or landmark trees.

Objective OSRC-19.1 Encourage the preservation and conservation of historic structures by promoting their rehabilitation or adaptation to new uses.

Objective OSRC-19.2 Encourage preservation of historic building or cemeteries by maintaining a Landmarks Commission to review projects that may affect historic structures or other cultural resources.

Objective OSRC-19.3 Encourage protection and preservation of archaeological and cultural resources by reviewing all development projects in archaeologically sensitive areas.

Objective OSRC-19.4 Identify and preserve heritage and landmark trees.

Objective OSRC-19.5 Encourage the identification, preservation, and protection of Native American cultural resources, sacred sites, places, features,

1 Paleontological potential refers to the likelihood that a rock unit will yield a unique or significant paleontological resource.

	and objects, including historic or prehistoric ruins, burial grounds, cemeteries, and ceremonial sites. Ensure appropriate treatment of Native American and other human remains discovered during a project.
Objective OSRC-19.6	Develop and employ procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources and Native American cultural resources, sacred sites, places, features, or objects.

7.3 Impacts and Mitigation Measures

Significance Criteria

Based on the Appendix G of the CEQA Guidelines, project implementation would have significant impacts and environmental consequences on cultural resources if it would result in any of the following:

- A substantial adverse change in the significance of a historical resource that is either listed or eligible for listing on the National Register of Historic Places, the California Register of Historical Resources, or a local register of historic resources;
- A substantial adverse change in the significance of a unique archaeological resource;
- Disturbance or destruction of a unique paleontological resource or site or unique geologic feature; or
- Disturbance of any human remains, including those interred outside or formal cemeteries.

Historic-period Architectural/Structural Resources

Historic research has indicated that levees were constructed between 1914 and 1942. Preliminary archival research undertaken by ESA has failed to provide any additional information about the specific levee on the project site or generally about levees in this vicinity. While the levee does date older than 50 years (based on USGS topographic maps), archival research has not indicated any historical significance to the levee.

The levee is not considered a historical resource under CEQA as it does not appear to meet the criteria for listing in either register. Research did not reveal that the levee is directly associated with events (criterion a/1) or people (criterion b/2) that have had a broad-reaching impact on the community at the local, state, or national level. Furthermore, this utilitarian structure does not embody the characteristics of a distinctive type, period, or method of construction, or represent the work of a master architect or builder (criterion c/3). Finally, it does not appear to have the potential to yield information important to an understanding of the prehistory or history of the local area, the state, or the nation (criterion d/4). Therefore, this levee does not appear to be eligible for the National or California Registers and lacks overall historical significance.

The levee is not considered a historic property or a historical resource therefore no additional work and no mitigation are necessary.

Impact Discussion

Impact 7.1: The project could have an adverse effect on a known archaeological site (CA-SON-202/H). (Significant)

The project could have an adverse effect on a potentially-significant archaeological resource. Site CA-SON-202/H is located on the project site. The site contains both prehistoric and historic-period elements and should be evaluated for its eligibility to the National and California Registers. In the interest of preventing unnecessary disturbance of a potentially-significant archaeological resource, evaluation of the resource should occur after the final determination of the project area. If the site is eligible for inclusion, avoidance of the site is preferable. If the site cannot be avoided by project redesign, a site evaluation and data recovery program should be implemented that includes a public outreach program. Without mitigation, this impact would be **significant**.

Mitigation Measure

Mitigation Measure 7.1: Evaluate CA-SON-202/H for its eligibility to the National Register of Historic Places and the California Register of Historical Resources and implement an archaeological data recovery program. In the interest of preventing unnecessary disturbance of a potentially-significant archaeological resource, evaluation of the resource should occur after the final determination of the project area. If the site cannot be avoided through redesign, it should be evaluated for its eligibility to the National and California Registers. This should be accomplished by constructing a detailed Archaeological Research Design and Treatment Plan (ARDTP). The ARDTP should be prepared by an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for archaeology in consultation with an affiliated Native American representative. The ARDTP shall contain, at a minimum:

- A prehistoric and historic-period archaeological research context using existing documents;
- An archaeological sensitivity study and testing plan that identifies expected property types, historical development, relevant research issues and themes, project impacts, and an archaeological testing plan that would identify potentially significant archaeological features and deposits; and
- An outline of criteria implemented by CEQA and Section 106 of the NHPA if applicable, to evaluate archaeological features and deposits that address relevant research issues.

If it is determined that a legally-significant archaeological resource is present and that the project could have an adverse effect on the site, the Sonoma County Waste Management Agency (SCWMA) shall:

- Design and implement an Archaeological Data Recovery Program (ADRP). The ADRP shall identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain. The ADRP should be prepared by an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for archaeology in consultation with an affiliated Native American representative. The ADRP shall identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery should be limited to the portions of the historic property that could be adversely affected by the project. Destructive data recovery methods should not be applied to portions of the archaeological resource if nondestructive methods are practical. The results of the ARDP should be presented in a report that contains methods, analysis, report production, laboratory analysis, and appropriate curation of materials. A public outreach program should be implemented that includes information on the site and Coast Miwok traditional lifeways.

Significance after Mitigation: Less than significant.

Impact 7.2: The project could inadvertently discover cultural resources. (Significant)

With the exception of resource CA-SON-202/H, it does not appear that the remaining project area contains cultural resources; however this possibility cannot be entirely discounted. Project personnel should be alerted to the possibility of encountering archaeological materials during construction, and apprised of the proper procedures to follow in the event that such materials are found. Without mitigation, this could be a **significant** impact.

Mitigation Measure

Mitigation Measure 7.2: The SCWMA shall halt work if cultural resources are discovered during ground-disturbing activities. If cultural resources are encountered, all activity in the vicinity of the find shall cease until it can be evaluated by a qualified archaeologist and a Native American representative. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If the archaeologist and Native American representative determine that the resources may be significant, they shall notify the SCWMA and shall develop an appropriate treatment plan for the resources. The archaeologist shall consult with Native American representatives in determining appropriate treatment for prehistoric or Native American cultural resources.

In considering any suggested mitigation proposed by the archaeologist and Native American representative, SCWMA shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed in other parts of the project area while mitigation for cultural resources is being carried out.

Significance after Mitigation: Less than significant.

Impact 7.3: The project could inadvertently discover human remains. (Significant)

It does not appear that the project area contains human remains; however this possibility cannot be entirely discounted. Project personnel should be alerted to the possibility of encountering human remains during construction, and apprised of the proper procedures to follow in the event that they are found. Without mitigation, this could be a **significant** impact.

Mitigation Measure

> **Mitigation Measure 7.3:** Halt work if human skeletal remains are identified during construction. If human skeletal remains are uncovered during project construction, work should immediately halt within 50 feet of the find. SCWMA shall contact the Sonoma County coroner to evaluate the remains and follow the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. If the County coroner determines that the remains are Native American, SCWMA would contact the Native American Heritage Commission (NAHC), in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). The NAHC would then identify the person(s) thought to be the Most Likely Descendent of the deceased Native American, who would then help determine what course of action should be taken in dealing with the remains.
>
> **Significance after Mitigation:** Less than significant.

Impact 7.4: The project could inadvertently discover paleontological resources. (Significant)

The maximum depth of excavation associated with the project is expected to range from 6 to 8 feet below the ground surface. Excavations would encounter San Francisco Bay Mud deposits and potentially Holocene alluvium (if the bay mud is thinner than 8 feet at the project site). As discussed in the setting, these are geologic units that have a low potential to yield significant paleontological resources. However unlikely, disturbance or destruction of a paleontological resource could still occur and therefore represents a **significant** impact.

Mitigation Measure

> **Mitigation Measure 7.4:** The paleontologist shall halt work if paleontological resources are identified during construction. If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, all ground disturbing activities within 50 feet of the find shall be halted until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate salvage measures in consultation with the project sponsor and in conformance with Society of Vertebrate Paleontology Guidelines (SVP, 1995; SVP, 1996). If the paleontologist determines the fossil find is unique or significant, and worthy of salvage, measures would focus on identifying an institution willing and able to accept the specimen, plaster jacketing the specimen, and promptly removing the specimen from the construction site for study in a paleontology lab.
>
> **Significance after Mitigation:** Less than significant.

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CHAPTER 8
Hydrology and Water Quality

8.1 Introduction

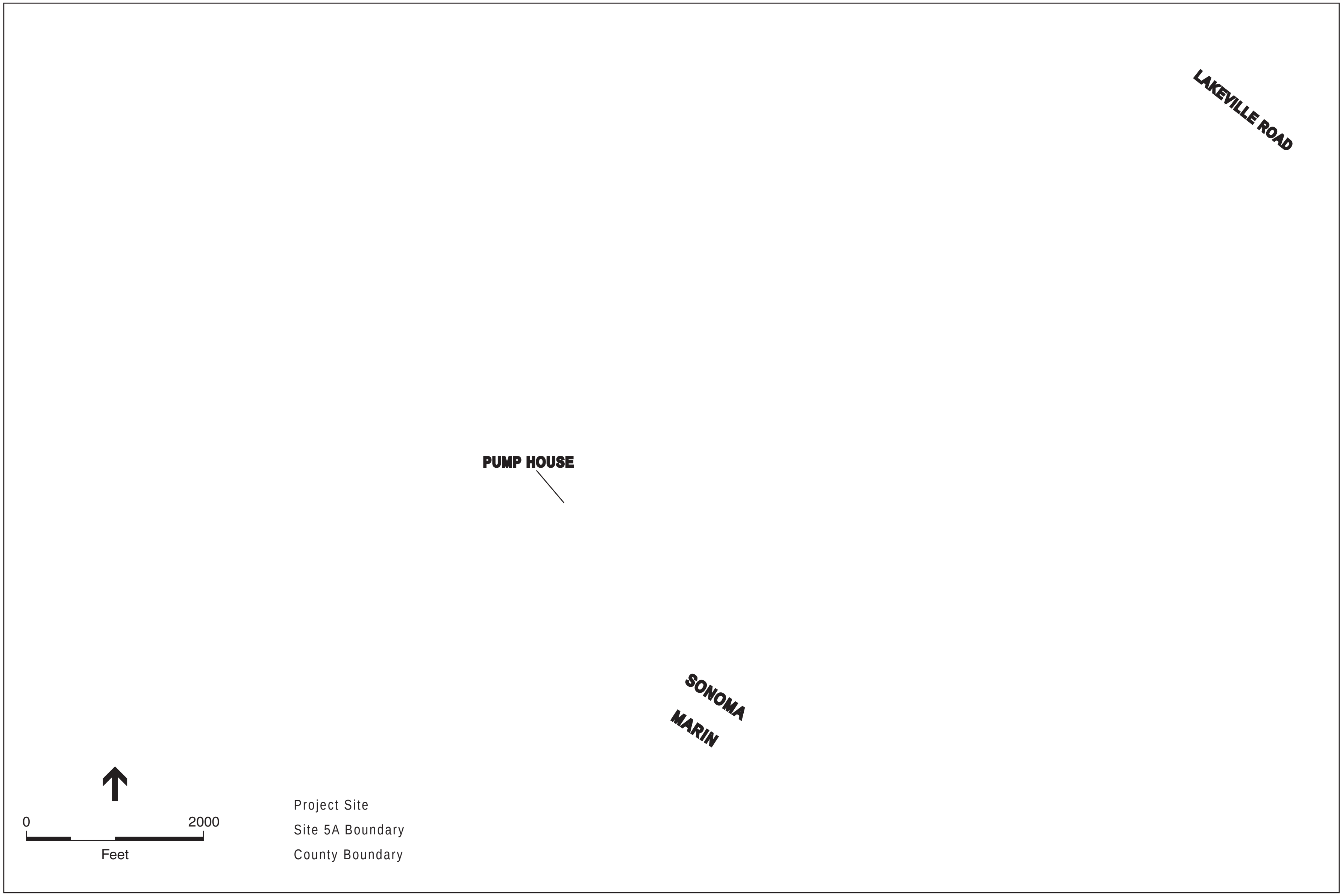
This chapter provides an overview of the existing environmental conditions for the project, as relevant to hydrology, water quality, groundwater, and flooding. This chapter also provides an overview of relevant regulatory information, and provides an assessment of potential impacts associated with hydrology, water quality, and flooding, as relevant to the project. Applicable mitigation measures are provided to reduce the intensity of potential impacts, as relevant and available.

8.2 Setting

Surface Water Hydrology and Drainage

The project site slopes gently from an elevation of approximately 2.6 feet above mean sea level (msl) along the eastern boundary, to approximately 0.0 feet msl along the western boundary. The site is located within Petaluma River hydrologic subarea (California Resources Agency, 2009), just east of the mouth of the Petaluma river, as it drains into San Pablo Bay. Surface water drainage on site is provided by a system of unnamed canals, as shown in **Figure 8-1**. Canal A connects with two small subwatersheds originating in the hills east of Old Lakeville No. 3 Road. The two small subwatersheds contain four small dams used to store seasonal runoff within the watershed. Runoff from these two subwatersheds is routed under Old Lakeville No. 3 Road, and flows through engineered channels and through culverts underneath Lakeville Road. Runoff continues through engineered channels and flows southwest until the two channels merge, approximately 1,500 feet northeast of the project site. Runoff is then conveyed through a single engineered channel until it reaches Canal A, which conveys water onto the project site. Canal A merges with Canal B, which eventually directs flow southwest towards a collection and pumping system, located approximately 3,000 feet west of the project site adjacent to the Petaluma River. From this point, water is pumped over the existing Petaluma River levee, and into the Petaluma River, via a pumphouse.

The second drainage located onsite is a meander connecting the drainage discussed above to a slough, located approximately 2,000 feet west of the project site. This slough drains in a southwesterly direction, until it merges with the drainage discussed above, near the pumphouse. The lower portions of both of the unnamed drainages that are located onsite appear to be remnant channels from wetlands that were once located onsite, before the area was reclaimed for farmland. The subwatersheds that feed onsite drainages provide only intermittent runoff, associated with storm events, and possibly a small amount of baseflow during the rainy season.



SOURCE: NAIP, 2006; ESRI, 2007; and ESA, 2009

Figure 8-1
Project Site Surface Waters

During the dry season, the subwatersheds upstream do not provide natural runoff to the system. Some agricultural associated with agricultural areas west of Old Lakeville Road may contribute to dry season runoff in the on-site drainages. On site and immediately downstream from the project site, lower-lying portions of the on-site drainages can be expected to contain standing water during the dry season. A field visit indicated that small amounts of standing water could be found on site at the conversion point of the two on-site drainages (Figure 8-1), and that standing water in these drainages generally deepened and became more prevalent in the slough mentioned above, and as the drainages approach the Petaluma River. This dry season standing water may result from agricultural tailwaters emanating from the vicinity of the project site, and likely also result from seepage from groundwater. However, further investigation would be required to confirm these sources.

There are no gauging stations or other known measurement devices located along the on-site drainages, or along the subwatersheds that feed these drainages, and the volume of winter stormwater that the drainages convey is unknown. Invert width of the onsite drainages ranges from approximately 10 to 25 feet on site, and the height from the lowest point of the channel to the top of the bank ranges from about 3 to 5 feet.

As indicated above, drainage waters from the project site and upstream subwatersheds is pumped up and over the levee between the project site and the Petaluma River. The Petaluma River is strongly tidally influenced in this area, with a hydrology that is substantially defined by the diurnal tidal flows associated with San Pablo Bay. The pump discharge point is located approximately 4 miles upstream from the mouth of the Petaluma River. The river's natural floodplain and associated marshland, which historically included the project site, has been partially reclaimed. Some marshland, including meandering channels, remains along the western bank of the river in the vicinity of the project site, while more substantial areas of remnant marsh are located approximately 3,000 feet upstream of the pump discharge point, discussed previously.

This tidal portion of the Petaluma River, located in the vicinity of the project site, is included in the Clean Water Act (CWA) Section 303(d) list of water quality limited segments (see below for a description of the Clean Water Act), for the following water quality pollutants (San Francisco Bay Regional Water Quality Control Board [SFRWQCB], 2006):

- diazinon from urban runoff and storm sewers;
- nickel from municipal point sources, urban runoff, storm sewers, and atmospheric deposition;
- nutrients from agriculture, land construction/development, and urban runoff/storm sewers; and
- pathogens associated with agriculture, construction/land development, and urban runoff/storm sewers.

Similarly, the more upstream, non-tidal portion of the Petaluma River is listed for the following constituents:

- diazinon from urban runoff and storm sewers;
- nutrients from agriculture, land construction/development, and urban runoff/storm sewers;

- pathogens associated with agriculture, construction/land development, and urban runoff/storm sewers; and
- sedimentation/siltation from agriculture, construction/land development, and urban runoff/storm sewers.

Total Maximum Daily Load assessments have not been completed for these constituents along the tidal or non-tidal portions of the Petaluma River.

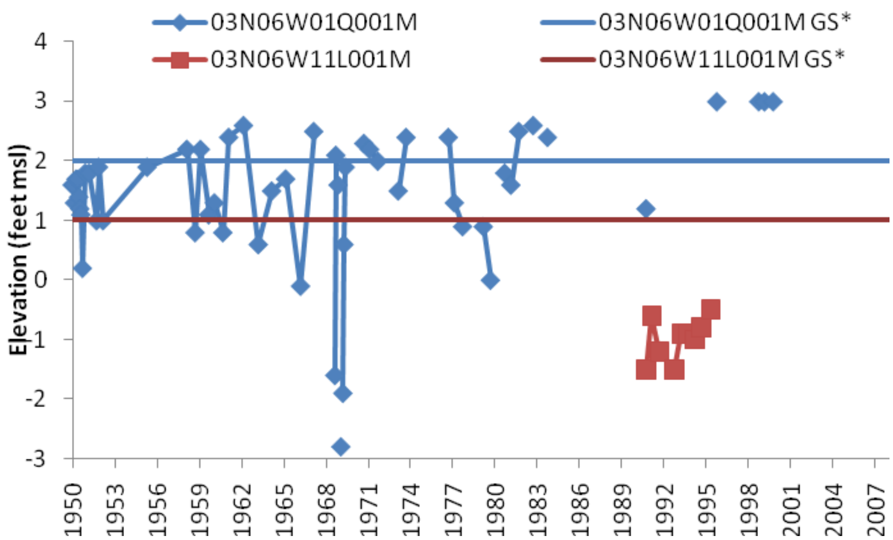
Groundwater

Groundwater level data for the immediate project site were not found to be available. However, the California Department of Water Resources (DWR) maintains a dataset of historic groundwater levels statewide, including in the vicinity of the project site (DWR, 2009). A records search indicated that two wells are located in the vicinity of the project site, for which level data records have been recorded, and which have similar elevations and site characteristics as compared to the project site. These include well number 03N06W01Q001M, located on the flatlands just south of SR 37, approximately 2.8 miles southeast of the project site, and well number 03N06W11L001M, also located on the flatlands just south of SR 37, approximately 2.6 miles south-southeast of the project site. Ground surface levels at both wells is near sea level, and both well installation sites are previously reclaimed wetlands of the Petaluma River/San Pablo Bay.

As shown on **Figure 8-2**, groundwater levels at these two sites are very close to the ground surface, and range in depth from approximately 5 feet below ground surface (bgs), to above ground surface (i.e., within existing natural channels located on site, which hold standing water on a seasonal basis). Measurements indicating that groundwater levels are above ground surface are indicative of artesian conditions, wherein water flows spontaneously from the well, without applying pumping.

Site conditions can also be utilized to roughly evaluate groundwater levels on the project site. Because the project site is located at or just slightly above sea level, and also because the project site is in close proximity to sea-level surface water bodies (e.g., the Petaluma River and San Pablo Bay), it is likely that groundwater on site is relatively shallow, or close to the ground's surface. This is corroborated by groundwater data from the two wells discussed above, which indicate groundwater levels within a couple feet of the ground's surface. A dry-season site visit, conducted on May 14, 2009, revealed standing water along low points on site, associated with the two unnamed drainages located on site. Standing water in these areas was observed along incised channels, at a depth of approximately 3-5 feet below the bank level of the drainages, where the bank level was of the same height as the surrounding site. Based on these observations, it is anticipated that groundwater levels on site might be on the order of 2 to 6 feet bgs.

In support of the project, a query was made to DWR for well drilling logs in the vicinity of the project site. A total of 98 well logs were found indicating historic well drillings within 2 miles of the project site, along the flat lands between the foothills to the east of the project site, and the Petaluma River. Water-bearing formations were identified within 0.5 mile north, south, and east of the project site, including near the Petaluma River (in the vicinity of the gun club) and along Lakeville Road. Strata underlying the project vicinity generally includes surface peaty soils, followed by 10 to 20 feet of clayey muds. Below that, muds are interbedded with approximately 5 to 20 foot thick silt, sand, and gravel layers, to about 100 or 150 feet in depth. Below this, well logs indicate either Franciscan formation, or hard volcanics. Near the current Petaluma River channel, one well indicated a gravel layer of approximately 40 feet in extent. Within 0.5 mile of the project site, well yields range from 20 to 30 gallons per minute.



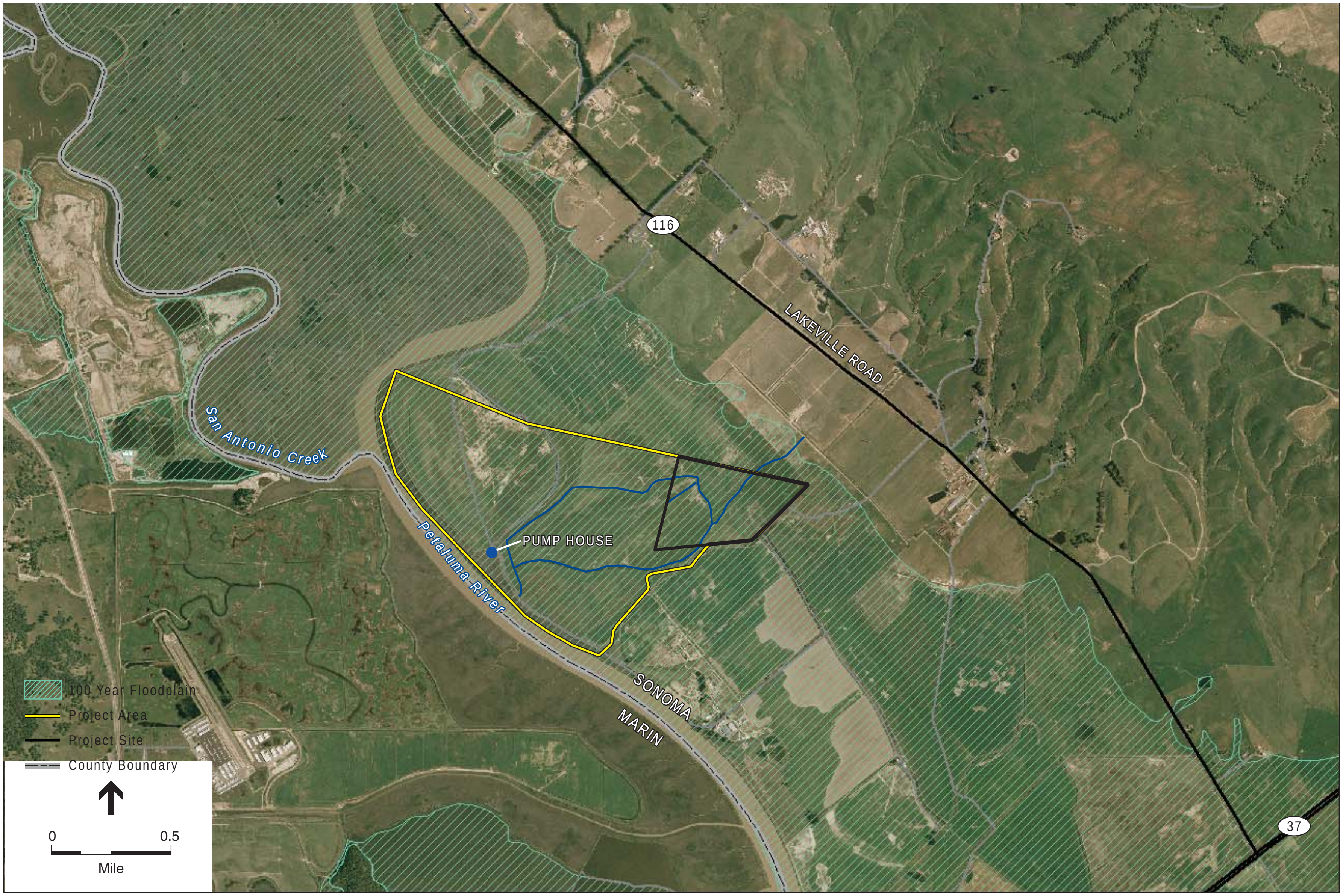
Source: DWR, 2009
*GS = Ground Surface

Sonoma County Compost Facility. 207312

Figure 8-2
Groundwater Levels in the Vicinity of the Project Site

Flooding

The entire project site is located approximately at sea level, ranging from 0 to 2.6 feet above msl in elevation. To the west of the project site, the land surface continues to grade gradually lower, below sea level, as it approaches the levees surrounding the Petaluma River. Water levels in the Petaluma River near the project site, which are approximately at sea level, are several feet higher in elevation, as compared to the ground surface immediately east of the Petaluma River levees, in the vicinity of the project site. Although the project site is low-lying, these levees are sufficient to provide 100-year flood protection to the entire site. As shown on **Figure 8-3**, the entire project site is located within a Federal Emergency Management Agency (FEMA) defined flood zone. As indicated by FEMA maps, flooding on site is associated with potential flooding along the Petaluma River and its associated waterways, which results in inundation along low-lying areas near the Petaluma River, including the project site.



SOURCE: FEMA, 2003; NAIP, 2006; ESRI, 2007; and ESA, 2010

SCWMA Compost Facility EIR . 207312

Figure 8-3
FEMA Floodplains in the Project Vicinity

Tsunami Hazard

A tsunami is a low-period ocean wave that results from substantial seismic displacement. Tsunamis can result from an earthquake at a remote location, and be effectively transmitted across hundreds to thousands of miles of ocean area, potentially resulting in inundation of low-lying coastal areas. The State of California (2009) has prepared a series of tsunami hazard inundation maps for select portions of coastal California. These maps provide an assessment of the potential tsunami hazard that would result from a maximum tsunami condition anticipated for the indicated area. The analyzed area includes Sears Point, where the project site is located. As shown in **Figure 8-4**, limited areas immediately adjacent to the Petaluma River could be affected by Tsunamis. However, the existing levee system to the west of the project site would provide sufficient protection from tsunami, such that the project site would not be inundated.

Water Supply

Background

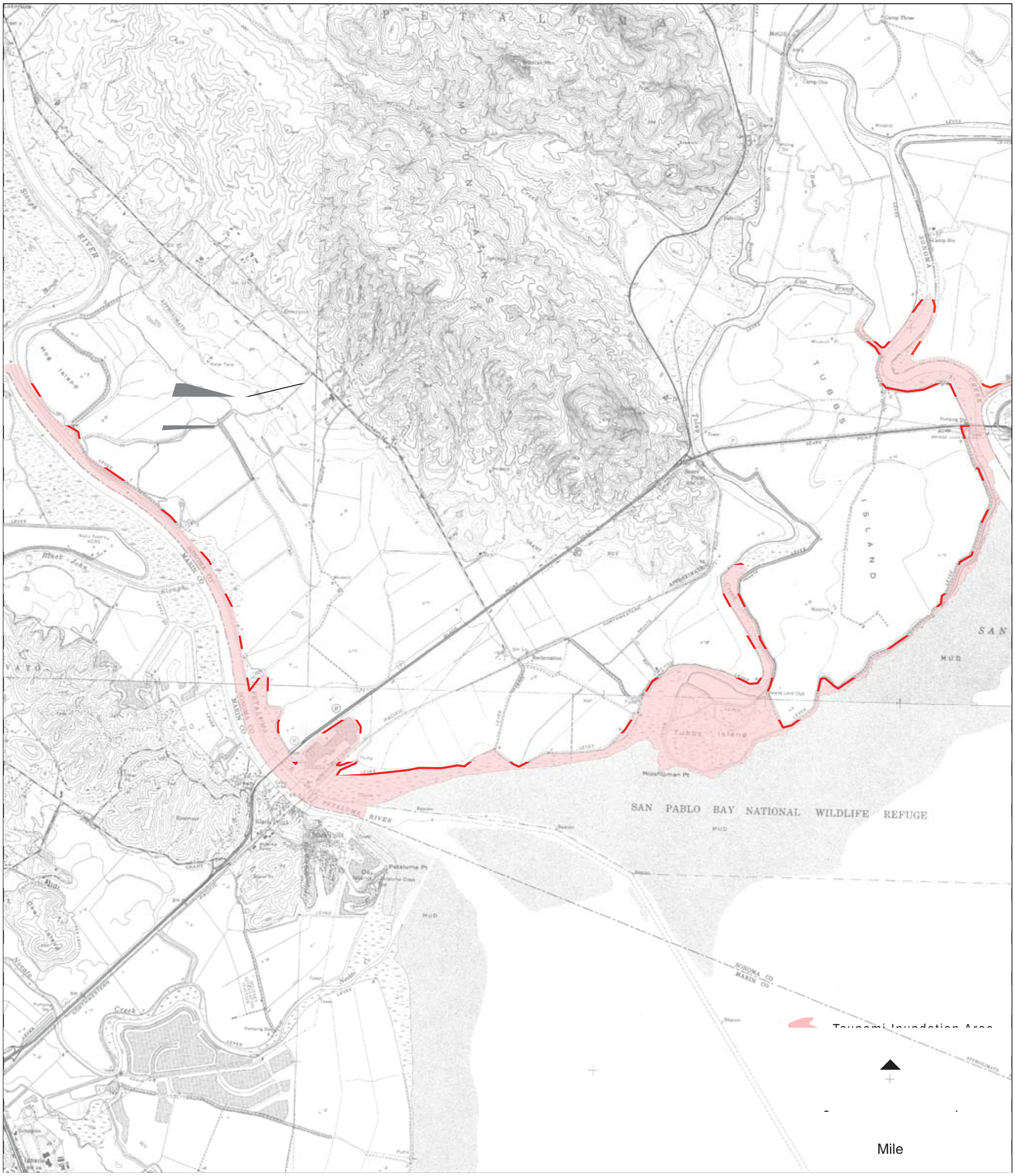
Compliance with the California Public Resources Code (PRC) §21151.9 requires, where necessary, that a proposed project prepare a Water Supply Assessment (WSA) to ensure that long term water supplies are sufficient to meet the project's demands in normal, single dry and multiple dry years for a period of 20 years. Preparation of a WSA is required if a project meets the statutory definition of a "project," where a project is defined as "a proposed industrial, manufacturing, or processing plant, or industrial park occupying more than 40 acres of land..."[1]

The project, if implemented at Site 5a, would require 100 acres within a 627-acre site, wherein the composting operations would occupy 70 of the 100-acre area of the property. The project meets the definition of a project. However, it was discovered through the process of completing this EIR that financial and procedural infeasibilities exist on Site 5a to the extent that it would be very unlikely this site would be selected for project implementation. These infeasibilities are listed in Section 4.11 of this EIR. In the interest of focusing project resources toward viable sites, it was decided by the SCWMA Board of Directors to not perform a Water Supply Assessment on the project site[2].

Water supply would be provided to the proposed compost facility via a new groundwater well that would be drilled on the project site. As discussed in Chapter 18, operation of the project would require up to 130 acre-feet of water per year (AF/yr), in order to support composting, landscaping, miscellaneous non-potable uses, and potable uses for an estimated 200,000 tons of raw organic material processed each year. As discussed in Chapter 18, most of this water, or approximately 114 AF/yr, would be used to maintain sufficient moisture in the compost piles, to promote composting. The compost facility would use either an open windrow system, aerated static piles, or a combination of

[1] California Water Code § 10912(a)(5)

[2] A WSA was performed for Site 40 and is described in Chapter 18 and in the Appendix. The Central Alternative Site is less than 40 acres, so a WSA is not required for that site. The proceeding description of the water supply for the project site is provided for reference purposes only.



SOURCE: CGS Topographic Quadrangles (Sears Point and Petaluma Point); Cal EMA, 2009; University of Southern California, 2009; and ESA, 2010

SCWMA Compost Facility EIR . 207312

Figure 8-4
Sears Point and Petaluma Point
Tsunami Inundation Area

both. The 114 AF/yr water use figure required for composting conservatively assumes that only an open windrow system would be used on site, because it would require the highest rate of water usage.

This amount of water would be similar to or less than the total amount of water that would be required to maintain existing agricultural practices on the project site. Specifically, for agricultural cultivation on site, most crops would be anticipated to require no less than 2 acre-feet per acre of applied water, per year. The compost site would result in the conversion of 70 acres of existing agricultural land (see also **Chapter 3**) for use as a composting facility. In contrast, the compost site would require a maximum of approximately 130 AF/yr for the project site, equivalent to approximately 1.86 AF of applied water per year per acre of the overall project site. Therefore, a change from the existing agricultural use to use as a compost facility under the project would remain consistent with existing agricultural water use practices, and would not constitute a substantial change in the volume of water used on site annually. Existing water supplies currently in use are anticipated to be sufficient to meet project demand without requiring a substantial change in water use. Additionally, the applicant would not continue agricultural use and associated irrigation of the 30-acre buffer and potential expansion area, which could further offset water demand for the project.

Additional potential sources of water have also been identified in support of the project. These include the use of stormwater runoff from the site, which would be stored in an on-site retention pond, the use of grey water generated on site, and the use of process water from other industrial sources, such as wineries. As discussed in Chapter 3, runoff from the site would be stored on site in an on-site detention pond. The pond would be sized sufficient to contain all stormwater flows – that is, to a capacity of at least 32 acre-feet. The pond would not be expected to reach capacity during most years. However, the volume of water contained in the pond during any given year could potentially be made available to composting operations, thereby offsetting a portion of total proposed groundwater use.

Depending upon the type of wastewater treatment selected for the project (see below), grey water may be available for use in support of composting operations or other approved uses on site, such as irrigation of landscaping. The volume of grey water that could be made available to appropriate on site use is anticipated to be small in comparison to total on site water use requirements. Nonetheless, the use of grey water on site could partially offset groundwater use.

Finally, other external sources of water suitable for composting may be made available to the project. These include process water from other nearby industrial sources – primarily wineries. Effluent from such facilities may be appropriate for use during the composting process, and the use of such waters could partially offset groundwater use on site.

Wastewater

The composting operations would be maintained so as to not generate wastewater or runoff on an ongoing basis. Specifically, water would be applied in sufficient quantities so as to maintain required moisture levels in the compost. However, to maintain optimal conditions for composting, excess water would not be applied to the compost, such that surface runoff would be generated on an ongoing basis. During storm events, however, surface runoff from the compost piles and other on-site facilities may occur. This runoff would be channeled into an engineered detention basin, to prevent co-mingling of runoff water from compositing operations with natural surface waters, as discussed in Chapter 3, Project Description.

The project would be anticipated to generate less than 2,000 gpd of sanitary wastewater, associated with toilet flushes and similar uses by compost facility employees (estimated to require up to 40 employees). Sonoma County promulgates strict requirements for the treatment and disposal of sanitary wastewater within its jurisdiction. Disposal via septic system probably would not be permitted because of the shallow groundwater. The following options for wastewater treatment and disposal are being considered for the project.

1. **Treatment and subsurface discharge on-site.** If appropriate site conditions exist (e.g., sufficient separation from groundwater, sufficient percolation rates), wastewater could be treated to secondary treatment levels, and discharged to the subsurface on site, via leach fields.
2. **Treatment on-site and discharge off-site.** If appropriate conditions for subsurface discharge do not exist on site, the wastewater could be treated onsite and conveyed, via a pipeline, to an adjacent site, or via pipeline along a roadway easement, to a non-adjacent parcel that has sufficient soil and groundwater characteristics for subsurface disposal.
3. **On-site vault storage and pumpout.** Sonoma County generally will not issue a permit for vault storage and pumpout of wastewater, for residential or commercial facilities. This practice was restricted by County Supervisors' Resolution 65472 in 1980. The operator could apply for an exemption to this resolution. Feasibility of such an exemption would be determined during project permitting. Under this option, wastewater from employee usage would be stored temporarily in a holding tank, and then would be trucked offsite for treatment and disposal at a nearby wastewater treatment facility. However, acquisition of an exemption to Resolution 65472 may be not be feasible.
4. **Incinerating or composting toilets, and graywater beneficial use.** Incinerating or composting toilets, wherein solids are incinerated or allowed to compost, and liquids (e.g., hand washing) are separated as graywater and reclaimed pursuant to recent revisions to Title 24 of the California Code of Regulations, as relevant to graywater usage (CCR Title 24, Part 5, Chapter 16A, Part I). Graywater would be put to use for landscaping or other irrigation on site. Temporary holding of graywater may be necessary during storm events and other wet periods, and could require installation of a graywater holding tank. This holding tank may be subject to permitting requirements of Sonoma County.

Regulatory Framework

Federal

Executive Order 11988

Under Executive Order 11988, FEMA is responsible for management of floodplain areas defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a one percent or greater chance of flooding in any given year (the 100-year floodplain). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. As discussed above, the FEMA 100-year floodplains are shown in **Figure 8-3**.

Clean Water Act

The CWA (33 USC 1251-1376) is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Important applicable sections of the act are:

- Sections 303 and 304, which provide for water quality standards, criteria, and guidelines.
- Section 401, which requires an applicant for any federal permit that proposes an activity that may result in a discharge to "waters of the United States" to obtain certification from the state that the discharge will comply with other provisions of the Act. In California, certification is provided by the State Water Resources Control Board (SWRCB).
- Section 402, which establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. In California, this permit program is administered by the Regional Water Quality Control Boards, and is discussed in detail below.
- Section 404, which establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is administered by the Army Corps of Engineers.

Federal Safe Drinking Water Act

The purpose of the Safe Drinking Water Act (1974) is to protect public health by regulating the nation's public drinking water supply. The law prescribes several actions that protect drinking water and its sources, including rivers, lakes, reservoirs, springs, and groundwater wells, although the Act does exclude drinking water wells that serve fewer than 25 persons. The law was amended in 1986 and 1996, and its implementation is overseen by the US Environmental Protection Agency (USEPA). As such, the USEPA is authorized to set national health-based standards for drinking water to protect against natural and man-made contaminants in drinking water (USEPA, 2006).

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, as revised in December, 2007, provides for protection of the quality of all waters of the state for use and enjoyment by the people of California. It further provides that all activities that may affect the quality of waters of the state shall be regulated to obtain the highest water quality that is reasonable, considering all demands being made and to be made on those waters. The Act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the state. The statewide program for water quality control is therefore administered most effectively on a local level, with statewide oversight. Within this framework, the Act authorizes the SWRCB and regional boards to oversee responsibility for the coordination and control of water quality within California.

State Water Resources Control Board

Created by the California State Legislature in 1967, SWRCB holds authority over water resources allocation and water quality protection within the state. The five-member State Water Board allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine Regional Water Quality Control Boards. The mission of SWRCB is to, “preserve, enhance, and restore the quality of California’s water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations.”

San Francisco Bay Regional Water Quality Control Board

SFRWQCB is responsible for oversight and implementation of water quality standards and programs, as delegated by the SWRCB. To this end, the SFRWQCB implements the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan; SFRWQCB, 2007). This document is the SFRWQCB’s master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater, and includes programs of implementation to achieve water quality objectives. The Basin Plan has been adopted and approved by the SWRCB, USEPA, and the Office of Administrative Law where required. The Basin Plan identifies the following existing beneficial uses for the lower portion of the Petaluma River: cold freshwater habitat, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, warm freshwater habitat, wildlife habitat, contact recreation, non-contact recreation, and navigation.

Additionally, Section 303(d) of the CWA requires that states develop a list of water bodies that do not meet water quality standards, establish priority rankings for waters on the list, and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality. The list of impaired water bodies is revised periodically (typically every two years), and TMDL development is overseen by SFRWQCB, within its area of jurisdiction. The tidal portion of the Petaluma River, which receives stormwater runoff and other discharges from the project site, is listed as 303(d) impaired for the following constituents: diazinon, nickel, nutrients, and pathogens (USEPA, 2006).

NPDES General Permit for Discharges of Stormwater Associated with Construction Activities

Construction activities disturbing 1-acre or more of land are subject to the permitting requirements of the NPDES General Construction Activity Permit for Discharges of Storm Water Associated with Construction Activities (General Construction Permit). A project applicant must submit a Notice of Intent to the RWQCB to be covered by the General Construction Permit prior to the beginning of construction. Recent revisions to the permit (effective July 1, 2010) require a risk-based permitting approach, dependent upon the likely level of risk imparted by a project. The new permit also contains several additional compliance items, including:

1. Additional mandatory Best Management Practices (BMPs) to reduce erosion and sedimentation, which may include incorporation of vegetated swales, setbacks and buffers, rooftop and impervious surface disconnection, bioretention cells, rain gardens, rain cisterns, implementation of pollution/sediment/spill control plans, training, and other structural and non-structural actions;

2. Sampling and monitoring for non-visible pollutants;
3. Effluent monitoring and annual compliance reports;
4. Development and adherence to a Rain Event Action Plan;
5. Requirements for the post-construction period;
6. Numeric action levels and effluent limits for pH and turbidity;
7. Monitoring of soil characteristics on site; and
8. Mandatory training under a specific curriculum.

Under the revised permit, BMPs will be incorporated into the action and monitoring requirements for each project site, as compared to the existing permit, where specific BMPs are implemented via a Stormwater Pollution Prevention Plan (SWPPP). Under the updated permit, additional monitoring, reporting, and training requirements for management of stormwater pollutants will be implemented, unless the new permit is challenged and set aside prior to its implementation.

Local

Sonoma County General Plan

The Sonoma County General Plan contains the following goals, objectives, and policies associated with water resources, groundwater, flooding, water supply, and wastewater.

Public Safety Element

Goal PS-2: Reduce existing flood hazards and prevent unnecessary exposure of people and property to risks of damage or injury from flood hazards.

Objective PS-2.2: Regulate new development to reduce the risks of damage and injury from known flooding hazards to acceptable levels.

Policy PS-2e: Expand the County’s “zero net fill” requirements to address all areas of the unincorporated County that are located within the 100-year FEMA flood hazard zones.

Policy PS-2f: Preserve floodplain storage capacity by avoiding fill in areas outside of the 100 year FEMA flood hazard zones that retain or could retain flood waters.

Policy PS-2l: On-site and off-site flood related hazards shall be reviewed for all projects located within areas subject to known flood hazards.

Policy PS-2m: Regulate development, water diversion, vegetation removal, grading and fills to minimize any increase in flooding and related damage to people and property.

Water Resources Element

Goal WR-1 Protect, restore and enhance the quality of surface and groundwater resources to meet the needs of all reasonable beneficial uses.

Objective WR-1.1 Work with the Regional Water Quality Control Boards (RWQCB) and interested parties in the development and implementation of RWQCB requirements.

Objective WR-1.2 Avoid pollution of stormwater, water bodies and groundwater.

Objective WR-1.5 Seek to protect groundwater from saltwater intrusion.

Policy WR-1b Design, construct, and maintain County buildings, roads, bridges, drainage and other facilities to minimize sediment and other pollutants in stormwater flows. Develop and implement "best management practices" for ongoing maintenance and operation.

Policy WR-1c Prioritize stormwater management measures in coordination with the RWQCB direction, focusing first upon watershed areas that are urbanizing and watersheds with impaired water bodies. Work cooperatively with the RWQCBs to manage the quality and quantity of stormwater runoff from new development and redevelopment in order to

1. Prevent, to the maximum extent practicable, pollutants from reaching stormwater conveyance systems.
2. Ensure, to the maximum extent practicable, that discharges from regulated municipal storm drains comply with water quality objectives.
3. Limit, to the maximum extent practicable, stormwater from post development sites to pre-development quantities.
4. Conserve and protect natural areas to the maximum extent practicable.

Policy WR-1d Where appropriate, support RWQCB waste discharge requirements for all wastewater treatment systems and other point sources.

Policy WR-1g Minimize deposition and discharge of sediment, debris, waste and other pollutants into surface runoff, drainage systems, surface water bodies, and groundwater.

Policy WR-1h Require grading plans to include measures to avoid soil erosion and consider upgrading requirements as needed to avoid sedimentation in stormwater to the maximum extent practicable.

Policy WR-1m Consider on-site wastewater management districts in areas with septic problems.

Policy WR-1o Require that commercial and industrial uses reduce and pretreat wastes prior to their entering sewer systems.

Policy WR-1p Actively pursue the abatement of failing septic systems that have been demonstrated as causing a health and safety hazard.

Policy WR-1q Require new development projects to evaluate and consider naturally-occurring and human caused contaminants in groundwater.

Policy WR-1u In the marshlands and agricultural areas south of Sonoma and Petaluma, require all environmental assessments and discretionary approvals to analyze and, where practicable, avoid any increase in saltwater intrusion into groundwater.

Policy WR-1v Request that the Sonoma County Water Agency [SCWA] revise the SCWA flood control design criteria to include a section on stream geomorphic analysis and to update information on bank protection and erosion control to incorporate biotechnical bank stabilization methods for the purpose of preventing erosion and siltation in drainage swales and streams.

GOAL WR-2 Manage groundwater as a valuable and limited shared resource.

Objective WR-2.1 Conserve, enhance and manage groundwater resources on a sustainable basis that assures sufficient amounts of clean water required for future generations, the uses allowed by the General Plan, and the natural environment.

Objective WR-2.3 Encourage new groundwater recharge opportunities and protect existing groundwater recharge areas.

Objective WR-2.5 Avoid additional land subsidence caused by groundwater extraction.

Policy WR-2d Continue the existing program to require groundwater monitoring for new or expanded discretionary commercial and industrial uses using wells. Where justified by the monitoring program, establish additional monitoring requirements for other new wells.

Policy WR-2e (formerly RC-3h) Require proof of groundwater with a sufficient yield and quality to support proposed uses in Class 3 and 4 water areas. Require test wells or the establishment of community water systems in Class 4 water areas. Test wells may be required in Class 3 areas. Deny discretionary applications in Class 3 and 4 areas unless a hydrogeologic report establishes that groundwater quality and quantity are adequate and will not be adversely impacted by the cumulative amount of development and uses allowed in the area, so that the proposed use will not cause or exacerbate an overdraft condition in a groundwater basin or subbasin. Procedures for proving adequate groundwater should consider groundwater overdraft, land subsidence, saltwater intrusion, and the expense of such study in relation to the water needs of the project.

Policy WR-2g In cooperation with SCWA, DWR, and other public agencies and well owners, support the establishment and maintenance of a system of voluntary monitoring of wells throughout the county, utilizing public water system wells and private wells where available. Encourage participation in voluntary monitoring programs, and, if funds are available, consider funding of well monitoring where determined necessary in order to stimulate participation.

Policy WR-2n Where area studies or monitoring find that land subsidence has occurred, support analysis of how the subsidence is related to groundwater extraction and develop a groundwater management plan or other appropriate actions, where practicable, to avoid further subsidence.

GOAL WR-4 Increase the role of conservation and safe, beneficial reuse in meeting water supply needs of both urban and rural users.

Objective WR-4.1 Increase the use of recycled water where it meets all applicable regulatory standards and is the appropriate quality and quantity for the intended use.

Objective WR-4.2 Promote and encourage the efficient use of water by all water users.

Objective WR-4.3 Conserve and recognize stormwater as a valuable resource.

Policy WR-4a Encourage disposal methods that minimize reliance on discharges into natural waterways. If discharge is proposed, review and comment on projects and environmental documents and request that projects maximize reclamation, conservation and reuse programs to minimize discharges and protect water quality and aquifer recharge areas.

Policy WR-4b Use water effectively and reduce water demand by developing programs to

1. Increase water conserving design and equipment in new construction, including the use of design and technologies based on green building principles,
2. Educate water users on water conserving landscaping and other conservation measures,
3. Encourage retrofitting with water conserving devices,
4. Design wastewater collection systems to minimize inflow and infiltration, and
5. Reduce impervious surfaces to minimize runoff and increase groundwater recharge.

Policy WR-4d Encourage monitoring for all water use and water metering for public water suppliers that require water users to pay for costs of the amount of water used. Encourage tiering and other pricing mechanisms for public water suppliers that provide incentives for water users to employ conservation and reuse programs. Actively encourage public water suppliers to maximize water re-use and conservation prior to increasing net water use for new development.

Policy WR-4e Require water conserving plumbing and water conserving landscaping in all new development projects and require water conserving plumbing in all new dwellings. Promote programs to minimize water loss and waste by public water suppliers and their customers. Require County operated water systems to minimize water loss and waste.

Policy WR-4g Require that development and redevelopment projects, where feasible, retain stormwater for on-site use that offsets the use of other water.

Policy WR-4k	Where consistent with water quality regulations, encourage graywater systems, roof catchment of rainwater and other methods of re-using water and minimizing the need to use potable surface water or groundwater.
Policy WR-4l	Establish a program to revise County Codes to increase, where appropriate, the use of recycled water for new commercial, residential, and agricultural development.

8.3 Impacts and Mitigation Measures

Significance Criteria

California Environmental Protection Agency (CEQA) defines a significant effect on the environment as a substantial, or potentially substantial, adverse change in the physical conditions of the area affected by the project. An impact related to hydrology and water quality, including drainage and flooding, would be considered significant if it would result in any of the following, which are adapted from Appendix G of the CEQA *Guidelines*:

- Violate a water quality standard or waste discharge requirement, or otherwise substantially degrade water quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site, or result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Inundation by seiche, tsunami, or mudflow.

The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change, as defined by CEQA. Implementation of the project would not result in the installation or construction of housing facilities or other residences within a 100-year flood zone.

Project Impacts

Impact 8.1: The project could violate a water quality standard or waste discharge requirement, or otherwise substantially degrade water quality. (Significant)

During project construction, the operation of heavy equipment, excavation, stockpiling of soils, grading, installation of facilities, realignment of waterways, installation of buildings and roadways, and other activities associated with project construction could result in the release of fuels, oils, antifreeze, coolants, hydraulic fluid, and other potential water quality pollutants into the environment. These substances could then be transported, via surface runoff, into receiving waterways including on-site drainages and the Petaluma River, resulting in potentially significant reduction of water quality on site and downstream. Additionally, if improperly managed, sediments disturbed during the realignment procedure for the onsite drainages (e.g., Canals A and B) could migrate offsite and result in offsite sedimentation. Releases of these pollutants could result in a **significant** impact associated with degradation of water quality.

During the operation phase of the project, routine use of compost feedstock delivery trucks, bulldozers and other on-site heavy machinery, and automobiles on site could also result in the accumulation and release of fuels, oils, greases, coolants, brake dust, and other potential water quality pollutants on site. Water applied to compost piles during normal compost operations would be managed in order to minimize runoff from compost piles. As indicated in Chapter 3, Project Description, during storm events, all surface runoff emanating from composting operations and associated facilities would be contained onsite, and channeled, as needed, into a 19.27 AF stormwater detention pond. Therefore, pollutants would not be released to surface waters, and natural waters would not be degraded.

During project operation, wastewater from toilet flushes, hand washing, and other graywater would be managed according to one of the four wastewater management options discussed above. The selected wastewater treatment and disposal system would comply with all County, State, and Federal permit conditions and requirements, including graywater standards as relevant, and would not discharge to surface waters. Therefore, disposal of graywater and/or treated wastewater on site would not result in a significant impact to water quality.

Storage and use of fuels (diesel and gasoline), oils, greases, and other potentially hazardous liquids would occur during project operations. If managed improperly, accidental spills of other releases of these fluids could result in the fluids becoming entrained in surface water or groundwater. As a result, surface water quality or groundwater quality could become degraded, resulting in a potentially significant reduction in water quality. Additional impacts associated with the alteration of a watercourse, including potential impacts to habitat and species, are discussed in Chapter 6, Biological Resources.

Mitigation Measure

> **Mitigation Measure 8.1a**: To control and manage shallow groundwater that is pumped during temporary construction activities, as well as stormwater runoff, SCWMA shall prepare and

implement a SWPPP as required under the General Construction Permit for Discharges of Storm Water Associated with Construction Activities, for all construction phases of the project. The SWPPP shall identify pollutant sources that may affect the quality of stormwater discharge and shall require the implementation of BMPs to reduce pollutants in storm water discharges.

BMPs may include, but would not be limited to:

- Excavation and grading activities in areas with steep slopes or directly adjacent to open water shall be scheduled for the dry season only (April 30 to October 15), to the extent possible. This will reduce the chance of severe erosion from intense rainfall and surface runoff.
- If excavation occurs during the rainy season, storm runoff from the construction area shall be regulated through a storm water management/erosion control plan that shall include temporary onsite silt traps and/or basins with multiple discharge points to natural drainages and energy dissipaters. Stockpiles of loose material shall be covered and runoff diverted away from exposed soil material. If work stops due to rain, a positive grading away from slopes shall be provided to carry the surface runoff to areas where flow would be controlled, such as the temporary silt basins. Sediment basins/traps shall be located and operated to minimize the amount of offsite sediment transport. Any trapped sediment shall be removed from the basin or trap and placed at a suitable location onsite, away from concentrated flows, or removed to an approved disposal site.
- Temporary erosion control measures (such as fiber rolls, staked straw bales, detention basins, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) shall be provided until perennial revegetation or landscaping is established and can minimize discharge of sediment into nearby waterways. For construction within 500 feet of a water body, appropriate erosion control measures, including fiber rolls and other erosion control measures listed above, shall be placed between the potential source of sediment and the water body.
- Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures.
- No disturbed surfaces will be left without erosion control measures in place during the rainy season, from October 15th through April 30th.
- Erosion protection shall be provided on all cut-and-fill slopes. Revegetation shall be facilitated by mulching, hydroseeding, or other methods and shall be initiated as soon as possible after completion of grading and prior to the onset of the rainy season (by October 15).
- A vegetation and/or engineered buffer shall be maintained, to the extent feasible, between the construction zone and all surface water drainages including riparian zones.
- Vegetative cover shall be established on the construction site as soon as possible after disturbance.
- BMPs selected and implemented for the project shall be in place and operational prior to the onset of major earthwork on the site. The construction phase facilities shall be maintained regularly and cleared of accumulated sediment as necessary.

Effective mechanical and structural BMPs that will be implemented at the project site include the following:

- o Mechanical storm water filtration measures, including oil and sediment separators or absorbent filter systems such as the Stormceptor® system, can be installed within the storm drainage system to provide filtration of storm water prior to discharge.
- o Vegetative strips, high infiltration substrates, and grassy swales can be used where feasible throughout the development to reduce runoff and provide initial storm water treatment.
- o Roof drains shall discharge to natural surfaces or swales where possible to avoid excessive concentration and channelizing storm water.
- o Permanent energy dissipaters can be included for drainage outlets.
- o The water quality detention basins shall be designed to provide effective water quality control measures including the following:
  - Maximize detention time for settling of fine particles;
  - Establish maintenance schedules for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets;
  - Maximize the detention basin elevation to allow the highest amount of infiltration and settling prior to discharge.

- Hazardous materials such as fuels and solvents used on the construction sites shall be stored in covered containers and protected from rainfall, runoff, vandalism, and accidental release to the environment. All stored fuels and solvents will be contained in an area of impervious surface with containment capacity equal to the volume of materials stored. A stockpile of spill cleanup materials shall be readily available at all construction sites. Employees shall be trained in spill prevention and cleanup, and individuals shall be designated as responsible for prevention and cleanup activities.
- Equipment shall be properly maintained in designated areas with runoff and erosion control measures to minimize accidental release of pollutants.

The SWPPP shall also specify measures for removing sediment from water pumped for trench dewatering before the water is released to waterways. Specific sediment removal techniques shall include as warranted, but not limited to:

- Use of settling ponds or large storage tanks (Baker tanks) to allow the settling out of entrained sediments;
- Use of physical filters to remove sediment, such as a sand or screen filter, or other filtration method
- Use of chemical flocculants, to facilitate the settling out of suspended sediments.

Measure 8.1b: To ensure that accidental releases of fuels and other potentially water quality pollutants during project operations do not result in water quality degradation, SCWMA shall, prior to commencement of project operation, complete and adhere to the recommendations provided in a spill prevention and control plan. The plan shall provide for compliance with local, state, and federal regulations regarding storage and use of fluids on site, and shall include, but not limited to:

- Storage and handling criteria for fuels, oils, lubricants, antifreeze, and other fluids that minimize fluid release
- Operational spill prevention measures including staff training for the recognition and proper handling of potentially hazardous fluids
- Cleanup procedures that, in the event of a spill, provide for identification and response procedures to contain spills, and properly dispose of contaminated soils or other materials, so as to minimize water quality effects.

Significance after Mitigation: Less than Significant

Implementation of the proposed mitigation would prevent or reduce potential for the emission of water quality pollutants, and thereby reduce potential impacts associated with water quality degradation.

Impact 8.2: The project could 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 or conflict with Sonoma County General Plan policies regarding groundwater. (Significant)

As discussed previously, implementation of the project would result in the installation of a groundwater well on site, in order to provide water supply to the proposed compost facility. A review of groundwater levels in the vicinity of the project site indicated that groundwater levels are likely to be approximately at sea level, and no trends of decline or reduction in historic and recent groundwater level data were observed. Water use in support of the project would be equivalent to, at most, approximately 130 AF/yr of water, in order to supply composting operations, as well as water use associated with landscape use, toilet flushes, hand washing, and other on site uses.

Although additional studies will be required to determine the extent to which subsurface aquifers on site will support pumping at rates necessary for the project, the withdrawal of approximately 130 AF/yr of water at the project site is expected to be less than current/existing agricultural water use on site (which as discussed previously is anticipated to require at least 2 acre-feet of water per acre per year, equivalent to 140 AF/yr of withdrawals across the project area under existing conditions). Agricultural irrigation of the project area would be discontinued under the proposed project. Additionally, the project applicant would not continue agricultural operations on the 30-acre buffer and potential expansion area (i.e., outside of the area where the composting facility would be located). Therefore, implementation of the proposed project is not anticipated to result in an increase in groundwater use at the project site, and would not result in a net increase in groundwater withdrawals. As a result, the proposed composting project is not anticipated to cause additional drawdown of the local or regional aquifer, and is not anticipated to result in significant reductions in the level of water in other nearby wells. Additionally, because no net increase in groundwater withdrawal is anticipated, the project is not expected to significantly contribute to land subsidence or migration of saline groundwater in the subsurface.

Installation of the project would result in the construction of impervious surfaces to support composting operations. Pervious surfaces account for approximately 100 percent of the existing 100-acre site. As most of the project site would remain as pervious surfaces, and adjacent areas would also remain pervious, there would not be an impact to groundwater recharge. Additionally, stormwater emanating from constructed impervious surfaces would be contained in detention basin on site, which could be lined to prevent percolation, depending on final site design and permitting. Therefore, the project is not anticipated to significantly alter groundwater levels on site or in adjacent areas.

Although the project is not anticipated to result in reduced groundwater levels, in order to remain consistent with Sonoma County General Plan Policy WR-2d, as described previously, implementation of Mitigation Measure 8.2a would be required. In order to maintain compliance with Sonoma County General Plan Policies WR-4b, WR-4g, and WR-4k, implementation of Mitigation Measure 8.2b would be required. Also, according to the Sonoma County Permit and Resources Management Department (PRMD), the project may require completion of a groundwater study and a saltwater intrusion analysis, in order to meet County procedural requirements for a project that would withdraw groundwater in a low lying area. Implementation of Mitigation Measure 8.2c would be required. Without mitigation this impact would be **significant**.

Mitigation Measures

Mitigation Measure 8.2a: Sonoma County General Plan Policy WR-2d requires that all large scale commercial and industrial groundwater users implement a groundwater monitoring program. The project operator shall implement a groundwater level monitoring program to evaluate drawdown of groundwater in accordance with county groundwater monitoring standards. In the event that unacceptable rates of groundwater drawdown are indicated, as dictated by County policy, the project operator shall work with Sonoma County to identify alternative source(s) of water supply, to be implemented in lieu of or in tandem with on-site groundwater pumping. Other viable water supply options may include drawing water from a well at a different location, or use of a separate or supplementary water supply system, such as recycled water or surface water.

Mitigation Measure 8.2b: Prior to construction, SCWMA shall complete a study assessing the potential for implementation of the following water conservation measures on site:

1. Use of water-conserving design measures that incorporate green building principles and water conserving fixtures;
2. Use of stormwater retained in the stormwater detention pond to supplement groundwater supplies in support of composting operations; and
3. Potential for use of graywater produced on site as a supplemental water source for composting operations.
4. Potential for use of additional process water from other industrial sources such as wineries.

Recommendations from the study, including but not limited to the implementation of the four measures listed above, shall be incorporated into project design, in order to reduce groundwater consumption and pumping, and maintain consistency with the Sonoma County General Plan.

Mitigation Measure 8.2c: Prior to the initiation of construction activities, SCWMA shall ensure that the project adheres to PRMD permitting requirements for the implementation of this facility, which would result in the use of groundwater sourced from a low-lying area in support of the project. As required by PRMD, SCWMA shall complete a hydrogeologic study to evaluate groundwater supply that is likely to be available to the project. Additionally, to the extent required by PRMD, SCWMA may also be required to complete a saltwater intrusion analysis in support of the project. SCWMA shall prepare these evaluations and submit to PRMD for review, in accordance with PRMD technical standards and submission requirements. Implementation of this mitigation measure would ensure that SCWMA adheres to PRMD requirements for the project.

Significance after Mitigation: Less than Significant.

Impact 8.3: The project could 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 which would result in substantial erosion or siltation on- or off-site, or result in flooding on- or off-site. (Significant)

Installation of the project could result in alteration of the course of the two unnamed drainages located on site. Specifically, these drainages would be re-routed to flow around the outer edge of the compost facility, in order to enable conveyance of stormwater flows around the compost site during project operation. If improperly engineered, the realignment of these waterways could result changes in drainage patterns or stormwater conveyance, such that flooding could result, on site or downstream. Additionally, if improperly managed, changes in flow patterns associated with the realignment of these two drainages could result in increased erosion and sedimentation on site or downstream.

As discussed in Chapter 3, Project Description, the project would include installation of a protective levee around the project site. Installation of this levee could result in the alteration of stormwater flows and surface drainages, such that localized flooding could result, or such that increased rates of on-site erosion could occur, potentially resulting in sedimentation on site or downstream. Implementation of **Mitigation Measures 8.3a** and **8.3b** would be required. Additional discussion of impacts to waterways and associated biological resources are contained in Chapter 6, Biological Resources. Without mitigation this impact is **significant**.

Mitigation Measures

Mitigation Measure 8.3a: Prior to construction, a hydrologic and flooding study shall be completed for the two unnamed drainages on site, and SCWMA shall ensure that recommendations from the study are incorporated into project design. The study shall include the following:

- Assessment of maximum (100-year event) flood flow rate (which shall include an extra 10 percent flow rate to accommodate potential climate change conditions) along the affected drainages;
- Assessment shall include an evaluation of flows derived from the watershed upstream of the project site, as well as on-site sources that would be discharged to the affected drainages, as relevant; and
- Based on these assessments, the study shall specify sizing, capacity, facility location, and outfall location and rate needed to convey a 100-year flood (plus an extra 10 percent volume capacity to accommodate potential climate change conditions) event without causing an increase (as compared to existing conditions) in flooding or other backup of water on site or downstream.

Mitigation Measure 8.3b: Prior to construction, a grading and drainage plan for the project site shall be completed, and the SCWMA shall ensure that recommendations from that document are incorporated into project design. The study shall include the following:

- Quantification of stormwater flows on site, up to 100-year storm conditions (which will include an extra 10 percent volume capacity to accommodate potential climate change conditions);
- Composting area engineering diagrams and maps of proposed drainage facilities, sized so as to convey and contain all stormwater flows from the composting area on site, up to 100 year storm conditions plus an extra 10 percent volume capacity to accommodate potential climate change conditions;
- Sizing of detention ponds so as to ensure adequate capacity for stormwater storage throughout the rainy season
- Engineering diagrams and maps of proposed drainage facilities for areas of the site that are not hydrologically connected to the composting area. Facilities shall include ditches, swales, stormwater retention ponds, and other stormwater conveyances, as needed to ensure that stormwater can be conveyed off site without causing additional flooding, erosion, or sedimentation on site or downstream.

Significance after Mitigation: Less than Significant.

Impact 8.4: The project could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Significant)

Impervious surfaces prevent infiltration of stormwater, resulting in increased stormwater runoff, which can result in flooding, erosion, sedimentation, or transport of pollutants on site or off site. Implementation of the project would result in the installation of a compost facility on the project site. Most of the compost facility would remain as pervious surfaces, associated with compost piles, work areas, and other non-developed areas. However, installation of impervious surfaces would also be required, including the following facilities: entrance road and scale; arriving and departing circulation area; administration and maintenance building; and various roads and sidewalks needed to enable operation of the facility. The compost operations area would also be impervious to allow for year-round operations.

As discussed in Chapter 3, Project Description, the project would include installation of stormwater control facilities, including a 32 AF stormwater detention pond. All drainage from the composting site, including impervious surfaces associated with roadways, the administration building, and other impervious surfaces, as relevant, would be directed into the stormwater detention pond, thereby preventing any off-site discharges. As a result, all stormwater flows, including additional flows emanating from impervious surfaces, would be contained on site in detention ponds, and would not result in flooding, erosion, sedimentation, or other effects on downstream areas. Water from the ponds would be reapplied to the compost areas. Without proper management of stormwater (including proper sizing and placement of facilities) this impact would be **significant**.

Mitigation Measure

Mitigation Measure 8.4: Implement Mitigation Measure 8.3b

Significance after Mitigation: Less than Significant.

Implementation of the prescribed mitigation would ensure that stormwater is appropriately managed on site**.**

Impact 8.5: The project would be located within a FEMA-defined 100-year floodplain, and would result in the displacement of flood waters. (Significant Unavoidable)

As shown on **Figure 8-3**, the proposed composting facility would be located entirely within an area that has been identified by FEMA as being within a 100-year floodplain. In order to protect the compost facility from flood damage, a combination of fill importation and construction of flood control levees around the proposed facility would be included in the project design and implemented at the time of project construction. Flood control levees and fill would be sufficient to elevate the facility and/or prevent inundation during flooding. However, importation of fill would conflict with the Sonoma County General Plan’s Policy PS-2e, requiring expansion of the County’s zero net fill requirements to all areas of the unincorporated County that are located within a 100-year floodplain.

Additionally, installation of fill and levees at the project site would result in the displacement of flood waters from the project site and into adjacent/surrounding areas: installation of levees/fill would eliminate floodplain storage capacity at the project site, and result in the backing up of floodwaters onto adjacent parcels. This situation could result in increased flood depths along adjacent properties, and could also result in additional land areas becoming subject to 100-year flooding, which are not currently subject to 100-year flooding, as a result of project implementation. No feasible mitigation is available to reduce such increases in flood extent and depth. Therefore, this impact is considered significant and unavoidable.

Impact 8.6: The project could expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. (Less than Significant)

The project site is protected from flooding by a series of levees along the Petaluma River and San Pablo Bay. However, as shown in Figure 8-2, implementation of the project would result in the construction and operation of facilities located in an area that is within a FEMA-defined 100-year flood zone. However, as discussed in Chapter 3, Project Description, the project would include installation of a levee around the perimeter of the composting site, which would protect the project from potential flooding. All proposed facilities except access roads would be constructed inside the levee, and the levee would be of sufficient height so as to prevent inundation of the project site during a 100-year flood event. In regards to potential failure of levees, installation and operation of the proposed project would not interfere with or involve construction along any existing levees or dams, and therefore would not increase the risk of failure of any levee or dam. Therefore, potential risks associated with flooding would be minimized via project design components, and this impact would be **less than significant**.

Mitigation: None required.

Impact 8.7: Inundation of the project site could result due to seiche, tsunami, or mudflow. (Less than Significant)

The project would be installed within a low-lying area less than 1 mile from the tidally-influenced portion of the lower Petaluma River, and less than four miles from San Pablo Bay. However, as shown on Figure 8-4, the project site would not be located within a potential tsunami inundation area. Seiche, which is defined as potential resonance waves within an enclosed body of water resulting from geologic movement or other mass movements, has not been documented in San Pablo Bay, and is not anticipated to occur. Smaller scale seiche, such as that produced by ship wakes, would not occur within San Pablo Bay due to its large size. Mudflows result when upstream soil conditions are such that, as a result of large rain events and/or geologic activity, surface sediments become destabilized and flow downhill, or as a result of volcanic activity. Sediments upstream of the project are not considered to be amenable to mudflow. Therefore, potential impacts associated with tsunami, seiche, and mudflow would be **less than significant**.

Mitigation: None required.

8.4 References

California Resources Agency, 2009. California Watershed Portal. California Watersheds Map Search. Available at http://cwp.resources.ca.gov/calw_browse.php; Accessed on March 4, 2009.

California Department of Water Resources (DWR), 2009. Water Data Library. Available at http://www.water.ca.gov/waterdatalibrary/ Accessed on August 27, 2009.

San Francisco Regional Water Quality Control Board (SFRWQCB), 2007. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). As amended through January 18, 2007.

State of California, 2009, Tsunami Inundation Map for Emergency Planning, Sears Point Quadrangle/Petaluma Point Quadrangle, Sonoma County; produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center; dated June 15, 2009, mapped at 1:24,000 scale.

CHAPTER 9
Land Use Planning and Agriculture

9.1 Introduction

This chapter describes and discusses existing land uses and agricultural resources on the project site and in the vicinity, considers the compatibility of the project with neighboring land uses, compliance with land use zoning regulations, project consistency with relevant land use plans and policies, and potential impacts that would result from the project. Applicable County plans and policies related to land use, planning, and agriculture are presented and potential impacts and mitigation measures are identified.

9.2 Setting

Regional Setting

Sonoma County has a total area of approximately 1,768 square miles and is the most northerly of the nine counties in the San Francisco Bay Region, located approximately 45 miles north of the City of San Francisco. Sonoma County is bordered by the Pacific Ocean to the west, Marin County and San Pablo Bay to the south, Solano, Napa and Lake Counties to the east, and Mendocino County to the north. U.S. Highway 101 (U.S. 101) is the major north-south route traveling through the county, providing access to San Francisco and Marin Counties to the south and Mendocino County to the north. (See **Figure 3-1**, Regional Location Map)

Agricultural Trends in Sonoma County

Sonoma County is well suited for agricultural cultivation as a result of its climate, good soils, availability of water, dependable market demand and established farming community and infrastructure. Wine grape cultivation is Sonoma County's primary crop - accounting for more than 65 percent of the County's entire agricultural production value in 2007. Livestock and poultry (including livestock and poultry products) accounted for approximately 27 percent of the county's total agricultural production in 2007 (Sonoma County, 2007).

Sonoma's cool temperatures and long grass growing season makes it ideal for high quality cattle and milk production. In addition to traditional cow dairies, numerous specialty goat and sheep farmers also operate within the county. In 2004, there were approximately 80 cow dairies operating within Sonoma County, including a handful of registered with the California Department of Agriculture as organic. That year, Sonoma County produced over 75 million gallons of milk. By volume, Sonoma

County produced approximately two percent of the state's total milk production (Sonoma County, 2004). In 2007, 'market milk' had the second highest agricultural commodity production value in the County (Sonoma County, 2007).

In 2007, Sonoma County saw a 7.6 percent increase in gross agricultural production value over 2006. While wine grape production value was down approximately 3.9 percent due to lower yields, increases in gross value for other commodities, most notably livestock and poultry and products from livestock and poultry (35 and 58 percent, respectively), outweighed the decrease in wine grape value (Sonoma County, 2007).

Project Site and Vicinity

Project Site Description

The project site is part of a larger parcel (Assessor's Parcel Number 068-120-002) which contains 627 acres and is privately owned. The project site consists of approximately 100 acres and is located, approximately 6 miles southeast of the City of Petaluma. The project site is adjacent to the Petaluma River, approximately 4.5 miles northeast of the northern shore of San Pablo Bay and the San Pablo Bay National Wildlife Refuge (**Figure 3-1**). Twin House Ranch Road runs adjacent to the southeastern boundary of the project site and provides local access via Lakeville Road (**Figure 3-2**). The project site is used for hay farming and grazing. There are currently no structures, paved roadways or utility infrastructure on the project site.

Vegetation on the project site consists primarily of annual grasslands and fallow cropland. The site contains wetland/marshland areas adjacent to the Petaluma River and constructed agricultural ditches that traverse the parcel to various extents. These channels range from small, dry channels to larger seasonal drainages with moister soils and abundant emergent vegetation. There are some seasonal and freshwater emergent wetlands on the parcel. Additional information on natural resources is included in Chapter 6, Biological Resources.

Surrounding Uses

The vast majority of land within the County's Petaluma and Environs Planning Area (outside of the City of Petaluma and the Urban Service Boundary), including the project site and vicinity, is used for agricultural purposes such as grazing, dairy farming, or vineyards, among others. Undeveloped grasslands and rural residences are scattered among active agricultural uses. The closest residence is located approximately 3,600 feet east of the project site. Commercial businesses in the vicinity of the project site include the Riverside Equestrian Center and the Sleepy Hollow Dairy. The nearest airport is Gnoss Field Airport, located approximately 2 miles southwest of the project site.

Regulatory Framework

The regulatory setting with regards to land use planning and agriculture are discussed below. The Countywide Integrated Waste Management Plan (CoIWMP) prepared pursuant to the California Integrated Waste Management Act, is discussed in Chapter 11, Public Services and Utilities.

Land Use Planning

Sonoma County General Plan 2020

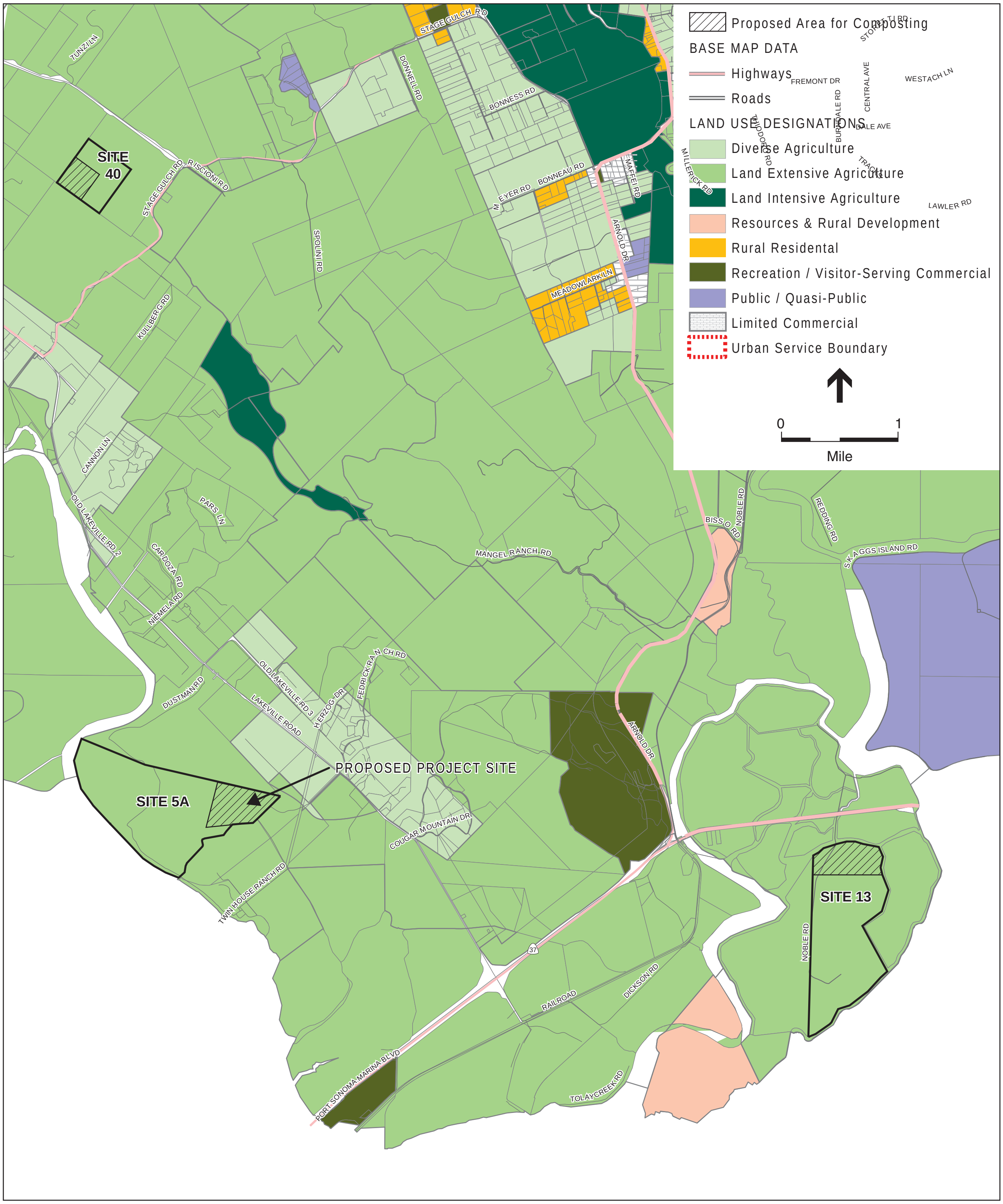
The current Sonoma County General Plan 2020 (General Plan) is an update of the previous General Plan adopted in 1989. The County's General Plan is comprised of ten plan elements: Land Use, Housing, Agricultural Resources, Open Space and Resource Conservation, Water Resources, Public Safety, Circulation and Transit, Air Transportation, Public Facilities and Services, and Noise. The County contains nine planning areas. The project is located within the Petaluma and Environs Planning Area (Planning Area 8) of the General Plan (Sonoma County, 2008b). Goals and policies specific to environmental issues areas discussed in this Draft EIR can be found in the regulatory section for each issue area. In addition, all General Plan policies were reviewed for potential inconsistencies after mitigation as discussed in Impact 9.2 below.

The existing compost facility is located on land designated as Public and Quasi Public (PQP). The relevant standards for the PQP designation are as follows:

> **Purposes and Definition**. This category provides sites that serve the community or public need and are owned or operated by government agencies, non profit entities, or public utilities. However, public uses are also allowed in other land use categories. The Public Facilities and Services Element establishes policies for location of public uses in these other categories.
>
> **Permitted Uses**. Uses include schools, places of religious worship, parks, libraries, governmental administration centers, fire stations, cemeteries, airports, hospitals, sewage treatment plants, waste disposal sites, etc.

Figure 9-1 presents Sonoma County General Plan land use designations for the project site and vicinity (Sonoma County, 2008c). The project site has a General Plan Land Use Designation of Land Extensive Agriculture (LEA). The adjacent parcels are also designated LEA. The relevant standards for the LEA designation are as follows:

> **Purpose and Definition**. This category shall enhance and protect lands capable of and generally used for animal husbandry and the production of food, fiber, and plant materials. Soil and climate conditions typically result in relatively low production per acre of land. The objective in land extensive agricultural areas shall be to establish and maintain densities and parcel sizes that are conducive to continued agricultural production.
>
> **Permitted Uses**:
>
> - Agricultural production, agricultural support uses, and visitor serving uses as provided in the Agricultural Resources Element.
> - Other Uses. Other uses consistent with the Agricultural Resources Element as provided in the Development Code.



SOURCE: Sonoma County, 2008; and ESA, 2009

SCWMA Compost Facility EIR . 207312

Figure 9-1
Land Use Map

Sonoma County Zoning Ordinance

The existing compost facility is located within the Public Facilities (PF) zoning district. The project site is zoned LEA with several combining districts. These combining districts include B6 (with a density designation of 60), Z Second Unit Exclusion, Floodplain (F2), Valley Oak Habitat (VOH) and Biotic Resource (BR) (Sonoma County, 2008a). The zoning relevant to the project and the existing zoning on the project site are discussed further below (Sonoma County, 2008e).

PF: The purpose of this zoning is to provide sites which serve the community or public need. Permitted uses include any facilities owned or operated by a city or county.

LEA: The purpose of this zoning is to enhance and protect lands best suited for permanent agricultural use and capable of relatively low production per acre of land. Permitted uses include agricultural activities, limited residential, and minor public facilities. Examples include reservoirs, storage tanks, pumping stations, transformer stations, fire and police stations and training centers, service yards and related parking lots.

B6: Within this combining district, development density and parcel size are stipulated by the adopted zoning map. The adopted zoning map indicates an allowed density of 60 acres per unit.

Z: Second Unit Exclusion: Within this combining district, second units are excluded unless authorization is obtained.

VOH: The purpose of this combining district is to protect and enhance valley oaks and valley oak woodlands through the identification of permitted uses, mitigation requirements for tree removal, exceptions to mitigation requirements, design review approval guidelines, and penalties for failure to comply with the provisions of the ordinance.

F2: The purpose of this combining district is to provide protection from hazards and damage which may result from flood waters. The development standards described in Article 58, F2 Floodplain Combining District, of the County Code of Ordinances (County Code) require that any structures constructed on the site comply with County building regulations as described in Chapter 7 of the County Code.

BR: The purpose of this combining district is to provide protective measures for biotic resource communities including critical habitat areas and riparian corridors through the identification of criteria for development within critical habitat areas and riparian corridors.

Federal Aviation Administration Advisory Circular for Hazardous Wildlife Attractants on or near Airports

Federal Aviation Administration (FAA) Advisory Circular 150/5200-33B provides guidance on land uses that have the potential to attract hazardous wildlife on or near public-use airports. The following is a summary of the sections relevant to Gnoss Field Airport and the project:

Section 1-3. Airports Serving Turbine-Powered Aircraft. The FAA recommends a separation distance of 10,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 of the Advisory Circular (which includes composting operations).

Section 1-4. Protection of Approach, Departure and Circling Airspace. For all airports, the FAA recommends a distance of five statue miles between the farthest edge of the airport's air operations area and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

Section 2-2e. Composting operations on or near airport property. Composting operations that accept only yard waste (e.g. leaves, lawn clippings, or branches) generally do not attract hazardous wildlife. … The compost, however, must never include food or other municipal solid waste. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any air operations area or the distance called for by airport design requirements. This spacing should prevent material, personnel, or equipment from penetrating any Object Free Area, Obstacle Free Zone, Threshold Siting Surface, or Clearway. Airport operators should monitor composting operations located in proximity to the airport to ensure that steam or thermal rise does not adversely affect air traffic.

For the Gnoss Field Airport, the project site is located outside of the 10,000 foot recommended separation distance for Waste Disposal Operations but within the 5-mile recommended separation for protection of approach, departure and circling airspace.

Agriculture

California Land Conservation Act (Williamson Act)

The California Land Conservation Act (commonly referred to as the Williamson Act), enacted in 1965, enables counties and cities to designate agricultural preserves that provide preferential taxation to private landowners who execute contracts restricting use of their land within a designated agricultural preserve to agricultural or open-space uses and certain compatible uses. Agricultural landowners with properties under Williamson Act contracts are assessed taxes on the income-producing value of their property instead of the property's assessed market value. To qualify for the program, the landowner is required to sign a contract with the county or city agreeing to restrict the use of the land for a period of 10 to 20 years, depending on the jurisdiction. In Sonoma County, these contracts run for 10 years. After the initial 10-year period, the contract renews automatically on an annual basis unless one of the parties files for non-renewal status or the contract is cancelled. A notice of nonrenewal starts the 9-year nonrenewal period during which the contract's restrictions are still in place. During the nonrenewal process, the annual tax assessment gradually increases. At the end of the 9-year nonrenewal period, the contract is terminated (California Department of Conservation [DOC], 2009b and 2009c).

The DOC has oversight responsibility for Williamson Act Program administration and compliance. However, local governments are authorized to adopt rules governing the administration of agricultural preserves within their jurisdiction. Sonoma County first adopted Rules for Administering Agricultural Preserves in 1967, which were last amended in 1989. Two sets of rules were adopted, one for "Type I" preserves (prime agricultural land), and one for "Type II" preserves (non-prime agricultural land, e.g., grazing or open space).

Williamson Act Contracts in California and Sonoma County

As of January 2005, 16.6 million acres of California farmland have been enrolled under the Williamson Act which represents more than half of the state's total 30 million acres of farmland and nearly a third of its privately owned land. In 2005, Sonoma County had 273,940 acres of farmland under agricultural easement protection most of which was under Williamson Act protection as nonprime farmland (231,924 acres) or as prime farmland (42,016 acres) (DOC, 2006).

Williamson Act Contracts for the Project Site

Figure 9-2 provides a map of properties in the vicinity of the project site that are currently under Williamson Act contracts. The project site is currently under a Williamson Act contract. The current owners of the project site originally entered into a Type II Williamson Act contract with Sonoma County for the entire parcel.

California Department of Conservation Farmland Mapping and Monitoring Program

DOC administers the Important Farmland Mapping and Monitoring Program (FMMP) which evaluates the quality of farmlands throughout the State of California. The suitability of the local soil resources plays a crucial part in the FMMP farmland classifications. FMMP uses the U.S.

Department of Agriculture Natural Resources Conservation Service soil survey information, land inventory and monitoring criteria to classify most of the state's agricultural regions into five agricultural and three nonagricultural land types. Every two years, FMMP publishes this information in its Important Farmland map series. The five agricultural land classifications are (DOC, 2009a):

- **Prime Farmland:** Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Farmland of Statewide Importance:** Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland.** Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
- **Farmland of Local Importance.** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. Farmland of Local Importance for Sonoma County includes the hayland producing areas of the Santa Rosa Plains, Petaluma Valley and Tubbs Island Naval Reservation (DOC, 2009a)[1]. The project site is located within this category.
- **Grazing Land.** Land on which the existing vegetation is suited to the grazing of livestock.

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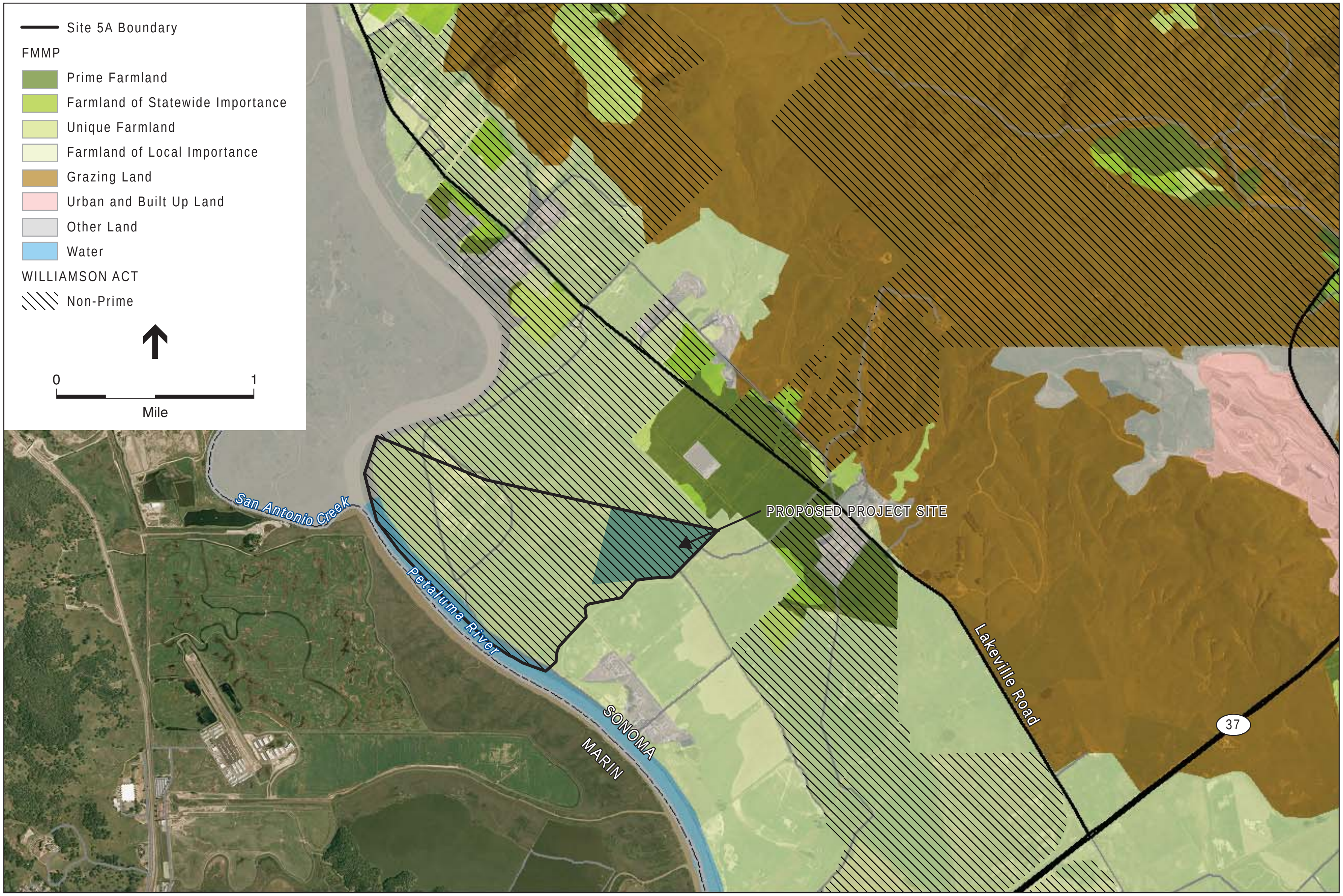
[1] Additional areas also include those lands which are classified as having the capability for producing locally important crops such as grapes, corn, etc., but may not be planted at the present time.



SOURCE: FMMP, 2006; NAIP, 2006; Williamson Act, 2006; ESRI, 2007; and ESA, 2009

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Figure 9-2
FMMP Land Classifications and Williamson Act Contracts

Nonagricultural lands are classified as: Urban and Built-Up lands; Water (perennial water bodies greater than 40 acres); or Other Land (i.e., not included in any other mapping category).

FMMP is an informational service only and does not constitute state regulation of local land use decisions. Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are considered valuable and any conversion of land within these categories is typically considered to be an adverse impact. FMMP classifications and acreages for land within Sonoma County are presented in **Table 9-1**.

Figure 9-2 provides a map of the FMMP classifications for the project site and surrounding vicinity. The project site is classified as Farmland of Local Importance and does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Properties to the northeast between the project site and Lakeville Road contain Prime Farmland.

TABLE 9-1
FMMP LAND CLASSIFICATION SUMMARY FOR SONOMA COUNTY

FMMP Land Classification Category	Total Acreage
Important Farmland	
Prime Farmland	32,258
Farmland of Statewide Importance	17,734
Unique Farmland	32,179
Farmland of Local Importance	78,168
Total Important Farmland	**160,339**
Grazing Land	420,022
Agricultural Land Total	**580,361**
Urban and Built-Up Land	74,231
Other Land	353,931
Water	17,532
Total Area Inventoried	**1,026,055**

SOURCE: DOC, 2008. California Farmland Conversion Report 2004-2006. Retrieved from: <http://www.consrv.ca.gov/dlrp/fmmp/pubs/2004-2006/Documents/2004-06%20Farmland%20Conversion%20Report.pdf>

9.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this Draft EIR, and taking guidance from Appendix G of the California Environmental Quality Act (CEQA) *Guidelines*, significant impacts to land use and agricultural resources may occur if the project would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with any habitat conservation plan or natural community plan;

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

The California Agricultural Land Evaluation and Site Assessment Model (LESA) significance thresholds will be used to determine the impact of conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. **Table 9-2** presents the California Agricultural LESA scoring thresholds.

TABLE 9-2

CALIFORNIA LESA MODEL SCORING THRESHOLDS

Total LESA Score	Scoring Decision
0 to 39 Points	Not Considered Significant
40 to 59 Points	Considered Significant <u>only</u> if LE <u>and</u> SA subscores are each <u>greater</u> than or equal to 20 points
60 to 79 Points	Considered Significant <u>unless</u> either LE <u>or</u> SA subscore is <u>less</u> than 20 points
80 to 100 Points	Considered Significant

A project would also be considered to have a significant impact on the environment if it would cause physical changes in the environment that would be substantially incompatible with existing or planned land uses.

The project site is not located within the area of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan. Consequently, the project would have no impact in regard to this criterion and accordingly, this issue is not discussed further.

Impact Discussion

Impact 9.1: The project has the potential to physically divide an established community. (Less than Significant)

The project site is located in a largely undeveloped area of Sonoma County. The majority of land uses in the vicinity of the project site are agricultural in nature with few residences in the area. The project would not result in any physical barriers to traffic and circulation or otherwise divide an established community; thus, impacts would be **less than significant**.

Mitigation: None Required.

Impact 9.2: The project has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects. (Significant)

The project site is located on a larger parcel which would be subdivided into two parcels (an approximately 527-acre parcel and a 100-acre parcel). It is expected that the larger parcel would remain in private ownership, under a Williamson Act contract and that current agricultural operations would continue. Operation of the project would not stimulate growth or residential development, nor would it encourage a shift to more urban, commercial, or industrial uses that would result in indirect impacts to agricultural lands or operations outside of the project site.

General Plan Land Use Designation and Zoning

LEA Designation and Zoning: The project does not appear to be consistent with the existing LEA land use designation/zoning. While Sonoma County Permit and Resource Management Department has not completed a general plan consistency analysis for the project, it has completed one for Site 40 (discussed in Chapter 19) and the Central Site (discussed in Chapter 28). Given the similar land use designations and zoning for the proposed project site (i.e., Site 5a) and Site 40, analysis of the general plan consistency findings for Site 40 is applicable to the proposed project site (Site 5A). Those findings are as follows:

The project does not appear to fit the requirements of an agricultural supporting use: 1) the project would be the dominant use of the property (traffic, employment, public services and utilities usage) and would not be subordinate to the agricultural use of the rest of the property and 2) support of agriculture would not be the main function of the facility (less than 10 percent of the compost feedstock is anticipated to be agricultural waste and about 15 percent of compost and mulch would be sold for agricultural purposes). Adoption of a County of Sonoma General Plan Amendment including re-designation of the project site from LEA to PQP and approval of a rezone from LEA District to PF District are included as required approvals in the project description (Section 3.6). The existing compost facility operates on property that is within the PQP designation and PF District zoning. It was previously determined that the existing compost facility was consistent with this designation (PQP) and zoning (PF District) and thus the same is assumed for the project.

Zoning

B6 Combining District with a density designation of 60Z: No residential units are proposed as part of the project; therefore there would be no conflict with this combining district.

VOH Combining District: The VOH combining district does not prohibit uses but rather requires mitigation for removal of valley oaks. Given that there are no valley oaks on the project site and the existing site is disturbed from farming and grazing, there would be no conflict with this combining district.

Floodplain (F2) Combining District: The entire project site is within the 100-year flood zone (see Chapter 8, Hydrology and Water Quality). The project includes the construction of a levee around the perimeter of the project site for the purpose of protecting the project and related structures and operations from flood waters. Projects within this combining district are subject to the development standards in Article 58, Section 26-58-030 of the Sonoma County Zoning Regulations. The development standards state that the applicant may be required by the planning director or other decision making body to submit additional data regarding the effect of flooding on proposed structure(s) and the effect of proposed structure(s) on the floodway. Flooding issues are analyzed in Impact 8.5. Flood control levees and fill would be sufficient to elevate the facility and/or prevent inundation during flooding. However, installation of fill and levees at the project site would result in the displacement of flood waters from the project site and into adjacent/surrounding areas which appears to be inconsistent with the intent of this combining district.

BR Combining District: The larger parcel contains wetland/marshland areas located adjacent to the Petaluma River, over a half-mile southwest of the project site. This is the only portion of the larger parcel to which the BR Combining District applies (Sonoma County, 2008d; Seppeler, 2009). When the larger parcel is subdivided, none of these areas would be located on or adjacent to the project site, thus there would be no conflict with this combining district.

General Plan

Inconsistency with public plans creates significant impacts under CEQA only when an adverse physical effect would result from the inconsistency. Relevant General Plan policies are discussed in the various technical sections of the EIR and were reviewed for inconsistency after implementation of mitigation. After mitigation, the project is potentially inconsistent with the General Plan policies listed in **Table 9-3**.

TABLE 9-3
GENERAL PLAN CONSISTENCY FOR PROJECT SITE

General Plan Policy		Consistency Discussion
Land Use Element		
Water Resources		
LU-7a	Avoid General Plan amendments that would allow additional development in floodplains, unless such development is of low intensity and does not include large permanent structures.	Recommended entitlements include amendment of the General Plan to allow a public facility on the project site. The project is located within the floodplain. The project includes a levee which would protect the development from flooding during a 100-year flood event; however, the project could affect flooding of adjacent properties.
LU-7c	Prohibit new permanent structures within any floodway. Require that any development that may be permitted within the flood plain to be raised above the 100 year flood elevation.	See consistency discussion for LU-7a above.
Agricultural Resources		
LU-9d	Deny General Plan amendments that convert lands outside of designated Urban Service Areas with Class I, II, or III soils (USDA) to an urban or rural residential, commercial, industrial, or public/quasi public category unless all of the following criteria, in addition to the designation criteria for the applicable land use category, are met: (1) The land use proposed for conversion is not in an agricultural production area and will not adversely affect agricultural operations, (2) The supply of vacant or underutilized potential land for the requested use is insufficient to meet projected demand, (3) No areas with other soil classes are available for non resource uses in the planning area, and (4) An overriding public benefit will result from the proposed use… Public uses such as parks and sewage treatment plants may be approved if an overriding public benefit exists.	The project proposes conversion of agricultural land to a non-agricultural use. This document explores several alternative sites; however, an overriding public benefit may warrant a General Plan amendment for the project site. The physical impacts associated with this inconsistency are related to loss of agricultural land. This impact is discussed below and was found to be less than significant due to the type of soils (suitable for hayland production) and size of project (relatively small in comparison to available agricultural land within the County).

TABLE 9-3
GENERAL PLAN CONSISTENCY FOR PROJECT SITE

General Plan Policy		Consistency Discussion
Circulation and Transit Element		
Traffic		
CT-5g	Require that new development provide project area improvements necessary to accommodate vehicle and transit movement in the vicinity of the project, including capacity improvements, traffic calming, right-of-way acquisition, access to the applicable roadway, safety improvements, and other mitigation measures necessary to accommodate the development.	The project proposes mitigation for traffic impacts to help accommodate the project. Additional discussion is included in **Chapter 12**, Traffic and Transportation. While there are significant and unavoidable impacts related to traffic safety in Chapter 12 (because mitigations that would reduce the impact would require County approval), overall the implementation of feasible traffic mitigation measures would be consistent with this policy.

The project was analyzed for consistency with the policies of the General Plan. This table notes only inconsistencies.

Conclusion

The potential impacts to the floodplain are inconsistent with the F2 Combining District and General Plan policies. The inconsistency has significant impacts related to flooding (Impact 8.5). As no feasible mitigation is available, this impact is **significant and unavoidable**.

Impact 9.3: The project would result in the conversion of agricultural land, specifically Farmland of Local Importance. (Less than Significant)

The project would not result in any temporary or permanent conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as they are not located on the project site, and thus LESA analysis was not conducted for the proposed project site (5A). The project would result in the conversion of approximately 100 acres of Farmland of Local Importance to non-agricultural use. The project site would be developed for composting facilities including a buffer area. The project site represents a small portion (i.e., approximately 0.1%) of the area available for hayland production (**Table 9-1**) and would support agricultural uses through the production of high-quality compost. Although the project would reduce Farmland of Local Importance within Sonoma County by approximately 0.1%, it would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. Therefore, the project would have a **less than significant** impact on these resources.

Mitigation: None Required.

Impact 9.4: The project would conflict with an existing Williamson Act Contract. (Significant)

The project site is currently restricted to agricultural use under a Williamson Act contract. The County would not be able to permit the project until the Williamson Act contract governing the property is terminated. While this impact does not have ramifications on the physical environment, the project could not proceed on land with a Williamson Act Contract and thus this impact is considered **significant**.

Mitigation Measure

Mitigation Measure 9.4: The County, Applicant or existing property owner would complete one of the following options:

1. File a notice of nonrenewal which would begin a 9-year non-renewal process. At the end of this period the Williamson Act contract would be terminated.
2. Terminate the contract by public acquisition pursuant to the Williamson Act. Public acquisition of Williamson Act lands results in termination of the contract following a consultation process with the County administrating body and the DOC. Public acquisition of contracted lands must meet two criteria (California Government Code §51292):
   a. The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve.
   b. If the land is agricultural land covered under a contract pursuant to this chapter for any public improvement, that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement.

Significance after Mitigation: Less than significant.

Impact 9.5: The project has the potential to conflict with airport operations. (Significant)

Composting operations have the potential to conflict with operations at Gnoss Field Airport, as identified in FAA Advisory Circular 150/5200-33B. Existing throughput for the County composting facility primarily consists of green material (yard waste) but does include a small percentage of food materials. Composting throughput containing food materials could result in increased numbers of gulls or other scavenging birds at the site, thus increasing the risk of bird strikes for aircraft departing or approaching the airport. Additionally, stormwater detention ponds can attract birds. It should be noted that both the Petaluma River and Redwood Landfill are located at closer distances to the airport than the project site. As the composting operations associated with the project and the stormwater detention pond could create a hazardous wildlife attractant near the airport, this impact is **significant**.

Mitigation Measures

Mitigation Measure 9.5: The following measures would be implemented to reduce risks associated with wildlife hazards near Gnoss Field Airport:

- Prior to construction of the facility, a Construction and Design Best Management Practices Evaluation will be conducted. This evaluation will include review of design specifications and construction plans and practices to identify potential areas to reduce wildlife hazard attractants.

- When operation of the project commences, a Wildlife Hazard Assessment (WHA) would be conducted by a wildlife damage management biologist. The WHA would be prepared pursuant to FAA guidelines (coverage of daily and seasonal occurrences which typically entails a year of observations and monitoring) to determine the extent and type of wildlife hazards attracted to the site and whether a Wildlife Hazard Management Plan (WHMP) would be required.
- Upon completion of the WHA, a WHMP will be developed if warranted. The WHMP may include standard measures such as wire grids or netting over the stormwater detention pond, use of auditory repellents and/or falconry to discourage birds from the site, covering compost piles, and/or enclosed areas for incoming feedstock. The program would be periodically re-evaluated to revise bird control techniques as necessary.

Significance after Mitigation: Less than significant.

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CHAPTER 10
Noise

10.1 Introduction

This chapter includes background information on noise and vibration and applicable noise guidelines and standards, including Sonoma County noise standards. This chapter also provides information on recent noise measurements at locations potentially affected by operations, assesses the potential impacts the noise from construction and operations of the compost facility would have on sensitive noise receptors in the vicinity and along access roads.

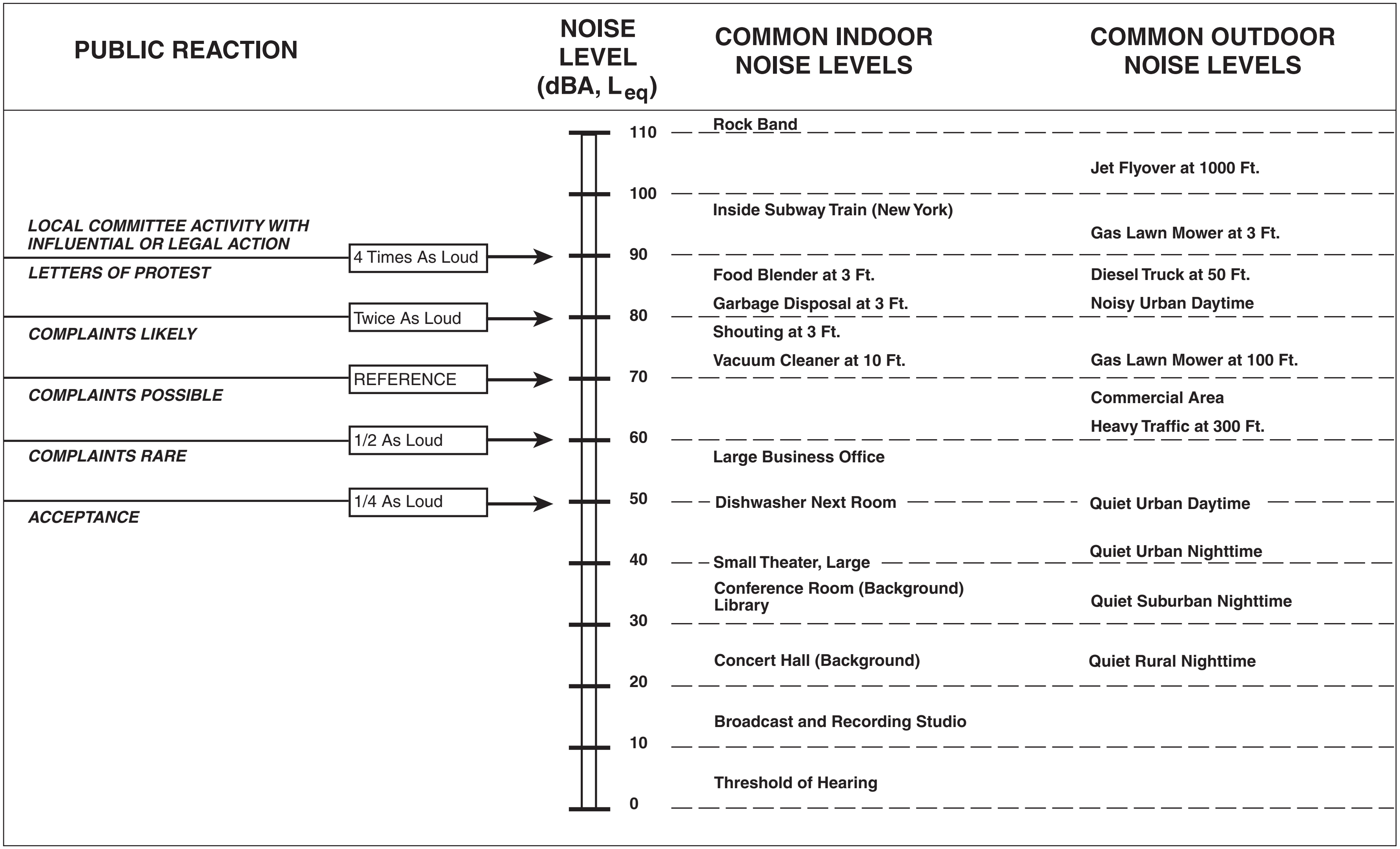
10.2 Setting

Environmental Noise Fundamentals

Noise is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ears decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 10-1**.



SOURCE: ESA, 2007

Figure 10-1
Effect of Noise on People

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in **Figure 10-1** are representative of measured noise at a given instant in time, however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment varies the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

Leq: the equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

Lmax: the instantaneous maximum noise level for a specified period of time.

L50: the noise level that is equaled or exceeded 50 percent of the specified time period. The L50 represents the median sound level. Limits for the L50 parameter are specified in the County General Plan Noise Element.

L25: the noise level that is equaled or exceeded 25 percent of the specified time period. Limits for the L25 parameter are specified in the County General Plan Noise Element.

L8: the noise level that is equaled or exceeded 8 percent of the specified time period. Limits for the L8 parameter are specified in the County General Plan Noise Element.

L2: the noise level that is equaled or exceeded 2 percent of the specified time period. Limits for the L2 parameter are specified in the County General Plan Noise Element.

Ln: the noise level that is equaled or exceeded N percent of the specified time period. L2 for example is the noise level equaled or exceeded 2 percent of the specified time period.

Ldn: also termed the DNL, the Ldn is the 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 PM and 7:00 AM is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: similar to the Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 PM and 10:00 PM in addition to a 10-dBA penalty between the hours of 10:00 PM and 7:00 AM

As a general rule, in areas where the noise environment is dominated by traffic, the Leq during the peak-hour is generally equivalent to the Ldn at that location (within +/- 2 dBA) (Caltrans, 1998).

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- subjective effects of annoyance, nuisance, dissatisfaction;
- interference with activities such as speech, sleep, learning; and
- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- a change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- a 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion, hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

Fundamentals of Vibration

As described in the Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment (FTA, 2006), ground-borne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly and sick), and vibration sensitive equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV and the FTA threshold of human annoyance to ground-borne vibration is 80 RMS (FTA, 2006).

Regulatory Setting

Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR), Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

State

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dB. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of DNL 45 dBA in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dBA. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

Local

Sonoma County General Plan

The Sonoma County General Plan Noise Element was recently updated and adopted on September 23, 2008. The project site is in an unincorporated area of Sonoma County. The Sonoma County General Plan Noise Element sets various goals and objectives that apply to projects in Sonoma County. General Plan noise level performance standards in **Table 10-1**, below, are performance standards for noise producing land uses that may affect noise sensitive land uses.

TABLE 10-1
MAXIMUM ALLOWABLE EXTERIOR NOISE EXPOSURES FOR NON-TRANSPORTATION NOISE SOURCES[A]

Hourly Noise Metric[b], dBA	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
L50 (30 minutes in any hour)	50	45
L25 (15 minutes in any hour)	55	50
L8 (5 minutes in any hour)	60	55
L2 (1 minute in any hour)	65	60

a These are the standards from Table NE-2 from the Sonoma County General Plan Noise Element.
b The sound level exceeded “n” percent of the time in any hour. For example, the L50 is the value exceeded 50 percent of the time or 30 minutes in any hour; this is the median noise level. The L2 is the sound level exceeded approximately 1 minute in any hour.

SOURCE: Sonoma County General Plan 2020 Noise Element, September, 2008

The following goals, objectives, and policies from the Noise Element are applicable to the project:

Objective NE-1.2 Develop and implement measures to avoid exposure of people to excessive noise levels.

Objective NE-1.3 Protect the present noise environment and prevent intrusion of new noise sources which would substantially alter the noise environment.

Policy NE-1a Designate areas within Sonoma County as noise impacted if they are exposed to existing or projected exterior noise levels exceeding 60 dB Ldn, 60 dB CNEL, or the performance standards in Table NE-2 from the Sonoma County General Plan Noise Element (**Table 10-1)**.

Policy NE-1b Avoid noise sensitive land use development in noise impacted areas unless effective measure are included to reduce noise levels. For noise due to traffic on public roadways, railroad and airports, reduce exterior noise to 60 dB Ldn or less in outdoor activity areas and interior noise levels to 45 dB Ldn or less with windows and doors closed. Where it is not possible to meet this 60 dB Ldn standard using a practical application of the best available noise reduction technology, a maximum level of up to 65 dB Ldn may be allowed but interior noise level shall be maintained so as not to exceed 45 dB Ldn.

Policy NE-1c Control non-transportation related noise from new projects. The total noise level resulting from new sources and ambient noise shall not exceed the standards in **Table 10-1** as measured at the exterior property line of any affected residential land use. Limit exceptions to the following:

1. If the ambient noise level exceeds the standard in **Table 10-1**, adjust the standard to equal the ambient level, up to a maximum of 5 dBA above the standard, provided that no measurable increase (i.e. +/- 1.5 dBA) shall be allowed.

5. Noise levels may be measured at the location of the outdoor activity area of the noise sensitive land use, instead of the exterior property line of the adjacent noise sensitive land use where:

    a. the property on which the noise sensitive use is located has already been substantially developed pursuant to its existing zoning, and

    b. there is available open land on those noise sensitive lands for noise attenuation.

Policy NE-1f Require development projects that do not include or affect residential uses or other noise sensitive uses to include noise mitigation measures where necessary to maintain noise levels compatible with activities planned for the project site and vicinity.

Policy NE-1h Prepare and consider a noise control ordinance to regulate existing noise sources as follows:

7. The ordinance may exempt or modify noise requirements for agricultural uses, construction activities, school functions, property maintenance, heating and cooling equipment, utility facilities, waste collection and other sources.

Policy NE-1i County equipment and vehicles shall comply with adopted noise level performance standards consistent with the best available noise reduction technology.

Sensitive Receptors

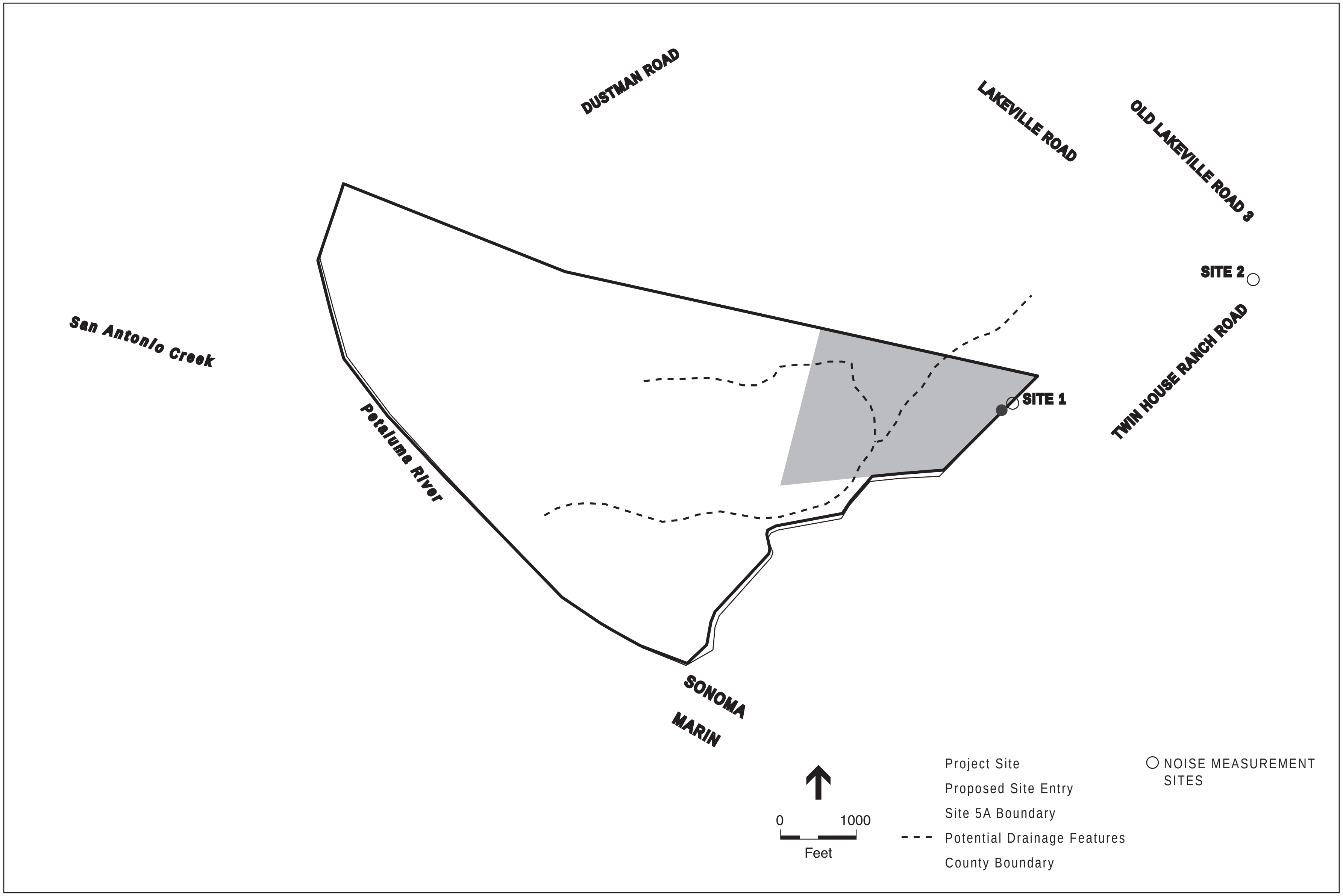
Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Noise sensitive uses identified by the Sonoma County General Plan include the following: residences, schools, hospitals, nursing homes, churches, libraries, long term medical or mental care facilities, office building interiors and other uses deemed noise sensitive by the local jurisdiction.

The majority of the surrounding area is open space. Land uses in the immediate vicinity of the project are limited to the Riverside Equestrian Center located approximately 2,100 feet south of the projected project site and Sleepy Hollow Dairy approximately 2,600 feet east of the projected project site. Neither of these areas contains a residence and therefore these areas are not technically considered sensitive receptors. For purposes of this report, they will be used as distance references. The closest residence is approximately 3,600 feet from the projected project site. All adjoining properties have a General Plan Land Use Zoning Designation of Land Extensive Agriculture (LEA). Residences along haul routes are sensitive receptors that could be affected by construction and operation of the project-related traffic.

Existing Noise Environment

The noise environment surrounding the project site is influenced primarily by agricultural-associated operations and truck and automobile traffic on local roadways. The noise environment along anticipated truck haul routes is also influenced by traffic noise from Lakeview Road, Old Lakeville Road and Twin House Ranch Road.

In order to characterize the existing operations environment as well as the project site environment, short term and 24-hour noise measurements were conducted April 14th thru April 17,th 2009. Measurements taken at sites 1 and 2 are located at the project site. Measurements taken at sites 3 thru 5 are located at the existing countywide compost site (Sonoma Compost, Inc). The locations of the noise measurements for the project site are shown in **Figure 10-2**. Noise measurement results for all study locations are summarized in **Table 10-2**. Noise plots of the long-term measurements are shown in **Figures 10-3** through **Figure 10-8**.



SOURCE: NAIP, 2006; ESRI, 2007; and ESA, 2009

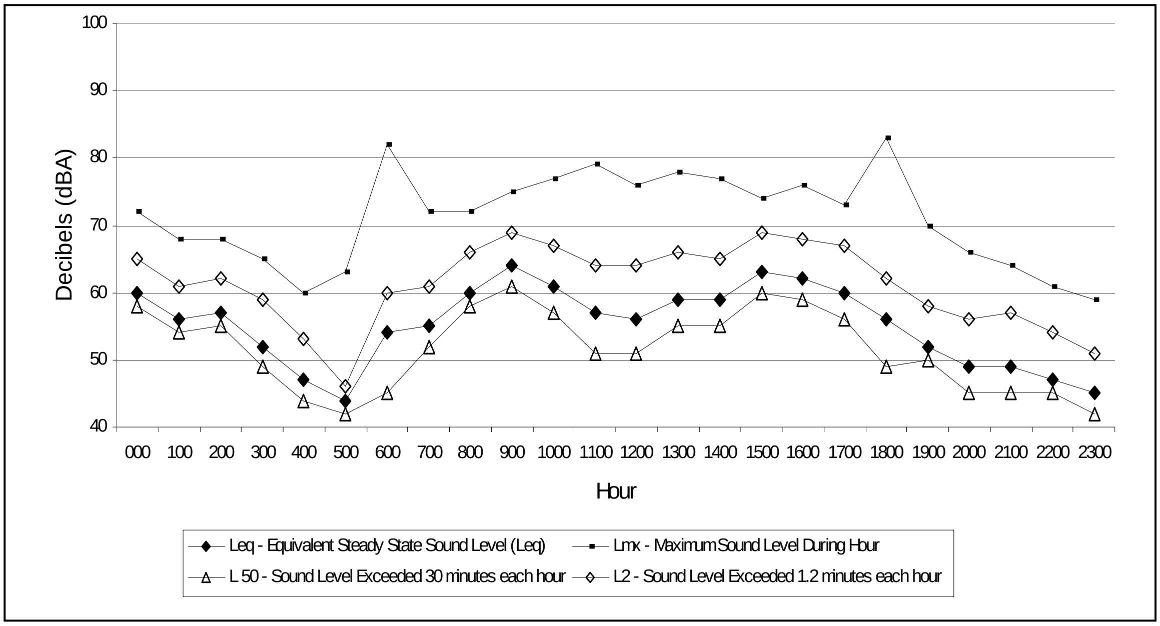
Figure 10-2
Long and Short Term Noise Measurement Locations

TABLE 10-2
SOUND-LEVEL MEASUREMENTS AT EXISTING AND PROJECTED STUDY LOCATIONS[A]

Location	Time Period	Leq(dBA)	Noise Sources
Site 1. Property Line 50 feet from Twin House Ranch Road	24– hour CNEL measurements were: Wed. Apr. 15: 62 dBA Thurs. Apr. 16: 56 dBA	Hourly Average Leq range: Apr. 15: 44 - 64 Apr. 16: 42 - 61	Unattended noise measurements do not specifically identify noise sources.
Site 1. Property Line 50 feet from Twin House Ranch Road	Tues. April 14 12:43 – 12:53 p.m.	5-minute results: Leq's = 65, 63	Wind gusts 76 dBA, Birds chirping,Traffic from Twin House Ranch Rd.
Site 1. Property Line 50 feet from Twin House Ranch Road	Fri. April 17 1:07 – 1:17 p.m.	5-minute results: Leq's = 58, 51	Background noise 46 – 50 dBA, Bees in boxes, Airplane
Site 2. 230 feet East of Lakeville Road/Twin House Ranch Road	24– hour CNEL measurements were: Wed. Apr. 15: 69 dBA Thurs. Apr. 16: 71 dBA	Hourly Average Leq range: Apr. 15: 56 - 67 Apr. 16: 56 - 69	Unattended noise measurements do not specifically identify noise sources.
Site 2. 230 feet East of Lakeville Road/Twin House Ranch Road	Tues. April 14 1:11 – 1:21 p.m.	5-minute results: Leq's = 62, 66	Wind 66 dBA, Lakeville Road traffic 70dBA
Site 2. 230 feet East of Lakeville Road/Twin House Ranch Road	Friday, April 17 1:47 – 1:57 p.m.	5-minute results: Leq's = 62, 60	Traffic 60 – 65 dBA Airplane, Birds
Site 3[b]. Sonoma Compost, Inc. 340 Feet NW of Greenwaste Storage and Grinding Area	24– hour CNEL measurements were: Wed. Apr. 15: 67 dBA Thurs. Apr. 16: 57 dBA	Hourly Average Leq range: Apr 15: 44 – 73 Apr. 16: 44 - 61	Unattended noise measurements do not specifically identify noise sources.
Site 3[b]. Sonoma Compost, Inc. 340 Feet NW of Greenwaste Storage and Grinding Area	Tues. April 14 11:38 – 11:48 a.m.	5-minute results: Leq's = 73, 73	Grinder 73 – 74 dBA Loader, Water truck
Site 3[b]. Sonoma Compost, Inc. 340 Feet NW of Greenwaste Storage and Grinding Area	Fri. April 17 9:58 – 10:08 a.m.	5-minute results: Leq's = 72, 70	Grinding and loading equipment 70 dBA, Truck leaving site
Site 4[b]. Sonoma Compost, Inc. 50 Feet from screen exhaust	Fri. April 17 11:07 – 11:12 a.m.	5-minute result: Leq = 75	Screen operation 73 – 75 dBA, Loader dumping material 75.5 dBA
Site 5[b]. Sonoma Compost, Inc. Near Existing site on top of windrow parallel to scarab	Fri. April 17 11:16 – 11:18 a.m.	2-minute result: Leq = 77	Scarab at approximately 25 feet, 76 dBA

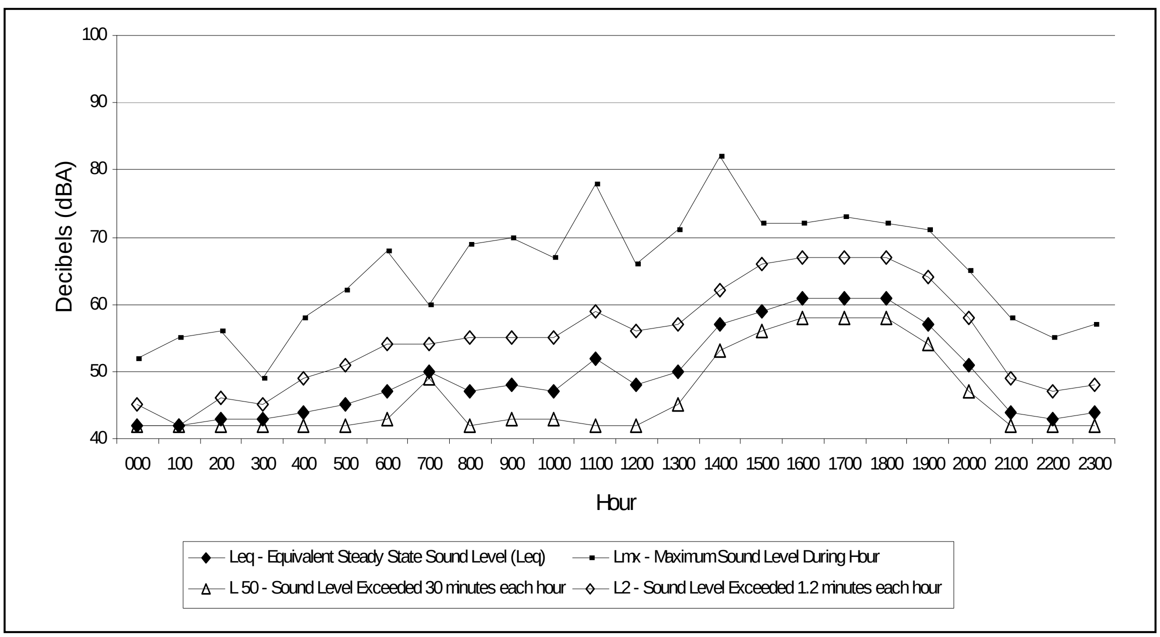
a All noise levels measured in decibels (dBA). Noise measurement data presented here using a Metrosonics dB-308 sound level meter, calibrated prior to use.
b These measurements were taken at the existing Sonoma Compost, Inc. facility at the Central Disposal Site.

As shown in **Table 10-2**, the measured noise levels for the project site had hourly averages that range from 42 to 73 dBA, which are noise levels expected over a 24-hour period on rural roads with light to moderate traffic. In the project area, noise levels are primarily a function of the distance from the road and the time of day, with the higher noise averages occurring during rush-hour traffic, and the lowest noise levels occurring during the nighttime hours. There are few other noise sources in the vicinity of the project site. As was noted during the short-term measurements on the project site, winds can be the main source of noise, masking manmade sources.



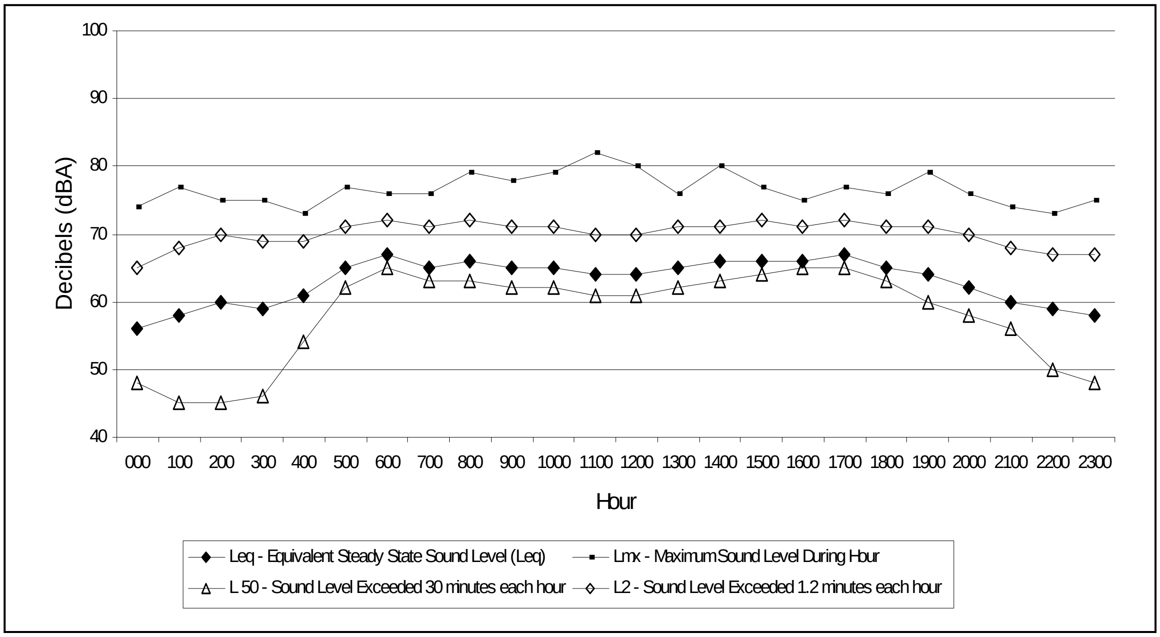
SCWMA Compost Facility EIR.207312

Figure 10-3
Site 1: Property Line 50 Feet from Twin House Ranch Road
Wednesday April 15, 2009



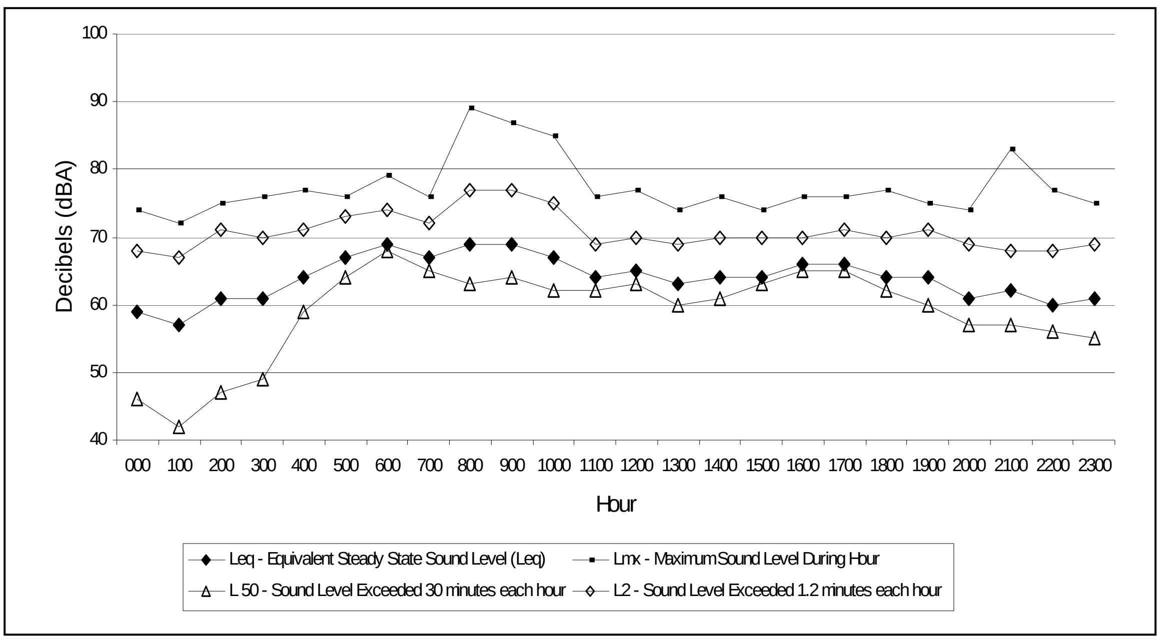
SCWMA Compost Facility EIR.207312

Figure 10-4
Site 1: Property Line 50 Feet from Twin House Ranch Road
Thursday April 16, 2009



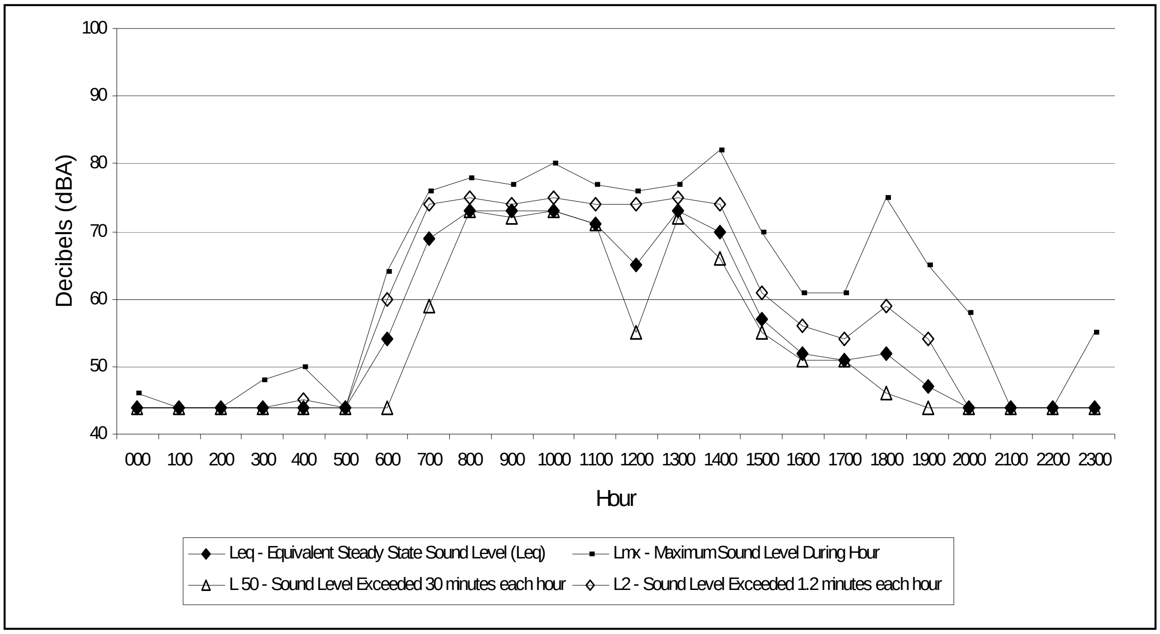
SCWMA Compost Facility EIR.207312

Figure 10-5
Site 2: 230 Feet East of Lakeville Road
Wednesday April 15, 2009



SCWMA Compost Facility EIR.207312

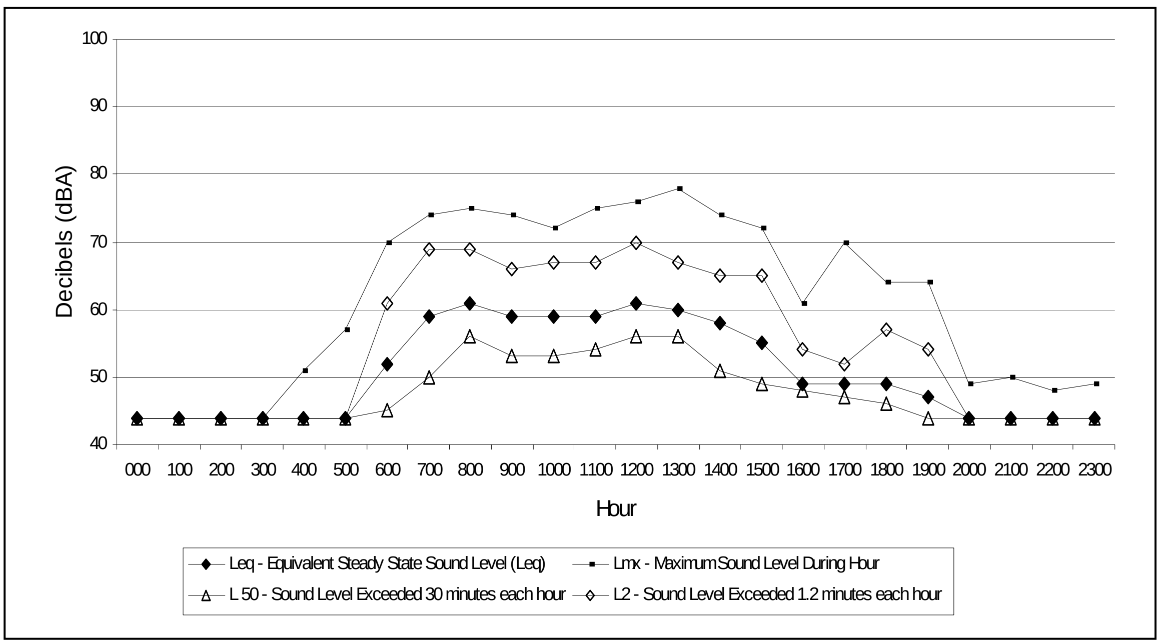
Figure 10-6
Site 2: 230 Feet East of Lakeville Road
Thursday April 16, 2009



SCWMA Compost Facility EIR.207312

Figure 10-7

Site 3: 340 Feet NW of Existing Compost Site
Wednesday April 15, 2009



SCWMA Compost Facility EIR.207312

Figure 10-8

Site 3: 340 Feet NW of Existing Compost Site
Thursday April 16, 2009

10.3 Impacts and Mitigation Measures

Significance Criteria

Consistent with the California Environmental Quality Act (CEQA) *Guidelines* Appendix G, the project would result in a significant impact on the environment if it would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (addressed in Impacts 10-3 thru 10-4).
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (addressed in Impact 10-1).
- Exposure of people residing or working in the project area to excessive noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport); or
- Exposure of people residing or working in the project area to excessive noise levels (for a project within the vicinity of a private airstrip).

For the purposes of this EIR, and consistent with noise standards contained in the Sonoma County General Plan, the following criteria are used to evaluate what constitutes a substantial increase in noise and a significant impact:

- Noise generated from the project's on-site sources that exceed the County's General Plan noise level performance standards in **Table 10-1 (**Table NE-2 in the General Plan)**.** The Sonoma County General Plan includes a provision in the Noise Element (NE-1C:5) measuring noise levels from the location of outdoor activity area, instead of the exterior property line.
- An increase in traffic noise of 3 dBA or more (a level perceivable to most individuals [Caltrans 1998]) at a sensitive receptor location that has a resulting noise level exceeding 60 dB Ldn/CNEL (Policy NE-1a) or 45 dB Ldn interior (Policy NE-1b).

The project is located 2,100 feet from the closest sensitive receptor and does not involve pile driving. The project would not create exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels. This issue is not discussed further in this chapter.

The project is not located within an airport land use plan, or within two miles of a public airport (including Gnoss Field Airport near Novato), or within the vicinity of a private airstrip. Consequently, no noise impacts associated with public or private air facilities would occur, and this issue is not discussed further in this chapter.

Impact Discussion

Impact 10.1: Project construction could expose persons to or generate excessive noise levels. (Significant)

Construction activity noise levels at and near the construction areas would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. **Table 10-3** shows typical noise levels during different construction stages. **Table 10-4** shows typical noise levels produced by various types of construction equipment.

Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling distance. Based on the project site layout and terrain, an attenuation of 7.5 dBA will be assumed because the site is consistent with the characteristics of a "soft site", as described above. The closest sensitive receptor would be approximately 2,100 feet from project construction. Residences along haul routes would also be exposed to increased traffic levels due to trucks hauling 80,000 – 100,000 cubic yards of soils/fill to construct a levee around the project site. However, the construction haul trips (approximately 24 per day) would be temporary (approximately one year) and the construction haul trips would not be expected to double traffic on the main haul route (Lakeville Road). The doubling of a moving noise source produces a 3 dBA increase in sound pressure level which is barely detectable by the human ear (ICF, 2009). Noise levels at residences along Lakeville Road would increase by less than 3 dBA and would not be a significant increase in noise levels.

Table 10-3 shows that excavation and finishing are the loudest phases of construction; the noise from these phases of construction would be up to 89 dBA at a reference distance of 50 feet. If attenuated out to 2,100 feet, this receptor would experience noise levels of approximately 48 dBA during finishing and excavation, the loudest of construction activities that would occur.

TABLE 10-3
TYPICAL CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level[a] (dBA, Leq)
Ground clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

TABLE 10-4
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level[a] (dBA, Leq at 50 Feet)
Dump truck	88
Portable air compressor	81
Concrete mixer (truck)	85
Scraper	88
Jackhammer	88
Dozer	87
Paver	89
Generator	76
Backhoe	85
Rock Drilling	98

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

Sonoma County generally decides upon daytime construction hours on a case-by-case basis. No construction noise thresholds exist as long as the construction is temporary. Further, after it is constructed, the levee around the project site would further reduce any off-site noise effects of construction. Without hourly restrictions on construction activities, noise from construction activities would be considered **significant**.

Mitigation Measure

Mitigation Measure 10.1: Construction of the new facility shall occur only during daytime between the hours of 7 a.m. – 7 p.m. Monday thru Friday, 9 a.m. – 5 p.m. Saturday, and no construction on Sunday.

Significance after Mitigation: Less than significant.

Impact 10.2: Operation of the project could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies. (Significant)

The loudest equipment that would be in operation at the project site would be the grinder and bulldozer. A windrow turner was also considered but its noise levels would be masked by the other equipment. Daytime noise levels generated by the loudest expected operations equipment are shown in **Table 10-5**.

TABLE 10-5
DAYTIME NOISE LEVELS ASSOCIATED WITH PROJECT OPERATIONS AT THE NEAREST RECEPTORS

Equipment	Reference Noise Level	Distance to Nearest Receptor	Maximum Noise Level of Equipment at Nearest Receptor (dBA)	Does equipment violate County daytime 30-Minute Standard (dBA)?	Attenuation needed to meet Standard
Grinder[a]	77 dBA at 200 feet	2,800	48	No	None
Bulldozer[b]	87 dBA at 50 feet	2,100	46	No	None

a This reference noise level derives from multiple measurements from separate projects with similar conditions and equipment. The highest noise levels produced were used as reference levels providing the most conservative level available.
b Reference noise level provided by Cunniff, 1977.

SOURCE: ESA, 2009

As seen in **Table 10-5**, daytime operations equipment would not exceed the 50 decibel daytime limit as set by the Sonoma County General Plan. Given that the maximum levels would be below 50 decibels, no other daytime standards (L25, L8, or L2) would be exceeded.

In the case of aerated static piles (ASP), large blowers (fans) would push and/or pull the air through the piles. These blowers (fans) may operate 24 hours per day. A ducting system would be used to direct air flows. Accurate noise levels during operation are unknown as the ASP details are conceptual and several types of systems by different vendors could be selected. A study documenting an ASP system contends that generation of noise is not a major issue as small 3 horse-power aeration blowers, a shop-sized air compressor, and a 15 horse-power exhaust fan were components of the aeration system (Carter & Burgess, 2004). The ASP blowers are not expected to be as loud as the grinder or bulldozers, but they would operate 24 hours a day and would be subject to the lower nighttime standards of 45 dBA. Depending on various factors the blowers could exceed 45 dBA at night at the nearest receptor if not adequately attenuated. This would be a potentially **significant** impact without mitigation.

Mitigation Measure

Mitigation Measure 10.2: ASP equipment that would operate at night shall be required to be attenuated to a level that does not exceed 45 dBA at the nearest residences. If post-construction monitoring indicates higher nighttime noise levels from the ASP equipment at sensitive receptor locations, then additional noise barriers (such as fences or walls that block any direct line of site to receptors) or sound insulated equipment enclosures would be required to attenuate operations noise to acceptable levels.

Significance after Mitigation: Less than significant.

Impact 10.3: Traffic associated with operation of the project would result in an increase in ambient noise levels on nearby roadways used to access the project site. (Less than Significant)

The project would generate new motor vehicle trips on the local road network. Truck trips could begin as early as 7:00 a.m. These trips would be distributed over the local road network and would affect roadside noise levels at sensitive receptor locations.

To assess the impact of project traffic on roadside noise levels, noise level projections were made using the Federal Highway Administration's (FHWA) TNM Lookup 2.5 model for those road segments that would be used by the haul trucks (as determined in the traffic chapter of this report) and that pass by sensitive receptors. The results of the modeling effort are shown in **Table 10-6**, below. The traffic volumes used for the modeling effort are morning weekday peak-hour volumes and weekend peak periods during periods when the facility is operating at peak production. Estimated noise levels under various project scenarios are shown in **Table 10-6**.

As shown in **Table 10-6**, the project traffic would cause a minimal noise impact to surrounding receptors in all areas with the project compared to without the project. No roadway segments would experience increases greater than 3 dBA during the peak hour as a result of the project; consequently the project would result in a **less than significant** impact on these segments.

Mitigation: None required.

Impact 10.4: Increases in traffic from the project in combination with other development would result in cumulative noise increases. (Less than Significant)

A cumulative impact arises when two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current, and probable future projects.

To assess the cumulative impact of project traffic on roadside noise levels, noise level projections were made using the FHWA TNM Version 2.5(2007). As depicted in **Table 10-6**, the project itself would not result in substantial and significant increases in noise on local roadways. In addition, the projected cumulative 2030 plus project scenario would result in minimal (less than 3 dBA) increases in noise. Thus, project would not be cumulatively considerable and would have a **less than significant** cumulative impact on noise.

Mitigation: None required.

TABLE 10-6
AM PEAK-HOUR TRAFFIC NOISE LEVELS ALONG ROADWAYS IN THE PROJECT VICINITY

Roadway Segment[1, 2]	AM and Saturday Peak-Hour Noise Level, dBA, Leq									
	Existing (A)	2011 plus Project (B)	Incremental Increase (B - A)	Significant? (Yes or No)[3]	Cumulative 2030 No Project (C)	Cumulative 2030 plus Project (D)	Incremental Increase (D-A)	Significant? (Yes or No)[3]	Incremental Increase (D-C)	Cumulatively Considerable? (Yes or No)[3]
1. Lakeview Road north of Twin House Ranch Road (Weekday)	67.2	67.4	0.2	No	68.7	68.9	1.7	No	0.2	No
2. Lakeview Road south of Twin House Ranch Road (Weekday)	67.2	67.3	0.1	No	68.7	68.7	1.5	No	0.0	No
3. Lakeview Road north of Twin House Ranch Road (Saturday)	65.7	65.9	0.2	No	67.3	68.0	2.3	No	0.7	No
4. Lakeview Road south of Twin House Ranch Road (Saturday)	65.8	66.0	0.2	No	67.3	67.4	1.6	No	0.1	No

1 Road center to receptor distance is 30 meters (approximately 100 feet) for values shown in this table. Noise levels were calculated using the FHWA Traffic Noise Prediction Model (FHWA TNM) LookUp Program Software Version 2.1, 2007. Look-Up data (02/08/2007) generated by TNM Version 2.5~~.~~ Prepared by US Department of Transportation, Research and Innovative Technology Administration, Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division.
2 Vehicle mix on based on existing truck percentages from traffic data. The speed for these segments was assumed to be 65 miles per hour.
3 Considered significant if the incremental increase in noise is greater than 3 dBA and result in noise levels above those considered compatible with County Noise Goals (NE-1b).

SOURCE: ESA, 2009

10.4 References

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CHAPTER 11
Public Services and Utilities

11.1 Introduction

This chapter discusses issues related to public services and utilities, including the effects of the project to water, wastewater, solid waste, electricity, natural gas, telecommunications, police, fire and other applicable public service/utilities. Stormwater and water quality are discussed in Chapter 8, Hydrology and Water Quality.

11.2 Setting

Water

The project site and vicinity is not currently served by a public water supplier. Surrounding properties within Sonoma County obtain water from private groundwater wells. Sonoma County Water Agency provides water to the City of Petaluma, northwest of the project site.

Wastewater

Residences and businesses in the project site vicinity utilize on-site septic systems. Sonoma County Water Agency manages several wastewater treatment systems in the unincorporated area; however, the project site is not included within the service area of an existing sanitation district.

Solid Waste

Approximately half of Sonoma County's municipal solid waste is disposed at the Central Disposal Site while the remainder is transferred to out-of-County landfills (SCWMA, 2011). More than 374,300 tons of waste was disposed of by Sonoma County residents and businesses between February 2006 and January 2007 at the County's five disposal facilities. More than two-thirds of the overall Sonoma County waste stream can be classified as divertible (25.4 percent), potentially divertible (12.3 percent), or compostable (32.1 percent). Forty-six percent of residential waste and 39 percent of commercial waste is categorized as compostable (Cascadia, 2007). Compostable materials include vegetative food waste and yard trimmings. From 1993 to 2008, the existing composting operations diverted approximately 950,000 tons of yard trimmings and wood waste from landfills, which represents approximately 15 percent of the County's total waste generated in that time (Sonoma Compost Company, 2009).

Existing green material composting and wood waste operations occur on 18 acres at the Central Disposal Site. It is estimated that by 2030 approximately 200,000 tons per year of green material and 23,000 tons per year of wood waste would be generated within Sonoma County (Brown and Caldwell, 2005).

Electricity, Natural Gas, and Propane

Electrical and natural gas service in Sonoma County are provided by Pacific Gas and Electric Company (PG&E). Propane gas delivery service is provided by several private companies in the area.

Police

The Sonoma County Sheriff's Office provides law enforcement services to unincorporated areas of the county, including the project site. The Department includes over 1,000 employees who provide law enforcement, court security and detention services within the County. The project site is located within Zone 5 which has a service area of 171 square miles. Zone 5 contains unincorporated areas in the southwestern portion of the County, surrounding the City of Petaluma and the southern half of Rohnert Park. This zone is staffed out of the main office at 2796 Ventura Avenue, in Santa Rosa. For fiscal year 2007 to 2008, the Department received 49,794 calls for service with an average emergency response time of 8 minutes and 6 seconds (Sonoma County Sheriff's Office, 2009). The California Highway Patrol provides law enforcement along state routes within California.

Fire Protection

The project site is located within the area served by the Lakeville Volunteer Fire Department. The Department provides service to approximately 37.6 square miles of unincorporated Sonoma County, including Infineon raceway. The Department includes a fire chief, 2 captains, 3 engineers, 11 fire fighters and 4 support staff. The Department receives between 200 and 250 calls annually. Approximately 60 to 70 percent of calls are traffic related. The average response time for the District is six and a half minutes (Silva, pers. comm., 2009).

The nearest station to the project site is located at 5100 Lakeville Road, approximately 2.5 miles northwest of the project site. The Department contracts with CALFIRE to continue CALFIRE service during non-summer months. The project site is not located in a State Responsibility Area or otherwise served by CALFIRE. There is some potential for wildfires on or near the project site. The Department has responded to fires started from metal horse shoes sparking off rocks in the project area.

The Department currently has the following apparatus/equipment:

- 1998 Ford Command Unit
- 2008 Polaris Ranger
- 1984 Quick Attack Unit (Chevy 4 X 4)
- 2004 Type III Wildland Engine
- 1964 Type III Wildland Engine (reserve vehicle)
- 1988 Type I Pumper
- 1978 Water Tender

In addition to the listed apparatus, a Type III engine is housed at 655 Lohrman Lane near Petaluma during the winter months.

The City of Petaluma provides ambulance transport to the project vicinity. The hospital that would provide primary emergency medical services is Petaluma Valley, located approximately 9 miles northwest of the project site.

Schools, Parks, Libraries

There are no public schools or libraries within 2 miles of the project site. Olompali State Historic Park is located approximately 1.5 miles west of the project site.

Regulatory Framework

California Integrated Waste Management Act

The California Integrated Waste Management Act (CIWMA), also known as Assembly Bill 939 required each jurisdiction in the state to divert 25 percent of its solid waste from landfill or transformation facilities by 1995 and 50 percent by 2000. Accepted diversion methods include source reduction, recycling and composting activities. The CIWMA also required each County to prepare a Countywide Integrated Waste Management Plan (CoIWMP), which is the main planning document for solid waste management in each County. Sonoma County's CoIWMP is discussed below.

In order for the County to help meet the CIWMA's diversion requirements, Chapter 22 of the County Code (Section 22-7A) explicitly bans the disposal at County disposal sites of tires, major appliances, yard debris, recyclable wood waste, corrugated cardboard and scrap metal. If materials cannot be recycled for a period of time the director of public works can permit disposal of these materials at any disposal facility.

Sonoma Countywide Integrated Waste Management Plan

The CoIWMP is the principal planning document for solid waste management in Sonoma County. The CoIWMP identifies goals and objectives of the County and the incorporated cities in the County with respect to solid waste reduction, recycling diversion, and disposal of solid waste. Concurrent with the preparation of the CoIWMP, all incorporated cities in the County and the County entered into a Joint Power Agreement which formed the Sonoma County Waste Management Agency (SCWMA) to deal with household hazardous waste, yard and wood waste, and public education. The most recent update to the CoIWMP was adopted and certified by SCWMA in February 2010.

The following are relevant goals, objectives and policies from the CoIWMP:

Chapter 2: Goals, Objectives, and Policies

GOAL A In order to help ensure the sustainability of our communities and to conserve natural resources and landfill capacity, the SCWMA, County and the Cities will continue to improve their municipal solid waste management system through emphasis on the solid waste management hierarchy of waste prevention (source reduction), reuse, recycling, composting and disposal.

Section 2.4.3 Composting Implementation Policies

- The SCWMA, County and the Cities will provide access to composting opportunities through implementation of composting facilities and programs which may be regional or local, public or private.
- The SCWMA will provide and administer a regional composting facility.

Chapter 4. Composting Component

Section 4.5.6.2 Required Tasks

- Specific tasks have been identified for each composting program.
- Yard Debris Composting (medium-term 2009 to 2018)
- Relocate operation to permanent location off the Central Landfill.

Sonoma County General Plan 2020

The General Plan Public Facilities and Services Element addresses eight types of public services including solid waste management (Sonoma County, 2008). This element's purpose is to lay the groundwork for future decisions related to these public services and infrastructure, to establish future policy regarding the provision of these services, and to integrate public service concerns into land use decision making.

Goal PF-2 Assure that park and recreation, public education, fire suppression and emergency medical, and solid waste services, and public utility sites are available to the meet future needs of Sonoma County residents.

Objective PF-2.9 Use the CoIWMP, and any subsequent amendments thereto, as the policy document for solid waste management in the County.

Policy PF-2a Plan, design, and construct park and recreation, fire and emergency medical, public education, and solid waste services and public utilities in accordance with projected growth, except as provided in Policy LU-4d.

11.3 Impacts and Mitigation Measures

Significance Criteria

According to Appendix G of the CEQA *Guidelines*, a project may be deemed to have a significant impact on the environment if it would:

- 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 services;
- 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;

- conflict with wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- 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;
- 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;
- be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- not comply with federal, state, and local statutes and regulations related to solid waste.

Based on Appendix F of the CEQA *Guidelines*, a project may also be deemed to have a significant impact on the environment if it would:

- result in an energy demand that would cause inefficient, wasteful, and/or unnecessary consumption of energy.

As the project would not be served by public water or wastewater providers or affect existing public water or wastewater providers, there would be no impact to municipal water or wastewater service providers related to the construction of new water or wastewater infrastructure. For impacts related to groundwater supply and wastewater discharge, see Chapter 8. Since the project does not propose to add schools, parks or libraries and the project would not increase demands on these kinds of facilities, there would be no impacts to public schools, parks or libraries. The compost facility would be required to comply with CalRecycle regulations regarding composting operations found at Title 14, Chapter 3.1. Thus, the project would comply with regulations related to solid waste. As the project would have no effect on these issues, they are not discussed further in this document.

Impact Discussion

Impact 11.1: The project would generate solid waste which would require disposal at a landfill. (Less than Significant)

The primary source of solid waste requiring disposal at the project would be residual waste within arriving feedstocks which could not be composted. These materials are currently sent to landfills and thus they do not represent a new waste stream. Employees and general administrative functions would generate a minor amount of trash which would require disposal. However, the project overall would result in a net reduction in the amount of solid waste sent to landfill due to the removal of compostable materials from the existing waste stream. This would result in additional capacity at landfills utilized by Sonoma County and thus would be **less than significant**.

Mitigation: None Required.

Impact 11.2: The project, and implementation of certain mitigation, would increase energy demands. (Less than Significant)

The project would generate energy demands primarily in the form of electricity, natural gas or propane, and petroleum based fuels (i.e., diesel and gasoline) from operation of buildings (e.g., lighting and heating/cooling), stationary processing equipment (e.g., grinders, blowers, etc.), and portable equipment (e.g., loaders, water trucks, forklifts, haul trucks, etc.). The specific electricity and/or natural gas requirements of the project would be determined by PG&E after the project operator submits a formal application for service. At that time, PG&E would review the project and identify what additional on- and/or off-site requirements would be needed to deliver electrical and/or gas service to the site. If natural gas services are not available the project would utilize electric appliances or propane gas for heating.

For the purposes of this CEQA review, it is estimated that by 2030 the project would require an increase in annual electrical demand between approximately 350 megawatt-hours (MW-hrs) and 1,000 MW-hrs (depending on the methods used to operate the project; e.g., windrow composting verses ASP composting) compared to the current demand of the existing facility, and any use of natural gas or propane would be negligible on a regional basis. For details related to the estimated electrical demand that would be associated with the project, refer to Appendix AIR-1. The precise amount of petroleum fuel demand that would be required under the project is uncertain; however, based on estimated greenhouse gas emission estimates (see Chapter 5, Air Quality) for the project and U.S. Energy Information Administration fuel coefficient data (USEIA, 2011), by year 2030, it is expected that the project could require the use of between approximately 200,000 and 220,000 combined gallons of diesel and gasoline each year.

The project would not include activities that would be considered to result in inefficient, wasteful, or unnecessary consumption of energy. In addition, the project would not reduce or interrupt existing electrical or natural gas services due to insufficient supply. It should also be noted as discussed in Chapter 5, Air Quality, the project would be inherently energy efficient by providing a local source of soil enrichment materials and reducing the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. Also, because the project would merely shift the location of the fuel consumption associated with off-road equipment and trucks from landfills to the project site, there would not likely be a net increase of fuel consumption in the region. Because the project would be inherently energy efficient, would not substantially increase fuel consumption in the region, and the operator of the facility would pay improvement and operating costs for available electricity and/or natural gas, this impact would be **less than significant**.

Mitigation: None Required.

Impact 11.3: The project would require law enforcement services from the Sonoma County Sheriff's Office. (Less than Significant)

Law enforcement services for the project would be provided by the Sonoma County Sheriff's Office. Calls for service to the project site would be typical of existing calls for service in the vicinity such as trespassing or vandalism. Calls for service from the existing composting facilities are rare. Typically criminal trespassing is associated with the adjacent landfill (Bakx, pers. comm., 2009). As with existing operations, the project is not anticipated to create a volume of calls which would affect the ability of the Department to provide adequate law enforcement services to the general area, or require the construction or alteration of police facilities. Thus, project effects to police protection services would be **less than significant**.

Mitigation: None Required.

Impact 11.4: The project would increase demand for fire protection and emergency medical services including response to wildland fires. (Less than Significant)

Fire protection services and emergency medical services at the site would be provided by the Lakeville Volunteer Fire Department. The City of Petaluma Ambulance provides emergency ambulance service for the area. Response by the Lakeville Volunteer Fire Department to the project site would be primarily associated with potential structural or compost fires, medical emergencies, on-or off-site vehicular accidents and off-site wildland fires.

The composting process creates heat which can cause fires. Other fire causes such as smoking, arson and lightning are rare but could occur. Composting facilities in California are required to comply with CCR Title 14 composting regulations (Title 14, Chapter 3.1. Article 6, §17867(8)) which requires operations to provide fire prevention, protection and control measures, including but not limited to:

- Temperature monitoring of windrows and aerated static piles
- Adequate water supply for fire suppression
- Isolation of potential ignition sources from combustible materials
- Fire-lanes shall be provided to allow fire control equipment access to all operation areas.

In addition to those mentioned specifically within the composting regulations, standard operational measures which would minimize the duration and intensity of fires, as well as the likelihood of fires spreading off-site, include limiting the size of piles, ensuring a minimum amount of space between piles and employee training for fire emergencies. Standard operational measures which aid in preventing fires include turning the windrows and watering the windrows. When excessive temperatures or fires are detected equipment including a water truck, front end loader, excavator, hose and fire extinguishers would be available. As with existing operations, the project is not anticipated to create a volume of calls which would affect the ability of the fire departments to provide adequate services to the general area, or require the construction or alteration of fire protection facilities. Thus, projects effects to fire protection and emergency medical services would be **less than significant**. Fire prevention controls incorporated into the project would also reduce risks from wildland fire to a **less-than-significant** level.

Mitigation: None Required.

Impact 11.5: The project would include new stormwater drainage facilities, the construction of which could create impacts. (Less than Significant)

The project would incorporate new on-site storm water drainage facilities which would route storm water to an on-site detention pond. The construction and operational impacts of the on-site drainage system are incorporated into the project description and thus analyzed throughout the document. However, impacts could occur as a result of construction and operation of the on-site drainage system. The construction of on-site detention ponds and stormwater drainage facilities would reduce any impact on off-site public stormwater drainage facilities. Thus, the project's impact related to construction of new stormwater drainage facilities would be **less than significant**.

Mitigation: None Required.

11.4 References

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CHAPTER 12
Traffic and Transportation

12.1 Introduction

The analyses in this chapter provide information on the local roadway network, operating levels of service (LOS), potential impact of traffic associated with the project, traffic and bicycle/pedestrian safety, road wear, and identification of mitigation measures necessary to mitigate potential significant impacts.

The transportation analysis is prepared for five scenarios, including:

- Existing (2009);
- Near-Term Cumulative Base (Year 2011);
- Near-Term Cumulative Base with Project (Year 2011);
- Long-Term Cumulative Base (Year 2030); and
- Long-Term Cumulative Base with Project (Year 2030)

Traffic count data and LOS calculations for this analysis are provided in Appendix TRAFFIC-1.

12.2 Setting

The Sonoma County Central Disposal Site (including the composting site operated by the Sonoma Compost Company) and transfer stations in the County are all located in what is generally considered rural, low-density regions. Major trip generators and attractors are dispersed throughout the County and therefore, the dominant mode of transportation is private vehicles. The transportation system in the project region is composed of an interconnected network of State, County, local roadways, and bicycle facilities. Major roadways in the project area are described below.

Roadway System and Site Access

The project site and surrounding roadway network are shown on Figures 3-1 and 3-2. The project area is served primarily by a network of rural two-lane roadways. These roadways typically lack curbs and sidewalks. The project site is located in southern Sonoma County and is accessed off a private road (Twin House Ranch Road) via Lakeville Road. The project site is approximately 6 miles southeast of the City of Petaluma, and 2.7 miles north of State Route 37 (SR 37). Regional access to the area is provided by U.S. Highway 101 (U.S. 101), State Route 116 (SR 116), and SR 37.

U.S. Highway 101 is a principal north-south freeway in Sonoma County, extending northward to Mendocino County, and southward to Marin County and points beyond. U.S. 101 provides access to/from the project site via interchanges at SR 116 and SR 37. U.S. 101 carries average daily traffic (ADT) volumes of 146,000 vehicles south of SR 37 and ADT volumes of 86,000 vehicles south of SR 116 (Caltrans, 2010).

State Route 116 is a major, generally north south route in Sonoma County, extending between SR 1 in the west and SR 121 in the east, and providing direct access to U.S. 101. In the project vicinity, SR 116 is a two-lane rural arterial with 12-foot wide travel lanes and paved shoulders that range between four and six feet in width. The posted speed limit on SR 116 is 55 miles per hour (mph). SR 116 carries an ADT of 16,600 vehicles to the north of Stage Gulch Road (Caltrans, 2010).

State Route 37 extends 21 miles along the northern shore of San Pablo Bay and connects U.S. 101 in Novato to I-80 in Vallejo. SR 37 is an east-west highway with two to four lanes and carries an ADT volume of 35,000 vehicles in the vicinity of the Lakeville Road intersection (Caltrans, 2010).

Lakeville Road is a two-lane rural arterial that extends in a generally north-south direction for approximately seven miles between SR 116 (at Stage Gulch Road) and SR 37 (Sears Point Road). In the project vicinity, Lakeville Road contains approximately 12-foot wide travel lanes plus turn lanes at intersections, and approximately four to six-foot wide paved shoulders. The roadway is posted with a 55 mph speed limit. Lakeville Road carries an estimated ADT of 16,250 vehicles in the vicinity of Twin House Ranch Road (Marks Traffic Data, 2009).

Twin House Ranch Road is an 18-foot wide paved private access road off Lakeville Road. It is an east-west road in the vicinity of the project site and primarily serves agricultural land uses. The road has no paved shoulders and the estimated right-of-way is 38 feet wide. The paved surface of this roadway is in poor condition in a number of places where there are cracks and potholes. The estimated ADT for Twin House Ranch Road is less than 500 vehicles.[1]

Existing Traffic Operating Conditions

Study Intersections

Intersection analysis was conducted at the proposed project access of Twin House Ranch Road and Lakeville Road and at two intersections on Lakeville Highway:

1. Access Driveway at Lakeville Road (side-street stop controlled)
2. Lakeville Highway at Stage Gulch Road (side-street stop controlled)
3. Lakeville Highway at Frates Road (signalized)

[1] ADT was estimated based on standard traffic engineering practices that p.m. peak-hour volumes are about ten percent of daily volumes. Peak-hour turning movement counts were collect in February 2009.

Existing Peak Weekday and Weekend Traffic Volumes

Operations the study intersections were evaluated during the weekday morning, and weekend peak periods. Vehicle turning movement counts were conducted in February 2009 at the access intersection and May 2010 at the remaining two intersections. Counts were conducted during the weekday a.m. peak period (7:00 to 9:00 a.m.) and weekend midday peak period (12:00 p.m. to 2:00 p.m.).[2] Intersection peak-period turning movement volumes are provided in Appendix TRAFFIC-1.

Intersection Level of Service (LOS) Analysis Methodology

The operation of a local roadway network is commonly measured and described using a grading system called Level of Service (LOS). The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of vehicle traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay experienced by motorists) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in long delays). This LOS grading system applies to both roadway segments and intersections. The LOS calculation methodology for intersections is dependent on the type of traffic control device, traffic signals or stop signs.

Intersection LOS calculations were conducted for the unsignalized study intersections using the methodology for side-street stop-controlled (SSSC) intersections contained in the 2000 *Highway Capacity Manual* (HCM). The LOS rating is based on the control delay for the stop-controlled movement expressed in seconds per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay, and is correlated to a LOS designation as shown in **Table 12-1**.

Intersection LOS calculations were conducted for the signalized study intersection using the methodology for signalized intersections contained in the 2000 HCM. The LOS rating is based on the average stopped delay for the overall intersection, expressed in seconds per vehicle. The methodology is based on the factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity, and is correlated to a LOS designation as shown in **Table 12-1**.

As shown in **Table 12-2**, the study intersections currently operate at acceptable levels of service (LOS C or better) during the weekday a.m. peak-hour, and weekend midday peak hour.[3] LOS calculation sheets are provided in Appendix TRAFFIC-1.

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2 The p.m. peak hour condition was not analyzed for the following reasons: the current compost facility closes at 3:00 p.m., as would the project facility; and the p.m. peak hour of background traffic on Lakeville Road at Twin House Ranch Road occurs between 4:30 p.m. and 5:30 p.m. Therefore, there would be no measurable p.m. peak hour vehicle contribution of project traffic during the p.m. peak hour.

3 The levels of service were calculated using the TRAFFIX analysis computer program.

TABLE 12-1
DEFINITIONS FOR INTERSECTION LEVEL OF SERVICE

Unsignalized Intersections		Level of Service Grade	Signalized Intersections	
Description	**Average Total Vehicle Delay (Seconds)**		**Average Control Vehicle Delay (Seconds)**	**Description**
No delay for stop-controlled approaches.	≤10.0	A	≤10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
Operations with minor delay.	>10.0 and ≤15.0	B	>10.0 and ≤20.0	Stable Operation or Minimal Delays: Generally occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
Operations with moderate delays.	>15.0 and ≤25.0	C	>20.0 and ≤35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
Operations with increasingly unacceptable delays.	>25.0 and ≤35.0	D	>35.0 and ≤55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
Operations with high delays, and long queues.	>35.0 and ≤50.0	E	>55.0 and ≤80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.	>50.0	F	>80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2000.

TABLE 12-2
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
EXISTING CONDITIONS[a]

Intersection	Traffic Control[b]	Weekday AM		Weekend Midday	
		Delay[c]	LOS	Delay[c]	LOS
Lakeville Road at Twin House Ranch Road	SSSC	16.3	C	12.5	B
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	22.6	C	14.7	B
Frates Road at Lakeville Highway	Signal	17.9	B	18.5	B

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodologies.

Peak Hour Signal Warrants

To assess the need for signalization of stop-controlled intersections, the *California Manual on Uniform Traffic Control Devices* describes eight signal warrants (Caltrans, 2010). Meeting one of the signal warrants could justify signalization of an intersection; however, the full set of warrants should be considered as part of an evaluation and survey before the decision to install a signal is made. Peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted for this study. The results of the traffic signal warrant analysis are provided for each analysis scenario and the signal warrant calculations are provided in Appendix TRAFFIC-1. The peak hour volume traffic signal warrant is not met at either of the unsignalized study intersections during the weekday a.m. and weekend peak hours.

Planned Roadway Improvements

The *2009 / 2014 Sonoma County Capital Project Plan* does not list any roadway improvement projects as funded or scheduled for Lakeville Road in the vicinity of the project site. The Draft *2009 Countywide Transportation Plan* for Sonoma County identifies the widening of Lakeville Road from two lanes to four lanes between SR 116 and SR 37. The cost associated with this improvement is estimated to be 22 million dollars. The plan does not provide a schedule or funding status for the proposed widening.

Existing Vehicle Speed on Lakeville Road

In order to evaluate existing travels speeds on Lakeville Road, speed data was collected just north of Twin House Ranch Road during the same time period (July 30-August 5, 2009) as the 24-hour traffic count data. As discussed above, the posted speed limit on Lakeville Road is 55 mph between Stage Gulch Road (north) and SR 37 (south).

The 85th percentile speed collected on Lakeville Road was 65 mph.[4] The mean, or 50th percentile average speed, was approximately 60 mph, with a 10 mph pace speed between 55 and 64 mph.[5] Overall, the speed survey indicates vehicles on Lakeville Road are currently traveling at speeds higher than the posted speed limit. Data for this analysis is provided in Appendix TRAFFIC-1.

Collision Records

Four years of collision records (2005-2008) were obtained from the California Highway Patrol for Lakeville Road between Stage Gulch Road and SR 37 (approximately a seven-mile-long corridor). **Table 12-3** shows a historical summary of vehicle accidents on Lakeville Road. Roughly 15 percent of the total collisions on the study roadway segment involved trucks (13 out of 89 total collisions). A summary of the accidents in the Lakeville Road corridor includes 45 property damage only collisions (50%), 38 injury accidents (43%) and six fatal collisions (7%) over the four-year period

TABLE 12-3
ACCIDENT HISTORY ON LAKEVILLE ROADWAYS IN PROJECT AREA

Roadway Segment	Distance (miles)	2005	2006	2007	2008	2005-2008 Average	Accident Rate (per MVMT)[a]
Lakeville Road (Stage Gulch to SR 37)	7.0						
- Total Accidents		22	22	34	11	22.3	0.54
- Accidents Involving Trucks		4	3	5	1	3.3	
Accident Rates – 2006 (accidents per million vehicle miles traveled)							
Sonoma County Average: 2-lane rural roads							1.19
Caltrans District 4: 2-lane rural roads							1.18
Statewide Average: 2-lane rural roads							1.09

a. MVMT - Million Vehicle Miles Traveled
SOURCES: ESA 2008, using data from California Highway Patrol, 2009; Caltrans *2006 Accident Data on California State Highways,* 2006b

The study roadway has an overall accident rate below statewide and Sonoma County averages for two-lane roads in rural settings. As shown in Table 12-3, the latest accident rate for two-lane rural roads in Sonoma County was 1.19 accidents per million vehicle miles traveled (MVMT), while the statewide average for two-lane rural roads was 1.09 accidents per MVMT.

Lakeville Road had an average annual accident rate of 0.54 accident per MVMT, which is lower than both the County's and State's averages for two-lane rural roads. Of the 89 collisions recorded over the past four years on Lakeville Road, 13 involved trucks. A review of the records for Lakeville Road indicates that approximately 40 percent of the total accidents were single-vehicle collisions with fixed objects, or non-collisions where vehicles ran off the road and became disabled. The remaining 60 percent involved two or more vehicles. Collisions on Lakeville Road were attributed to a variety of factors, including unsafe speed, following too closely, violation of right-of-way,

4 The 85th percentile speed is the speed at or below which 85 percent of the motorists drive on a given road unaffected by slower traffic or poor weather. This speed indicates the speed that most motorists on the road consider safe and reasonable under ideal conditions.

5 Pace speed is the 10 mph range in which the majority of vehicles are traveling.

and improper turning. Over two-thirds of the total collisions on Lakeville Road occurred during clear weather, while the remainder occurred on cloudy or rainy days.

Pedestrian and Bicycle Traffic

Pedestrian facilities are comprised of sidewalks, crosswalks, and pedestrian signals. The rural project area contains no pedestrian facilities.

Bicycle facilities are categorized as bike paths (Class I), bike lanes (Class II), or bike routes (Class III). Class I bike paths are paved trails that are separated from the roadways. Class II bike lanes are lanes on roadways that are designated for use by bicycles by striping, pavement legends, and signs. Class III bike routes are roadways that are designated for bicycle use with signs, but have partial or no striping or pavement legends, or have bike lane width not meeting Class II criteria. There are currently over 77 miles of Class I bike paths, 121 miles of Class II bike lanes and 43 miles of Class III routes in Sonoma County (SCTA, 2008). However, within the vicinity of the project site, there are currently no designated bike facilities.

The 2010 Sonoma County Bicycle and Pedestrian Master Plan classifies Lakeville Road (south of SR 116 and north of SR 37) as proposed Class II bike lanes (Priority 3).[6] There was no bicycle activity observed on Lakeville Road in the vicinity of the proposed project site access road during the peak two-hour weekday morning and weekend traffic counts conducted in February 2009. However, week-long traffic counts documented between 200 and 300 bicyclists on Lakeville Road in late July – early August 2009. Weekend bicycle traffic was substantially higher than on weekdays (see Appendix TRAFFIC-1).

Regulatory Framework

The development and regulation of the project area transportation network primarily involves state and local jurisdictions. All roads within the project area are under the jurisdiction of state and local agencies. State jurisdiction includes permitting and regulation of the use of state roads, while local jurisdiction includes implementation of state permitting, policies, and regulations, as well as management and regulation of local roads. Applicable state and local laws and regulations related to traffic and transportation issues are discussed below.

California Department of Transportation

The California Department of Transportation (Caltrans) manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. Heavy trucks accessing the project site use roadways that fall under Caltrans' jurisdiction, primarily U.S. 101, SR 37 and SR 116. Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials, and for construction-related traffic disturbance.

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6 The Sonoma County Bicycle and Pedestrian Advisory Committee has prioritized each individual project included in the 2010 Bicycle and Pedestrian Master Plan into one of three categories (Priority 1: High; Priority 2: Medium; and Priority 3: Low).

Sonoma County

Lakeville Road is under the jurisdiction of Sonoma County. County policies and regulations regarding the design, use, or obstruction of roadways are detailed in the Sonoma County General Plan 2020 *Circulation and Transit Element* (Sonoma County PRMD, September 23, 2008). The majority of these goals and policy guidelines in the Circulation and Transit Element pertain to the development and planning of roadways and transit systems.

The *Draft 2009 Countywide Transportation Plan* for Sonoma County provides further guidance for transportation planning and associated goals and policies (SCTA, 2009). This plan focuses on the design and implementation of improvements to the county circulation system, including roadways, bikeways, and rail service.

Sonoma County's General Plan 2020 Circulation and Transit Element Objectives related to level of service standards include:

Objective CT-3.1: Maintain LOS C or better on roadway segments unless a lower LOS has been adopted.

Objective CT-3.2: Maintain LOS D or better at roadway intersections.

Objective CT-3.3: Allow the above levels of service to be exceeded if it is determined to be acceptable due to environmental or community values, or if the project(s) has an overriding public benefit that outweighs lower levels of service and increased congestion

12.3 Impacts and Mitigation Measures

Intersection Operating Conditions

Hours of Operation

The existing composting facility located at the Sonoma County Central Disposal Site (Sonoma Compost Company) currently accepts material during the hours of 7:00 a.m. to 3:00 p.m. Monday through Saturday, with general operation of the facility during the hours of 6:30 a.m. to 5:30 p.m.[7] Although the project may be open to the public on Sundays, the hours of operation would not change for the project.

Project Trip Generation

The vehicle trip generation for the project was estimated by reviewing annual historical Sonoma County Waste Management Agency data for green material and wood waste processed at the Central Compost Facility. Additional data was received from Sonoma Compost Company, the private company that manages the compost operation under contract to the County. Green material throughput for Fiscal Year 2007/08 (July-June) totaled 94,400 tons at the compost facility. This material was delivered via haul trucks (standard garbage trucks) with average loads of 5.5 tons,

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7 The facility is permitted to accept material on Sundays too, but due to budgetary considerations, the site is currently closed to the general public on Sundays.

mixed organic material (MOM) trucks with average loads of 15.7 tons and self haul vehicles (passenger cars with trailers, pickup trucks, etc.) which average 0.47 tons per load.

The project trip generation estimates shown in **Table 12-4** assumes that each vehicle generates at a minimum two trips to and from the site. The daily weekday total of 352 trips is roughly the equivalent of 176 vehicles. In general, employees often account for more than two trips per day (commute, errands, lunch, etc.); however, it was observed that most employees at the site do not leave until the end of their shift. The current compost operation employs 24 people. Employees generate an estimated 32 daily trip ends based on a vehicle occupancy rate of 1.5 persons per vehicle.

TABLE 12-4
SUMMARY OF EXISTING COMPOST FACILITY TRIP GENERATION

	Daily [a]		AM Peak Hour			Weekend Peak Hour		
Source	**Weekday**	**Weekend**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Haul Trucks	74	10	N/A	N/A	N/A	N/A	N/A	N/A
MOM Trucks	14	10	N/A	N/A	N/A	N/A	N/A	N/A
Self Haul Vehicles	172	260	N/A	N/A	N/A	N/A	N/A	N/A
Compost Sales [b]	56	168	N/A	N/A	N/A	N/A	N/A	N/A
Bio Fuel (outgoing fuel for biomass plants)	4	4	N/A	N/A	N/A	N/A	N/A	N/A
Employees	32	32	N/A	N/A	N/A	N/A	N/A	N/A
Total	**352**	**484**	**24**	**14**	**38**	**52**	**46**	**98**

a. Haul, MOM and Self Haul vehicle trip estimates based on Sonoma County Waste Management Agency 2008 Data. Compost sales, Bio Fuel and Employee trip generation data from Sonoma Compost Company, 2009.
b. Compost Sale trips reduced 25% to account for shared trip activity with self haul trips.

SOURCE: ESA, 2009.

Table 12-5 shows current levels of peak hour activity by vehicle type for the compost facility during the weekday a.m. peak hour (7:00 a.m. to 8:00 a.m.) and weekend peak hour (12:15 p.m. to 1:15 p.m.). The current compost facility stops accepting material daily at 3:00 p.m., and the project would also close at that time. The p.m. peak hour of background traffic on Lakeville Road at Twin House Ranch Road occurs between 4:30 p.m. and 5:30 p.m., and therefore, there would be no measurable p.m. peak hour vehicle contribution of project traffic at this location.

TABLE 12-5
SUMMARY OF EXISTING PEAK HOUR PROJECT TRIP GENERATION

	Inbound				Outbound				
Peak Hour	**Car / Trailer Pickup**	**Medium Truck**	**Heavy Truck**	**Total In**	**Car / Trailer Pickup**	**Medium Truck**	**Heavy Truck**	**Total Out**	**Peak Hour Total**
AM Peak Hour (7:00-8:00 a.m.)	14	3	7	24	5	3	6	14	**38**
Weekend Peak Hour (12:15-1:15 p.m.)	47	2	3	52	42	1	3	46	**98**

SOURCE: ESA February 2009.

The *Sonoma Countywide Composting Feasibility Study, September 2005* projected 2030 levels of green waste at 200,000 tons per year and wood waste at 23,000 tons per year (a projected growth rate of about three percent per year). The projections were developed from Sonoma County Waste Management Agency historical data, and State of California, Department of Finance estimates of population growth in Sonoma County between 2000 and 2030. The 2030 estimates were used for this analysis to develop future estimates of trip generation at the project site. The use of the 2030 waste projections likely provides a conservatively high estimate given recent annual levels of green waste at below 100,000 tons. **Table 12-6** shows estimates of 2030 daily and peak hour weekday a.m. and weekend project vehicle traffic.

TABLE 12-6
SUMMARY OF 2030 PROJECT TRIP GENERATION

	Daily		AM Peak Hour			Weekend Peak Hour		
Source	**Weekday**	**Weekend**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Haul Trucks	175	24	N/A	N/A	N/A	N/A	N/A	N/A
MOM Trucks	33	24	N/A	N/A	N/A	N/A	N/A	N/A
Self Haul Vehicles	406	614	N/A	N/A	N/A	N/A	N/A	N/A
Compost Sales [a]	131	397	N/A	N/A	N/A	N/A	N/A	N/A
Bio Fuel	9	9	N/A	N/A	N/A	N/A	N/A	N/A
Employees	48	48	N/A	N/A	N/A	N/A	N/A	N/A
Total	**803**	**1,116**	**55**	**32**	**87**	**119**	**106**	**225**

a. Compost Sales trips reduced 25% to account for shared trip activity with self haul trips.

SOURCE: ESA, 2009.

Project Vehicle Distribution Patterns

Contractor haul trucks and MOM trucks would be distributed primarily to the north of the project site. Trucks traveling from the Annapolis, Guerneville and Healdsburg Transfer Stations would continue southbound on U.S. 101 to the SR 116 Lakeville Highway exit and continue south on Lakeville Road to Twin House Ranch Road. Other contract haul trucks destined for the current compost facility at Petaluma would likewise use U.S. 101 to the SR 116 Lakeville Highway exit. Trucks traveling from the Sonoma Transfer Station would travel west on Stage Gulch Road and then south on Lakeville Road.

Self haul vehicles hauling materials to the project site would be distributed throughout the Central and Southwest areas of the County. Much of the self haul traffic is from the Santa Rosa, Rohnert Park, Cotati, Petaluma corridor. This traffic would also be expected to use U.S. 101 to the SR 116 exits at Lakeville Highway. Employee and compost sales traffic would follow similar distribution patterns to the self haul vehicles.

Based on traffic studies performed by ESA, the intersection analysis assumes 90 percent of project traffic would be distributed to the project site to and from the north (on Lakeville Highway), and the other 10 percent to and from the south off SR 37 to Lakeville Road.

Traffic Volume Growth Rate

Year 2011 (Near-Term Cumulative) and 2030 (Long-Term Cumulative) project area growth in traffic volumes were developed using the recently updated Sonoma County Transportation Authority (SCTA) Transportation Demand Model (2005-2035).

The applied growth rates were developed based primarily on the link volume data (ADT and p.m. peak hour) from the SCTA model for Lakeville Road in the vicinity of Twin House Ranch Road. The model provided baseline 2005 and forecast 2035 for daily and p.m. peak-hour directional volumes. A 67 percent increase in peak-hour traffic was forecasted for Lakeville Road over the 30-year model growth projection. The daily traffic volume forecast were higher (a 79 percent increase over 30 years) than the peak-hour projections. A 1.7 percent annual growth rate was developed and applied to the intersection volumes during the weekday a.m. and weekend peak hours based on the SCTA link volume data.[8]

Significance Criteria

According to Appendix G of the CEQA *Guidelines,* a project that would "cause an increase in traffic which is substantial in relation to existing traffic load and capacity of the street system" may be deemed to have a significant adverse impact on the environment.

Sonoma County Significance Criteria

The following applicable County significance criteria were used to judge the transportation impacts[9]:

- At County intersections, the project would have a significant impact if the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate worse than the County's LOS D standard (i.e., at LOS E or F). This criterion applies to all signalized, all-way stop-controlled, and side street stop-controlled intersections with project traffic volumes over 30 vehicles per hour per intersection approach or per exclusive left-turn movement.
- If a County intersection currently operates, or is projected to operate, worse than the County LOS standard (i.e., at LOS E or F), then the project's impact would be significant if it causes the average vehicle delay to increase by five seconds or more. The delay will be determined by comparing intersection operations with and without the project's traffic for both the existing baseline and project future conditions. This criterion applies to all signalized, all-way stop-controlled, and side street stop-controlled intersections with project traffic volumes over 30 vehicles per hour per intersection approach or per exclusive left-turn movement.
- The County traffic study guidelines indicate that a project would result in a significant impact if it failed to meet minimum standards for any of the following areas of analysis:
    - On-site and Frontage Improvements – Proposed on-site circulation and street frontage would not meet the County's minimum standards for roadway or

8 The SCTA model does not generate traffic volumes for the weekday a.m. and weekend peak hours, and the annual growth rate for those peak-hour periods was assumed to be the same as for the weekday p.m. peak hour.

9 These significance criteria are from the County traffic study guidelines, which are consistent with County General Plan guidelines, and are treated as an elaboration of the latter.

driveway design, or potentially would result in safety hazards, as determined by the County in consultation with a registered traffic engineer.

- Emergency Access – The project site would have inadequate emergency access.
- Alternative Transportation – The project would provide inadequate facilities for alternative transportation modes (e.g., bus turnouts, bicycle racks, pedestrian pathways) and/or the project would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation.
- Road Hazards – Hazards are increased due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment, heavy pedestrian or truck traffic).
- Vehicle Queues – The addition of project traffic would cause the 95^{th} percentile queue length to exceed roadway turn lane storage capacity.
- Signal Warrants – The addition of the project's vehicle or pedestrian traffic would cause an intersection to meet or exceed Caltrans' signal warrant criteria.
- Turn Lanes – The addition of project traffic would cause an intersection to meet or exceed criteria for provision of a right- or left-turn lane on an intersection approach.
- Sight Lines – The project constructs an unsignalized intersection (including driveways) or adds traffic to an existing unsignalized intersection approach that does not have adequate sight lines based upon Caltrans criteria for state highway intersections and County criteria for County roadway intersections.

In addition, for purposes of this EIR, the following additional significance criterion was used to judge the transportation impacts:

- The project would have a significant impact to roadwear if it would increase heavy truck traffic volumes that would increase the Traffic Index (TI) by more than 1.5 on roadways built to accommodate heavy truck traffic, and by more than 0.5 on other roadways, or would add vehicles whose weight exceeds weight limit restrictions on the affected roadway.

Impact Discussion

Near-Term Cumulative Base (Year 2011)

The project if approved would begin operations sometime in 2011. The results of the LOS analysis for Near-Term Cumulative Base Conditions are summarized in **Table 12-7**. Near-term Cumulative Base traffic conditions at the study intersections are projected to operate at acceptable levels of service (LOS C or better) during both peak hours. The peak-hour traffic volume signal warrant is not met under any of the near-term peak-hour conditions.

TABLE 12-7
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
NEAR-TERM CUMULATIVE BASE CONDITIONS [a]

Intersection	Traffic Control [b]	Scenario	Weekday AM		Weekend Midday	
			Delay[c]	LOS	Delay[c]	LOS
Lakeville Road at Twin House Ranch Road	SSSC	Existing	16.3	C	12.5	B
		Near-Term Base	16.7	C	12.5	B
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	Existing	22.6	C	14.7	B
		Near-Term Base	24.0	C	15.1	C
Frates Road at Lakeville Highway (SR 116)	Signal	Existing	17.9	B	18.5	B
		Near-Term Base	18.3	B	18.9	B

a Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Near-Term Cumulative Base Plus Project Traffic Impacts

Impact 12.1: The project would contribute to Near-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour. (Less than Significant)

Near-Term Cumulative Base plus Project conditions are defined as Near-Term Cumulative Base plus traffic added by the project. Estimated vehicle trip generation for the project under this condition is the existing trip generation estimated presented in Table 12-4 above. Project impacts are then identified by comparing the LOS results under Near-Term Cumulative plus Project conditions to those under Near-Term Cumulative Base conditions. Traffic volumes were adjusted to reflect a passenger car equivalent (PCE) of 1.5 for medium truck traffic and 3.0 for heavy truck traffic.[10]

The results of the LOS analysis for Near-Term Cumulative Base plus Project conditions are shown in **Table 12-8**. With the addition of project-generated traffic, the study intersections are projected to continue to operate at an acceptable LOS D or better during both peak hours. The peak-hour traffic volume signal warrant is not met under any of the near-term plus project peak-hour conditions. This impact would be **less than significant**.

While peak hour intersection operations would not be significantly affected under near-term conditions by project generated traffic, there are safety and design related issues that would pose potential significant impacts in the near-term. These issues are addressed in the bicycle/pedestrian safety, traffic safety and access road sections.

Mitigation Measure: None Required.

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10 For this analysis, a heavy truck would be equivalent to three passenger cars and a medium truck would be equivalent to 1.5 passenger cars.

TABLE 12-8
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
NEAR-TERM CUMULATIVE BASE PLUS PROJECT CONDITIONS[a]

Intersection	Traffic Control[b]	Scenario	Weekday AM		Weekend Midday	
			Delay[c]	LOS	Delay[c]	LOS
Lakeville Road at Twin House Ranch Road	SSSC	Existing	16.3	C	12.5	B
		Near-Term Base	16.7	C	12.5	B
		Near-Term Plus Project	23.1	C	19.1	C
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	Existing	22.6	C	14.7	B
		Near-Term Base	24.0	C	15.1	C
		Near-Term Plus Project	26.0	D	16.3	C
Frates Road at Lakeville Highway (SR 116)	Signal	Existing	17.9	B	18.5	B
		Near-Term Base	18.3	B	18.9	B
		Near-Term Plus Project	18.4	B	18.9	B

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Near-Term Cumulative Traffic Safety

Access Road Improvements

Impact 12.2: The project could worsen traffic safety due to design features or incompatible uses. (Significant)

The project would be accessed via Twin House Ranch Road, a private road, about three-fourths of a mile from Lakeville Road. As described in the Setting, this is a two-way, 18-foot-wide paved road in poor condition with an ADT of fewer than 500 vehicles per day. Project traffic in the near-term is projected to add approximately 350 vehicle trips during a typical weekday and close to 500 vehicle trips on weekend days. Approximately 30 percent of the weekday vehicle trips would consist of heavy haul trucks.

The existing conditions of Twin House Ranch Road would not meet the needs of the project traffic in terms of capacity or safety. The roadway would need to be reconstructed to adequately accommodate two-way truck traffic with sufficient space at the intersection with Lakeville Road to allow incoming and outbound vehicles to maneuver without adversely affecting traffic operation in the public right-of-way. This is a **significant** impact.

Mitigation Measures

Mitigation Measure 12.2a: Prior to the start of project operations, SCWMA shall widen (to County standards) the Twin House Ranch Road cross-section between Lakeville Road and the project site to provide two 12-foot-wide lanes, a dedicated left-turn lane and shared through-right turn lane on the Twin House Ranch Road intersection approach to Lakeville Road, and a dedicated southbound right-turn lane on Lakeville Road of a length and turning radius sufficient to fully accommodate southbound right-turning trucks from Lakeville Road separated from the southbound through traffic flow.

Mitigation Measure 12.2b: Prior to the start of project operations, SCWMA shall install a traffic refuge area (about 200 feet long) on Lakeville Road to accommodate left turning vehicles from Twin House Ranch Road.

The refuge area would align opposite to the existing northbound left-turn lane on Lakeville Road and would allow left-turning vehicles from Twin House Ranch Road to cross one lane of through traffic at a time.[11]

This intersection is located within Sonoma County's jurisdiction, and thus implementation of these mitigation measures would require encroachment permits from the County. The current paved surface on Lakeville Road is 36 feet (two 12-foot-wide travel lanes and two six-foot-wide shoulders). However, the current paved surface at the study intersection is approximately 45 feet and accommodates a northbound left turn lane (11 feet wide, 160 feet long), and a southbound paved apron (9 to 18 feet wide, 125 feet long) that facilitates right turns onto Twin House Ranch Road. It is estimated that a maximum right-of-way width of 60 feet would be required to construct a southbound right-turn lane, a northbound refuge area, and two 12-foot-wide through lanes and maintain the six-foot-width shoulder on the east side of Lakeville Road.

Significance after Mitigation: Less than significant. However, if implementation of Mitigation Measures 12.2a and 12.2b were not approved by Sonoma County (the jurisdiction responsible for Lakeville Road), the impact would be Significant and Unavoidable.

Alternative Transportation

Impact 12.3: The project would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation. (Significant)

The project would cause a substantial increase in vehicle and truck traffic on Lakeville Road and would increase the opportunity for conflicts between project traffic and bicyclists and/or pedestrians. The potential for conflicts would be considered greatest in circumstances where Lakeville Road would be regularly used by bicyclists or pedestrians and/or is a designated proposed bikeway, and the road does not meet current County roadway design standards (including paved shoulders of sufficient width for use by bicycles). In addition, project haul trucks could lose debris from their trailers which could end up on shoulders and in bike lanes, potentially creating a hazard for bicyclists.

As discussed in the Setting, the *2010 Sonoma County Bicycle and Pedestrian Master Plan* classifies Lakeville Road (south of SR 116 and north of SR 37) as proposed Class II bike lanes (low priority). While no bicyclists or pedestrians were observed during the peak period (two-hour) weekday and weekend traffic counts in February 2009, week-long machine counts taken in late July – early August 2009 documented that Lakeville Road was, in fact, used by as many as 200 to

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[11] Caltrans' *Highway Design Manual (Section-403.7 Refuge Areas)* states that "The shadowing effect of traffic islands may be used to provide refuge areas for turning and crossing vehicles. Adequate shadowing provides refuge for a vehicle waiting to cross or enter an uncontrolled traffic stream. Similarly, channelization also may provide a more efficient crossing of two or more traffic streams by permitting drivers to select a time gap in one traffic stream at a time."

300 bicyclists per day. Bicycle trips on any given day throughout the year could be higher or lower than those counted in July 2009, depending on season, weather conditions, size of bicycling groups, and other factors.

Although the project would not prevent the county from implementing bicycle improvements included in the Bicycle and Pedestrian Master Plan, project-generated increase in traffic volumes on Lakeville Road between SR 116 and SR 37 could create potential conflicts with the plan to provide Class II bike lanes. In addition, debris falling from project vehicles could cause safety issues for bicyclists along the haul route, and this impact is considered **significant**.

Mitigation Measures

> **Mitigation Measure 12.3a:** The operator of the facility shall ensure that all contract haul trucks are covered to prevent spillage of materials onto haul routes.
>
> **Mitigation Measure 12.3b:** The operator shall conduct regular sweeping of the intersection of Lakeville Road / Twin House Ranch Road to keep it free of debris and dirt that may accumulate from exiting trucks.
>
> **Significance after Mitigation:** Less than Significant.

Road Hazards

Impact 12.4: The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic. (Significant)

The project would cause an increase in traffic including heavy trucks on Lakeville Road. The majority of the project traffic would travel to and from the north on Lakeville Road. This distribution pattern of project traffic would result in increased numbers of southbound vehicles slowing to turn right onto Twin House Ranch Road to access the project site and likewise an increase in traffic turning left from Twin House Ranch Road across two through lanes of traffic onto Lakeville Road. Currently, both of these movements are relatively infrequent on a daily basis. A review of the stopping sight distance requirements for Lakeville Road at Twin House Ranch Road found the available sight distance to be adequate in both directions.

The analysis of near-term traffic impacts indicated that the intersection of Lakeville Road / Twin House Ranch Road would continue to operate at acceptable LOS C or better with project traffic. However, the introduction of increased turning movements to and from Lakeville Road at Twin House Ranch Road would increase the potential for vehicle conflicts and collisions in the project area. The posted speed limit on Lakeville Road is 55 mph. Based on field observations both visual and driving, it was determined that the 55 mph speed limit was regularly exceeded during weekdays, weekends, peak commute periods and off peak periods.[12] The potential for the increase in vehicle conflicts would be a **significant** impact.

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[12] A vehicle traveling at 60 mph needs approximately 230 feet in order to come to a complete stop (NHTSA, 1998).

Mitigation Measures

Mitigation Measure 12.4a: Prior to the start of project operations, SCWMA shall post warning signs on Lakeville Road 250 feet in advance of the access driveway (Twin House Ranch Road) that cautions drivers about truck traffic entering and exiting the roadway.

The warning signs shall follow guidelines set forth in the *California Manual on Uniform Traffic Control Devices* (Caltrans, 2010).

Mitigation Measure 12.4b: SCWMA shall implement intersection improvements identified in Mitigation Measures 12.2a and 12.2b.

Significance after Mitigation: Less than Significant; however, if implementation of Mitigation Measures 12.2a and 12.2b were not approved by Sonoma County (the jurisdiction responsible for Lakeville Road), the impact would be Significant and Unavoidable.

Long-Term Cumulative Base (Year 2030)

Year 2030 was selected as the subject year for buildout of the proposed compost facility, given the assumed first year of operation of the project (2011) and the 20-year forecasts developed for the *Sonoma Countywide Composting Feasibility Study*. For Long-Term Cumulative Base conditions, it is assumed that no off-site road improvements in the study area (presented under *Planned Roadway Improvements*, in the Setting) would be in place. The results of the LOS analysis for Long-Term Cumulative Base conditions are summarized in **Table 12-9**.

TABLE 12-9
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
LONG-TERM CUMULATIVE BASE CONDITIONS[a]

			Weekday AM		Weekend Midday	
Intersection	**Traffic Control[b]**	**Scenario**	**Delay[c]**	**LOS**	**Delay[c]**	**LOS**
Lakeville Road at Twin House Ranch Road	SSSC	Existing Long-Term Base	16.3 20.8	C C	12.5 42.8	B E
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	Existing Long-Term Base	22.6 46.2	C E	14.7 14.4	B B
Frates Road at Lakeville Highway (SR 116)	Signal	Existing Long-Term Base	17.9 22.1	B C	18.5 23.0	B C

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Under Long-Term Cumulative Base traffic conditions, the eastbound approach (Twin House Ranch Road) of the intersection of Lakeville Road / Twin House Ranch Road would operate at an unacceptable LOS E during the weekend peak hour (and at an acceptable LOS C during the weekday a.m. peak hour). The westbound approach (Stage Gulch Road) of the intersection of Stage Gulch Road / Lakeville Highway – Lakeville Road would operate at an unacceptable LOS E during the weekday a.m. peak hour (and at an acceptable LOS C during the weekend peak hour). The intersection of Frates Road / Lakeville Highway would operate at an acceptable LOS C during both study peak hours.

Long-Term Cumulative Base plus Project Impacts

Impact 12.5: The project would contribute to Long-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour. This would be a significant impact during the a.m. and weekend peak hour. (Significant)

Long-Term Cumulative Base plus Project conditions are defined as Long-Term Cumulative Base conditions plus traffic added by the project. Year 2030 vehicle trip generation for the proposed compost facility is shown in Table 12-6. The 2030 project trip generation is estimated to more than double the trips at the existing Sonoma Compost Company facility. Project impacts are then identified by comparing the LOS results under Long-Term Cumulative Base plus Project conditions to those under Long-Term Cumulative Base conditions.

The results of the LOS analysis for Long-Term Cumulative Base plus Project conditions are summarized in **Table 12-10**. As a result of the addition of project-generated traffic, the eastbound approach (Twin House Ranch Road) of the study intersection would degrade from an acceptable LOS C to an unacceptable LOS F during the weekday a.m. peak hour. The service level would remain at LOS E during the weekend peak hour, but the average vehicle delay would increase by more than the five-second threshold of significance. The peak-hour traffic volume signal warrant is not met under any of the long-term plus project peak hour conditions. Because intersection traffic volumes at the Lakeville Road / Twin House Ranch Road intersection would not meet the threshold for signalization under near-term or long-term conditions, intersection modifications would be needed to improve peak hour intersection operations to acceptable (LOS D or better) levels. Without the intersection modifications, this would be a **significant** impact.

In addition, project-generated trips would cause the westbound approach (Stage Gulch Road) of the intersection of Stage Gulch Road / Lakeville Highway – Lakeville Road to degrade from LOS E to LOS F during the weekday a.m. peak hour, and the average vehicle delay would increase by more than the five-second threshold of significance. Because intersection traffic volumes at the Stage Gulch Road / Lakeville Highway – Lakeville Road intersection would not meet the threshold for signalization under near-term or long-term conditions, intersection modifications would be needed to improve peak hour intersection operations to acceptable (LOS D or better) levels. Without the intersection modifications, this would be a **significant** impact.

TABLE 12-10
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
LONG-TERM CUMULATIVE BASE PLUS PROJECT CONDITIONS[a]

Intersection	Traffic Control[b]	Scenario	Weekday AM		Weekend Midday	
			Delay[c]	LOS	Delay[c]	LOS
Lakeville Road at Twin House Ranch Road	SSSC	Existing	16.3	C	12.5	B
		Long-Term Base	20.8	C	42.8	E
		Long-Term Plus Project	**50.2**	**F**	**48.9**	**E**
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	Existing	22.6	C	14.7	B
		Long-Term Base	46.2	E	14.4	B
		Long-Term Plus Project	**62.3**	**F**	24.7	C
Frates Road at Lakeville Highway (SR 116)	Signal	Existing	17.9	B	18.5	B
		Long-Term Base	22.1	C	23.0	C
		Long-Term Plus Project	22.8	C	24.1	C

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Mitigation Measures

Mitigation Measure 12.5a: Implement Mitigation Measure 12.2b (install a 200-foot-long traffic refuge area on Lakeville Road to accommodate left turning vehicles from Twin House Ranch Road).

Implementation of Mitigation Measure 12.2b would improve the LOS at the Lakeville Road and Twin House Ranch Road intersection to LOS C or better during the weekday a.m. peak hour and weekend peak hour, as drivers turning from Twin House Ranch Road left onto Lakeville Road would be able to select a time gap in one traffic stream at a time (as described in Footnote 11). As the intersection would operate at an acceptable LOS after mitigation, the project would have a less-than-significant impact.

Mitigation Measure 12.5b: Prior to Year 2030, SCWMA shall install a traffic refuge area (about 200 feet long) on Lakeville Road to accommodate left turning vehicles from Stage Gulch Road.

Implementation of Mitigation Measure 12.5b would improve the LOS at the Stage Gulch Road and Lakeville Highway – Lakeville Road intersection to LOS C during the weekday a.m. peak hour, as drivers turning from Stage Gulch Road left onto Lakeville Road would be able to select a time gap in one traffic stream at a time (as described in Footnote 11). As the intersection would operate at an acceptable LOS after mitigation, the project would have a less-than-significant impact.

Significance after Mitigation: Less than significant; however, if implementation of Mitigation Measures 12.2b and 12.5b were not approved by Sonoma County (the jurisdiction responsible for Lakeville Road), the impact would be Significant and Unavoidable.

Long-Term Cumulative Traffic Safety

Road Hazards

Impact 12.6: The project would generate turning movements by heavy vehicles to and from Lakeville Road at Twin House Ranch Road, increasing the potential for road hazard conflicts between project traffic and through traffic. (Significant)

As described under Impact 12.4, the project would cause an increase in traffic including heavy trucks on Lakeville Road, and the distribution pattern of project traffic would result in increased numbers of southbound vehicles turning right onto Twin House Ranch Road and of traffic turning left from Twin House Ranch Road onto Lakeville Road. The analysis of long-term traffic conditions showed that the intersection of Lakeville Road / Twin House Ranch Road would deteriorate to unacceptable LOS E or F conditions as a result of increased levels of project traffic (weekday a.m. peak hour, weekend peak hour) and due to forecasted increases in background traffic. During peak hour operations, 2030 project traffic was estimated to increase by more than 100 percent over current levels of project vehicle activity. The potential for the increase in vehicle conflicts would be a **significant** impact.

Mitigation Measures

> **Mitigation Measure 12.6a:** Implement Mitigation Measure 12.4a (posting of warning signs on Lakeville Road in advance of Twin House Ranch Road that cautions drivers about truck traffic entering and exiting the roadway).
>
> **Mitigation Measure 12.6b:** SCWMA shall implement intersection improvements identified in Mitigation Measures 12.2a and 12.2b.
>
> **Significance after Mitigation:** Less than Significant. However, if implementation of Mitigation Measures 12.2a and 12.2b were not approved by Sonoma County (the jurisdiction responsible for Lakeville Road), the impact would be Significant and Unavoidable.

Roadwear Impacts

Impact 12.7: The project could contribute to the degradation of pavement on public roads. (Significant)

The truck trips generated by the project would cause incremental damage and wear to roadway pavement surfaces along the haul route. The degree to which this impact would occur depends on the roadway's design (pavement type and thickness) and its current condition. Freeways and state routes, such as U.S. 101 and SR 116, are designed to handle a mix of vehicle types, including heavy trucks, and thus, the project's impact on those facilities would be negligible. Local roadways, such as Twin House Ranch Road are generally not designed to accommodate heavy vehicles, and truck travel on this road would have the potential to adversely affect the pavement condition. Roadway damage can include conditions such as loose asphalt and potholes that have the potential to make driving conditions less safe. Roadways significantly affected from project truck traffic would have to be upgraded to support heavy trucks.

The capability of a roadway to handle a traffic load is measured by deflection testing, coring, and visual condition surveys of the road. These methods allow the roadway's TI to be assessed. The TI is a logarithm-based scale that indicates the ability of the pavement structure to support the repetitive wheel and axle loads of large trucks, given a sound structural roadway subbase. Typically, TI ratings of 7.0 to 9.0 are calculated for roadways that are not expected to carry appreciable amounts of truck traffic. Higher TI values of 9.0 to 10.0 are typical of major arterial roadways with heavy truck traffic, and values of 10.0 or more are common for freeways and freeway ramp systems. The effects on pavement life from passenger cars, pickups, and two-axle, four-wheel trucks are considered to be negligible.

To evaluate the potential project impact on roadway condition and maintenance, the estimated TI for current and project conditions was calculated for roadway segments on Lakeville Road and Twin House Ranch Road. The TI was calculated in accordance with the procedures specified in the Caltrans *Highway Design Manual*, 2006a on the basis of a 20-year roadway design period (the standard period used by Caltrans) and average daily truck traffic volumes (Caltrans, 2008a). A summary of the TI calculations for roadways on the project haul route are presented in **Table 12-11**.

The existing TI for Lakeville Road in the vicinity of the project is 11.8. The addition of project daily truck traffic would increase the TI to 11.9. This increase falls below the 1.5 significance criteria TI increase threshold for roadways built to accommodate heavy truck traffic. The increase in the TI on Lakeville Road due to project truck traffic would be less than significant. The existing TI for Twin House Ranch Road is 7.8 and as indicated in Table 12-11, the project would increase the estimated TI by 1.3 to a TI of 9.1. This would be considered a significant impact because the increase in TI would exceed the threshold of 0.5 for roadways not designed to accommodate heavy truck traffic. This impact is **significant**.

TABLE 12-11
CALCULATED TRAFFIC INDEX (TI) FOR PROJECT HAUL ROUTES [a]

Roadway	Existing	Existing plus Project
Lakeville Road	11.8	11.9
Twin House Ranch Road	7.8	**9.1**

a. Traffic Indices in this table represent values calculated on the basis of existing and project truck traffic volumes, and Equivalent Single-Axles Load factors in the Caltrans Highway Design Manual.

Bold typeface signifies a significant impact.

SOURCE: ESA, 2009 and the Caltrans *Highway Design Manual* 2006a Traffic Index methodology.

Mitigation Measure

Mitigation Measure 12.7: Implement Mitigation Measure 12.2a (widen Twin House Ranch Road to County standards between Lakeville Road and the project site), which would increase the pavement's Traffic Index to support the project-generated heavy truck traffic. Improving the road to County standards will lessen the degradation of the pavement due to the project.

Significance after Mitigation: Less than Significant

Construction

Impact 12.8: Project construction would result in temporary increases in truck traffic and construction worker traffic. (Significant)

Project construction activities would generate offsite traffic that would include the initial delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, the delivery of materials throughout construction, and the removal of construction debris.

Construction of the levee would require a total of approximately 11,100 truckloads of imported fill assuming the use of a nine cubic yard truck. On average over the five month construction period, 220 one-way truck trips (or 110 round-trips) would occur on a daily basis. This also equates to approximately 28 one-way truck trips per hour during a typical workday.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on any roadways in the project locale. The impact of construction-related traffic would be a temporary, intermittent lessening of the capacities of study area roadways because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. However, given the proximity of the plan area to regional roadways (i.e., U.S. 101 and SR 37), construction trucks would have relatively direct routes. Most construction traffic would be dispersed throughout the day. Thus, the temporary increase would not significantly disrupt daily traffic flow on any of the project area roadways.

Although the impact from the number of vehicles would be less than significant, truck movements could have an adverse effect on traffic flow in the area caused by the slower speeds of these trucks and longer turning maneuvers. As such, the impact is considered **significant**.

Mitigation Measure

Mitigation Measure 12.8: The construction contractor(s) shall develop a construction management plan for review and approval by the Sonoma County Department of Transportation and Public Works. The plan shall include at least the following items and requirements to reduce, to the maximum extent feasible, traffic congestion during construction of this project and other nearby projects that could be simultaneously under construction:

- A set of comprehensive traffic control measures that include designating construction access routes and scheduling of major truck trips and deliveries to avoid peak traffic hours and designated construction access routes; and
- Notification of adjacent property owners and public safety personnel regarding scheduled major deliveries.

Significance after Mitigation: Less than Significant.

12.4 References

AASHTO. (American Association of State Highway and Transportation Officials). A Policy on Geometric Design of Highways and Street. 2001.

California Highway Patrol, correspondence, July 17, 2009, Vehicle Accident Reports (2005-2009) for Lakeville Road between SR 37 and Stage Gulch Road.

California Department of Transportation (Caltrans), – 2006 Collision Data on California State Highways (road miles, travel, collisions, collision rates) April 2007.

California Department of Transportation (Caltrans), *Highway Design Manual*, http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm, September 2006.

California Department of Transportation (Caltrans), – Traffic Data Branch. *2009 Traffic Volumes on California State Highways*. Available online at: http://www.traffic-counts.dot.ca.gov.

California Department of Transportation (Caltrans), *California Manual on Uniform Traffic Control Devices*, 2010.

County of Sonoma General Services, Capital Project Plans: Five Year Capital Project Plan for 2009 to 2014. Available online at: http://sonoma-county.org/gs/administration/cpp.htm, Accessed May 2010.

Sonoma County - County Bicycle and Pedestrian Master Plan, adopted April 2010.

Sonoma County, Sonoma County Year 2020, Circulation and Transit Element, September 23, 2008.

Sonoma County Transportation Authority, 2009 Countywide Transportation Plan for Sonoma County, draft April 2009. Available online at http://www.sctainfo.org/ctp.htm, accessed April 2009.

Sonoma County Transportation Authority, Traffic Model Outputs: ADT and PM Peak Hour for 2005 and 2035, contact Christopher Barney, June 17, 2009.

Transportation Research Board, *2000 Highway Capacity Manual*.

CHAPTER 13
Aesthetics

13.1 Introduction

This chapter discusses the existing visual character of the project site and analyzes the potential for the project to affect existing site visual characteristics and views. A site visit was conducted on April 23, 2009 to evaluate views from the project site and views of the project site from the surrounding area. This chapter also describes the regulatory environment relevant to protection of aesthetic landscape resources and to visual impact assessment.

13.2 Setting

Regional Characteristics

The project is located in the southern portion of Sonoma County in the Petaluma and Environs Planning Area. The prominent natural features within the planning area include the Sonoma Mountains, rolling hills near the City of Petaluma, the Petaluma River and San Pablo Bay. Urban uses are primarily visible in and around the City while rural residential and agricultural uses dominate the unincorporated areas. Visual character within this Planning Area is particularly important along scenic corridors and within community separators and scenic landscape units. The project site is located in a rural and agrarian area, near active agricultural operations, an equestrian center, and dairy farms.

Project Site Characteristics

The project site consists of agricultural land which is used for hay farming and sheep grazing. During the site visit bee boxes were located on the project site. There are no structures on the project site. The immediate vicinity includes vineyards and open space. The project site is generally flat as typical of sites used for hay farming and does not include major landforms. At the landscape level, the topography slopes very gently from east to west towards the Petaluma River. The project site is not within an area designated as a community separator or scenic landscape unit. Lakeville Road is considered a scenic corridor and is located approximately 0.5 miles east of the project site.

Viewpoints

The project site is visible from the surrounding area. For the purposes of this analysis, views of the site can be categorized as short-range (views from points adjacent to the site) and long-range (views from points over one-quarter mile from the site). Based on a review of aerial photography and April 2009 site visit, several viewpoints were chosen to characterize off-site views, as shown on **Figure 13-1**.

Short-Range Views

The project site is visible from certain short-range vantage points including Twin House Ranch Road. From Twin House Ranch Road (Viewpoint A) the project site is visible in the foreground as shown in **Figure 13-2a**. Twin House Ranch Road is a private access road used primarily by property owners and by staff and users of the Riverside Equestrian Center. The photographs reflect that the site contains no structures and is relatively flat, agricultural land and open space.

Long-Range Views

Long-range views of the project site include Riverside Equestrian Center (Viewpoint B) and public roads (Viewpoint C), including Lakeville Road. As shown in **Figure 13-2b**, from these viewpoints the project site is visible in the background. Motorist views of the site along Lakeville Road are typically short due to the speed of travel, particularly in comparison to views along Twin House Ranch Road. Depending on the water level of the Petaluma River, the project site may be visible to boats or other watercraft traveling along the Petaluma River. Normally views of the project site would be at least partially obscured by the levee which is located between the Petaluma River and the project site.

Visual Sensitivity

The Sonoma County's Permit and Resource Management Department (PRMD) provides Visual Assessment Guidelines for use in the preparation of environmental documents. While the Sonoma County Waste Management Agency (SCWMA) is not required to use these guidelines, they provide a useful method for analyzing visual impacts within Sonoma County.

Under the PRMD Guidelines, the visual sensitivity of the project site is given a rating of low, moderate, high or maximum using the definitions provided in **Table 13-1**. The project site is considered of moderate visual quality. The project vicinity is rural and characterized by agricultural uses and open space on relatively flat lands. The project site is undeveloped and consistent with nearby properties in terms of visual characteristics. The project site is not located within a scenic corridor setback (defined as 30 percent of the depth of the lot to a maximum of 200 feet from the centerline of the roadway), and the site's zoning and land use designation do not identify it as a protected scenic resource. The site itself does not constitute a significant scenic or natural resource nor does it contain individual landscape or architectural features with significant aesthetics value.

SOURCE: DeLorme Street Atlas, 2000; and ESA, 2009

Figure 13-1
Viewpoint Map

Viewpoint A looking north, project site in foreground.

Viewpoint A looking west, project site in foreground.

SOURCE: ESA, 2009

Figure 13-2a
Viewpoint Photographs

Viewpoint B looking north, project site in background.

Viewoint C looking southwest, project site in background.

SOURCE: ESA, 2009

Figure 13-2b
Viewpoint Photographs

TABLE 13-1
PRMD SITE SENSITIVITY DEFINITIONS

Sensitivity	Characteristics
Low	The site is within an urban land use designation and has no land use or zoning designations protecting scenic resources. The project vicinity is characterized by urban development or the site is surrounded by urban zoning designations and has no historic character and is not a gateway to a community. The project site terrain has slopes less than 20 percent and is not on a prominent ridgeline and has no significant natural vegetation of aesthetic value to the surrounding community.
Moderate	The site or portion thereof is within a rural land use designation or an urban designation that does not meet the criteria above for low sensitivity, but the site has no land use or zoning designations protecting scenic resources. The project vicinity is characterized by rural or urban development but may include historic resources or be considered a gateway to a community. This category includes building or construction sites with visible slopes less than 30 percent or where there is a significant natural feature of aesthetic value that is visible from public roads or public use areas (i.e. parks, trails etc.).
High	The site or any portion thereof is within a land use or zoning designation protecting scenic or natural resources, such as General Plan designated scenic landscape units, community separators, or scenic corridors. The site vicinity is generally characterized by the natural setting and forms a scenic backdrop for the community or scenic corridor. This category includes building and construction areas within the SR designation located on prominent hilltops, visible slopes less than 40 percent or where there are significant natural features of aesthetic value that are visible from public roads or public use areas (i.e. parks, trails etc.). This category also includes building or construction sites on prominent ridgelines that may not be designated as scenic resources but are visible from a designated scenic corridor.
Maximum	The site or any portion thereof is within a land use or zoning designation protecting scenic resources, such as General Plan designated scenic landscape units, community separators, or scenic corridors. The site vicinity is generally characterized by the natural setting and forms a scenic backdrop for a designated scenic corridor. This category includes building or construction sites within the scenic resource designation on or near prominent ridgelines, visible slopes greater than 40 percent or where there are significant natural features of aesthetic value that are visible from a designated scenic corridor.

SOURCE: Sonoma County, 2009. Permit and Resource Management Department Visual Assessment Guidelines.

Regulatory Environment

California Scenic Highway Program and Scenic Corridor Protection Program

In 1963, the California Legislature established the State's Scenic Highway Program, intended to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. The nearest eligible state scenic highway is State Route 37, over 2 miles south of the project site (California Scenic Highway Mapping System, 2007).

Sonoma County General Plan 2020

The Sonoma County General Plan 2020 contains objectives and policies that guide development in the County. Scenic resources within the County are discussed in the Open Space and Resource Conservation (OSRC) Element, which divides scenic resources into three resource categories, including scenic corridors, community separators, and scenic landscape units. These resources are designated on Figure OSRC-1 of the OSRC Element. The project site is not located within or in proximity to any community separator areas or scenic landscape units. Lakeville Road is designated as a scenic corridor and is located approximately 0.5 miles east of the project site. The relevant goals and objectives from the General Plan regarding visual resources are discussed below.

Goal OSRC-3 Identify and preserve roadside landscapes that have a high visual quality as they contribute to the living environment of local residents and to the County's tourism economy.

Objective OSRC-3.2 Provide guidelines so future land uses, development and roadway construction are compatible with the preservation of scenic values along designated Scenic Corridors.

Goal OSRC-4 Preserve and maintain views of the night time skies and visual character of urban, rural and natural areas, while allowing for nighttime lighting levels appropriate to the use and location.

Objective OSRC-4.1 Maintain night time lighting levels at the minimum necessary to provide for security and safety of the use and users to preserve night time skies and the night time character of urban, rural and natural areas.

Objective OSRC-4.2 Ensure that night time lighting levels for new development are designed to minimize light spillage offsite or upward into the sky.

13.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR, and taking guidance from Appendix G of the CEQA *Guidelines*, impacts to the visual quality or character of a site may occur if the project would result in:

- a substantial adverse effect on a scenic vista;
- substantial degradation of the existing visual character or quality of the site and its surroundings;
- the production of substantial light or glare; or
- substantial damage to scenic resources including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway.

Impact Discussion

Impact 13.1: The project would alter the visual character of the project site. (Less than Significant)

As discussed previously, while SCWMA is not required to use County Visual Assessment Guidelines, they provide a useful method for analyzing visual impacts within Sonoma County. The Guidelines compare the visual sensitivity of the project site with the visual dominance of the project. As discussed under **Visual Sensitivity** above, the project site is considered of moderate visual sensitivity. The visual dominance of the project is dependent on many elements or characteristics of the project as shown in **Table 13-2**. **Figure 3-5** and **Figure 3-6** shows the project layout which includes a vegetated levee surrounding the site and landscaping screen on the northern and eastern borders (where there are existing, unobstructed views). Building structures would be single-story and neutral in color. The visual dominance with these project elements would be subordinate or co-dominant.

TABLE 13-2
PRMD VISUAL DOMINANCE DEFINITIONS

Dominance	Characteristics
Dominant	Project elements are strong – they stand out against the setting and attract attention away from the surrounding landscape. Form, line, color, texture, and night lighting contrast with existing elements in the surrounding landscape.
Co-Dominant	Project elements are moderate – they can be prominent within the setting, but attract attention equally with other landscape features. Form, line, color, texture, and night lighting are compatible with their surroundings.
Subordinate	Project is minimally visible from public view. Element contrasts are weak – they can be seen but do not attract attention. Project generally repeats the form, line, color, texture, and night lighting of its surroundings.
Inevident	Project is generally not visible from public view because of intervening natural land forms or vegetation.

SOURCE: Sonoma County, 2009. Permit and Resource Management Department Visual Assessment Guidelines.

In terms of significance, under the Guidelines a subordinate or co-dominant project would be considered **less than significant** in an area of moderate sensitivity (**Table 13-3**).

TABLE 13-3
SIGNIFICANCE FOR PRMD VISUAL IMPACT ANALYSIS

	Visual Dominance			
Sensitivity	**Dominant**	**Co-Dominant**	**Subordinate**	**Inevident**
Maximum	Significant	Significant	Significant	Less than Significant
High	Significant	Significant	Less than Significant	Less than Significant
Moderate	Significant	Less than Significant	Less than Significant	Less than Significant
Low	Less than Significant	Less than Significant	Less than Significant	Less than Significant

SOURCE: Sonoma County, 2009. Permit and Resource Management Department Visual Assessment Guidelines.

Mitigation: None required.

Impact 13.2: The project could result in the production of new sources of light and/or glare. (Significant)

The levee surrounding the project would prevent significant glare impacts to off-site areas. Typical hours of operation for the project would be between 7:00 a.m. and 4:00 p.m., Monday through Sunday. The site could operate infrequently during the permitted evening hours, for activities such as temperature monitoring. Within the project area, existing nighttime lighting is associated with farm structures, residences, and automobiles traveling along nearby roadways. This lighting is of low-intensity and dispersed. The project would introduce new nighttime lighting sources on the project site for security and operational purposes. Nighttime lighting can contribute to light pollution of the nighttime sky and light trespass onto adjacent properties. Additionally, excessive lighting in rural areas could affect the natural character of the area. This impact is **significant**.

Mitigation Measure

Mitigation Measure 13.2: The following measures are based on recommendations within Sonoma County's Visual Assessment Guidelines and the Sonoma County General Plan. These measures shall be incorporated into the project design:

- Exterior lighting shall be downward casting and fully shielded to prevent glare.
- Lighting shall not wash out structures or any portions of the site.
- Light fixtures shall not be located at the periphery of the property and shall not spill over onto adjacent properties or into the sky.
- Flood lights shall not be used.
- Parking lot fixtures should be limited in height (20-feet).
- All parking lot and/or street light fixtures shall use full cut-off fixtures.
- Lighting shall shut off automatically after closing and security lighting shall be motion-sensor activated.
- Night time lighting shall be limited to the minimum necessary to provide for security and safety.

Significance after Mitigation: The above-listed lighting measures would minimize light pollution and light trespass by controlling the amount and direction of lighting. Implementation of the above mitigation measures would reduce impacts to a less-than-significant level.

13.4 References

California Scenic Highway Mapping System, 2007. Officially Designated and Eligible Scenic Highways in Sonoma County. Last updated 12-07-2007. Available at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Sonoma County, 2008. *Sonoma County General Plan 2020.* Sonoma County Permits and Resource Management Department, Sonoma, CA. Adopted by Resolution No. 08-0808 of the Sonoma County Board of Supervisors on September 23, 2008. Available at: http://www.sonoma-county.org/prmd/gp2020/adopted/index.htm.

Sonoma County, 2009. Visual Assessment Guidelines. Sonoma County Permit and Resource Management Department.

CHAPTER 14

Introduction to Review of Site 40 Alternative and Central Site Alternative

14.1 Introduction

This chapter presents an introduction to the environmental review of the Site 40 Alternative and the Central Site Alternative. The Site 40 Alternative would replace the existing compost facility at the Central Disposal Site with a site approximately 2.5 miles east of the City of Petaluma at the intersection of Adobe Road and Stage Gulch Road (State Route 116) that would have the capacity to process approximately 200,000 tons of incoming feedstock materials per year. The Site 40 Alternative compost facility would use an outdoor windrow system, aerated static pile (ASP) composting technology, or a combination of both systems. The Central Site Alternative would also replace the existing compost facility at the Central Disposal Site, but would only have the capacity to process approximately 110,000 tons of incoming feedstock materials per year. Because of limited space, the Central Site Alternative compost facility would use ASP technology. For detailed descriptions of the Site 40 Alternative and the Central Site Alternative, refer to Chapters 4.5 and 4.7, respectively.

The environmental impacts of the Site 40 Alternative are analyzed in Chapters 15 through 23 and the environmental impacts of the Central Site Alternative are analyzed in Chapters 24 through 32. In the relevant chapters that could be affected by the type of composting, the Draft EIR Site 40 Alternative analyses include the differences in environmental impacts between windrow composting and ASP composting. The Central Site Alternative analyses include impacts related to ASP composting technology.

14.2 Impact Analysis

The review of the Site 40 Alternative and the Central Site Alternative go beyond the impact analysis requirements of CEQA and are analyzed at essentially an equal level of detail as the proposed project at Site 5A. The impact chapters for the Site 40 Alternative and the Central Site Alternative analyze the extent that each of the studied issue areas could be affected if the subject alternative is approved. To avoid redundancy, specific significance criteria are identified for each issue area in relevant Chapters 5 through 13. Same as for the proposed project, the impacts are divided into the following categories:

- Significant and unavoidable; cannot be mitigated to a level that is less than significant;
- Significant, can be mitigated to a level that is less than significant;
- Less than significant, no mitigation required.

Where feasible, mitigation measures are presented for all impacts determined to be significant. In some cases, mitigation measures identified in previous relevant chapters are referenced in the subsequent chapters as also being applicable to reducing the impacts of the alternatives. Where implementation of the mitigation measures would not reduce the magnitude of the impact below the defined standard of significance, the impact is determined to be significant and unavoidable.

CHAPTER 15
Air Quality/Site 40 Alternative

15.1 Introduction

This chapter evaluates the potential impacts of the Site 40 Alternative on regional and local air quality from both stationary and mobile sources of air emissions. The information presented in this chapter is unique to the Site 40 Alternative and the reader is referred to Chapter 5, Air Quality, in cases where air quality setting information and/or impact analysis is the same for Site 40 as the project site.

15.2 Setting

Topography, Climate and Meteorology

Much of the information regarding general Climate and Meteorology is the same for Site 40 as the project site. The reader is referred to Chapter 5, Air Quality, for this information. However, in regards to topography, Site 40 is located in an area with rolling hills with elevation ranges from approximately 150 to 400 feet above mean sea level. In addition, Site 40 has a slightly greater frequency of winds blowing from the northwest and much less frequent winds blowing from the south than the project site.

Regulatory Context

Information regarding the Regulatory Context for Site 40 is the same as for the project site. The reader is referred to Chapter 5, Air Quality, for this information.

Existing Air Quality

Existing levels of air quality in the Site 40 area can generally be inferred from ambient air quality measurements conducted by the Bay Area Air Quality Management District (BAAQMD) at its nearby monitoring stations. Site 40 is approximately 5.5 miles north of the project site, 17 miles southeast of the Santa Rosa monitoring station, and 18 miles north of the San Rafael monitoring station. The Santa Rosa and San Rafael air quality monitoring station data described in Chapter 5, Air Quality, for ozone and respirable particulates (PM10 and PM2.5) would be representative of existing regional air quality at Site 40 as well. The reader is referred to Chapter 5, Air Quality, for this information.

Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include age, health problems, proximity to the emissions source, and duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The majority of the Site 40 surrounding area is open space and/or agricultural. Sensitive receptors in the immediate vicinity of the project are limited to residences. The closest residence to the Site 40 composting area is approximately 1,750 feet to the west. Other residences are approximately 1,835 feet to the east and 2,450 feet to the north. A dairy farm is approximately 1,750 feet to the south. All adjacent properties have a General Plan Land Use Zoning Designation of Land Extensive Agriculture (LEA).

15.3 Impacts and Mitigation Measures

Significance Criteria

The Significance Criteria for the air quality analysis for Site 40 is the same as for the project site. The reader is referred to Chapter 5, Air Quality, for this information.

Impact Discussion

As with the proposed project, composting for the Site 40 Alternative would utilize either an outdoor windrow system or aerated static piles (ASP). The air quality impacts of these two options are described below.

Impact 15.1: Construction of the Site 40 Alternative (associated with either windrow or ASP option) could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, PM10, and PM2.5 that could contribute to existing nonattainment conditions and further degrade air quality. (Significant)

Construction of the Site 40 Alternative would have similar impacts, regulations, and controls as those described under Chapter 5, Air Quality, Impact 5.1. BAAQMD has adopted new daily mass significance thresholds for construction-related activities in its *CEQA Air Quality Guidelines*. These thresholds are 54 pounds per day of ROG, NOx, or PM2.5 and 82 pounds per day for PM10. The URBEMIS2007 model was used to quantify construction emissions. Unmitigated and mitigated construction-related emissions for the Site 40 Alternative are presented in **Table 15-1**. As can be seen from the data in **Table 15-1**, NOx emissions would exceed the BAAQMD thresholds, even after implementation of mitigation. This impact would be significant and unavoidable.

TABLE 15-1
PEAK DAY CONSTRUCTION-RELATED POLLUTANT EMISSIONS (Pounds/Day)[a]

Year	ROG	NOx	CO	SO_2	Exhaust PM10[b]	Exhaust PM2.5[b]
2010 (Unmitigated Emissions)	8	66	35	<1	4	3
2010 (Mitigated Emissions)[c]	8	57	35	<1	2	2
BAAQMD Construction Threshold	54	54	None	None	82	54
Significant Impact?	No	Yes	No	No	No	No

a. Emissions were modeled using URBEMIS2007 and assuming 14.25 acres of the total 57 acre-site would be disturbed on the worse-case day. Default URBEMIS2007 equipment assumptions were assumed for construction. 150,000 cubic yards of soil was assumed to be exported. Construction activities were assumed to occur for the duration of one year. Additional information is included in Appendix AIR-3.
b. BAAQMD's proposed construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.
c. Mitigation measures were incorporated into the URBEMIS2007 model as surrogates for the Basic and Additional Control Measures described below under Mitigation Measure 15.1, per the BAAQMD *CEQA Air Quality Guidelines*.

Mitigation Measure

Mitigation Measure 15.1: Implement Mitigation Measure 5.1 (Construction Emission Controls).

Significance after Mitigation: Significant and Unavoidable.

As depicted in **Table 15-1**, even with mitigation implementation, NOx emissions during construction would exceed the BAAQMD threshold. This impact would be significant and unavoidable.

Impact 15.2: Operation of the Site 40 Alternative (windrow composting option) would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. (Significant)

Site 40 Alternative operational air quality impacts fall into two categories: fugitive dust impacts (re-entrainment on local roadways and on-site disturbed areas) and criteria pollutant impacts due to off-road equipment, on-road vehicles, area sources (natural gas combustion, landscaping equipment, architectural coatings), and composting off-gas emissions. The modeling methodology, emission factors, and quantified emissions would be the same for the Site 40 Alternative as those described in Chapter 5, Air Quality, Impact 5.2, except for on-road vehicle emissions, which would change due to the revised trip lengths for vehicles associated with the Site 40 Alternative operations.

Conditions were assessed for the Existing Sonoma Compost facility and projected into the future (for year 2011), and for the Site 40 Alternative's assumed first year of operation (year 2011) and maximum projected throughput (year 2030). The Site 40 Alternative and existing facility would not overlap operations. **Table 15-2**, below, presents estimated maximum (worst-case) daily emissions of criteria pollutants, and comparison to the applicable regulatory threshold. **Table 15-2** shows that the estimated unmitigated net emissions (Site 40 minus Existing emissions) of all pollutants would not exceed the applicable BAAQMD significance thresholds during operations starting in 2011. For operations in 2030, unmitigated net emissions of ROG and PM10 would exceed the BAAQMD thresholds. This would be a significant impact without mitigation.

Mitigation Measures

Mitigation Measure 15.2a: Implement Mitigation Measure 5.2a (Composting VOC Reduction via Pseudo-Biofilters).

Mitigation Measure 15.2b: Implement Mitigation Measure 5.2b (Fugitive Dust Control).

Significance after Mitigation: Less than Significant.

Implementation of the above mitigation measures would reduce net daily ROG and PM10 emissions to a less than significant level for 2011 and 2030 operations.

Impact 15.3: Operation of the Site 40 Alternative (ASP composting option) would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. (Significant)

Site 40 Alternative-related air quality impacts fall into two categories: fugitive dust impacts (re-entrainment on local roadways and on-site disturbed areas) and criteria pollutant impacts due to off-road equipment, on-road vehicles, area sources (natural gas combustion, landscaping equipment, architectural coatings), and composting off-gas emissions. The modeling methodology, emission factors, and quantified emissions would be the same for the Site 40 Alternative as those described in Chapter 5, Air Quality, Impact 5.3, except for on-road vehicle emissions, which would change due to the revised trip lengths for vehicles associated with the Site 40 Alternative operations.

Conditions were assessed for the Existing Sonoma Compost facility (for year 2011), and for the Site 40 Alternative's assumed first year of operation (year 2011) and maximum projected throughput (year 2030). **Table 15-3**, below, presents estimated maximum (worst-case) daily emissions of criteria pollutants, and comparison to the applicable regulatory threshold. **Table 15-3** shows that the estimated net emissions (Site 40 minus Existing emissions) of all pollutants would not exceed the applicable BAAQMD significance thresholds during operations starting in 2011. For operations in 2030, unmitigated net emissions of PM10 would exceed the BAAQMD thresholds. This would be a significant impact without mitigation.

TABLE 15-2
ESTIMATED MAXIMUM DAILY SITE 40 ALTERNATIVE
(WINDROW COMPOSTING) EMISSIONS

	Criteria Pollutant Emissions (lbs/day)[1]				
	ROG	**CO**	**NOx**	**PM10**	**PM2.5**
Existing Operations – Projected Year 2011					
Off-road Equipment Exhaust	4	16	38	1	1
On-road Vehicle Exhaust	1	21	5	0	0
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	712	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (3 acres)	0	0	0	39	7
Total Unmitigated Emissions (pounds/day)	**717**	**39**	**43**	**40**	**8**
Site 40 Alternative Operations - Year 2011					
Off-road Equipment Exhaust	4	16	38	1	1
On-road Vehicle Exhaust	2	49	7	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	712	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (3 acres)	0	0	0	84	14
Total Unmitigated Emissions (pounds/day)	**718**	**67**	**45**	**86**	**16**
Total Net Emissions (Unmitigated Site 40 minus Existing)	**1**	**28**	**2**	**46**	**8**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***
Total Mitigated Emissions (pounds/day) [2]	**184**	**67**	**45**	**40**	**8**
Total Net Emissions (Mitigated Site 40 minus Existing) [3]	**(533)**	**28**	**2**	**0**	**0**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***
Site 40 Alternative Operations - Year 2030					
Off-road Equipment Exhaust	4	27	6[5]	0	0
On-road Vehicle Exhaust	0	22	2	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	1,425	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (6 acres)	0	0	0	167	28
Total Unmitigated Emissions (pounds/day)	**1,429**	**51**	**8**	**168**	**29**
Total Net Emissions (Unmitigated Site 40 minus Existing)	**712**	**12**	**(35)**	**128**	**21**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***Yes***	***NA***	***No***	***Yes***	***No***
Total Mitigated Emissions (pounds/day) [2]	**360**	**51**	**8**	**79**	**14**
Total Net Emissions (Mitigated Site 40 minus Existing) [3]	**(357)**	**12**	**(35)**	**39**	**6**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***

1. Emissions were modeled using several models and emission factors, including the URBEMIS2007 model (for off-road equipment, area sources, and fugitive dust from actively disturbed areas), EMFAC2007 for on-road vehicle exhaust, the CIWMB emission factor for VOC emissions (CIWMB, 2007), and U.S. EPA AP-42 (for paved roads (section 13.2.1 - Paved Roads)). Existing emissions of fugitive dust were assumed to be controlled by watering 2 times per day and reducing speed on unpaved roads. These emission factors and modeling are described in more detail in Appendix AIR-3.
2. These values include implementation of Mitigation Measures 15.2a and 15.2b described below. The fugitive dust reduction is based on the URBEMIS2007 defaults.
3. Values in (parentheses) represent a net reduction from the Existing scenario.
4. BAAQMD has established mass thresholds of significance for ROG, NOx, PM10, and PM2.5. The BAAQMD thresholds for CO are localized concentrations, which is described below under Impact 15.4.
5. Even though off-road equipment operations were assumed to double to process double the compost during year 2030 operations, NOx is estimated to substantially drop during that time due to assumed new equipment purchases or rebuilding the equipment in the year 2025, which would meet more stringent regulatory requirements.

TABLE 15-3
ESTIMATED MAXIMUM DAILY SITE 40 ALTERNATIVE
(ASP COMPOSTING) EMISSIONS

	Criteria Pollutant Emissions (lbs/day)[1]				
	ROG	**CO**	**NOx**	**PM10**	**PM2.5**
Existing Operations – Projected Year 2011					
Off-road Equipment Exhaust	4	16	38	1	1
On-road Vehicle Exhaust	1	21	5	0	0
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	712	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (3 acres)	0	0	0	39	7
Total Unmitigated Emissions (pounds/day)	**717**	**39**	**43**	**40**	**8**
Site 40 Alternative Operations - Year 2011					
Off-road Equipment Exhaust	4	15	36	1	1
On-road Vehicle Exhaust	2	49	7	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Aerated Static Pile Emissions	36	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (2 acres)	0	0	0	64	10
Total Unmitigated Emissions (pounds/day)	**42**	**66**	**43**	**66**	**12**
Total Net Emissions (Unmitigated Site 40 minus Existing)	**(675)**	**27**	**0**	**26**	**4**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***
Total Mitigated Emissions (pounds/day) [2]	**42**	**66**	**43**	**31**	**6**
Total Net Emissions (Mitigated Site 40 minus Existing) [3]	**(675)**	**27**	**0**	**(9)**	**(2)**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***
Site 40 Alternative Operations - Year 2030					
Off-road Equipment Exhaust	4	25	6[5]	0	0
On-road Vehicle Exhaust	0	22	2	1	1
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Aerated Static Pile Emissions	71	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (4 acres)	0	0	0	127	19
Total Unmitigated Emissions (pounds/day)	**75**	**49**	**8**	**128**	**20**
Total Net Emissions (Unmitigated Site 40 minus Existing)	**(642)**	**10**	**(35)**	**88**	**12**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***Yes***	***No***
Total Mitigated Emissions (pounds/day) [2]	**75**	**49**	**8**	**60**	**9**
Total Net Emissions (Mitigated Site 40 minus Existing) [3]	**(642)**	**10**	**(35)**	**20**	**1**
Thresholds (pounds/day)[4]	***54***	***NA***	***54***	***82***	***54***
Significant after Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***

1. Emissions were modeled using several models and emission factors, including the URBEMIS2007 model (for off-road equipment, area sources, and fugitive dust from actively disturbed areas), EMFAC2007 for on-road vehicle exhaust, the CIWMB emission factor for VOC emissions (CIWMB, 2007) with a 95% reduction from ASP system (based on preliminary data), and U.S. EPA AP-42 (for paved roads (section 13.2.1 - Paved Roads)). Existing emissions of fugitive dust were assumed to be controlled by watering 2x per day and reducing speed on unpaved roads. These emission factors and modeling are described in more detail in Appendix AIR-3.
2. These values include implementation of Mitigation Measure 15.3 described below. The fugitive dust reduction is based on the URBEMIS2007 defaults.
3. Values in (parentheses) represent a net reduction from the Existing scenario.
4. BAAQMD has established mass thresholds of significance for ROG, NOx, PM10, and PM2.5. The BAAQMD thresholds for CO are localized concentrations, which is described below under Impact 15.4.
5. Even though off-road equipment operations were assumed to double to process double the compost during year 2030 operations, NOx is estimated to substantially drop during that time due to assumed new equipment purchases or rebuilding the equipment in the year 2025, which would meet more stringent regulatory requirements.

Mitigation Measure

Mitigation Measure 15.3: Implement Mitigation Measure 5.2b (Fugitive Dust Control).

Significance after Mitigation: Less than Significant.

Implementation of the above mitigation measure would reduce net daily PM10 emissions to a less than significant level under full build-out.

Impact 15.4: Site 40 Alternative traffic (associated with either windrow or ASP composting option) would generate localized CO emissions on roadways and at intersections in the site vicinity. (Less than Significant)

According to the BAAQMD *CEQA Air Quality Guidelines*, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

1. Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The project would not conflict with the Sonoma County Comprehensive Transportation Plan established by the Sonoma County Transportation Authority. In regards to the second and third criteria, intersection traffic volumes would be substantially less than 44,000 and 24,000 vehicles per hour, respectively. The estimated increase in traffic volumes caused by project-related traffic would not be substantial relative to background traffic conditions, nor would project traffic significantly disrupt daily traffic flow on area roadways.

Based on the BAAQMD's criteria, project-related traffic would not lead to violations of the carbon monoxide standards and therefore, no further analysis was conducted for carbon monoxide impacts of the project at these intersections. This impact would be considered less than significant on a project-level and cumulative basis.

Mitigation: None required.

Impact 15.5: Operation of the Site 40 Alternative (associated with either windrow or ASP composting option) could create objectionable odors affecting a substantial number of people. (Significant)

Potential generation of odors associated with operation of the Site 40 Alternative would have the same impacts, regulations, and controls as those described under Chapter 5, Air Quality, Impact 5.5. These controls include the implementation of an Odor Impact Minimization Plan (see Appendix AIR-7) as required by law for either composting option (windrow or ASP). The Odor Impact Minimization Plan includes two major components, a Complaint Response Protocol and an Odor Complaint Reporting Format. The Odor Complaint Response Protocol describes the procedures to follow upon receiving a complaint. The protocol includes measures to identify the odor and requires appropriate adjustments to storage, process control, and facility improvements to reduce odors.

Mitigation Measure

Mitigation Measure 15.5: Implement Mitigation Measure 5.5 (Odor Control).

Significance after Mitigation: Less than Significant.

Compliance with the Odor Impact Minimization Plan would assure that odor impacts from composting would be less than significant.

Impact 15.6: Implementation of the Site 40 Alternative (windrow composting option) may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources. (Significant)

Similar to the proposed project, TAC emissions sources at Site 40 would include heavy duty equipment used on-site, haul trucks used to transport material to and from the site and fugitive emissions associated with composting activities. Since Site 40 would process the same amount of material as the proposed project, it was assumed that the emissions rates estimated for the proposed project would also apply to Site 40. Please see introductory information in Impact 5.6, which is the same for Impact 15.6. Additional information is included in the Health Risk Assessment (HRA) as part of Appendix AIR-4.

The nearest workers would be located at a dairy farm located approximately 1,750 feet south of the Site 40 alternative site. There would also be workers at a farm located approximately 2,500 feet north of the site. There are residential receptors located approximately 1,750 feet to the west, approximately 1,835 feet to the east and approximately 2,450 feet to the north.

Acute and Chronic Risk

The maximum exposed worker receptor was modeled at a dairy farm located north of the Site 40 location. The highest-impacted (maximum HI) organ system would be the eyes. For the maximum exposed worker, the acute HI under the windrow option would be 2.32, which would exceed the BAAQMD threshold of 1 and would therefore constitute a **significant** impact. For the maximum exposed residence (located west of the site on Periera Road), the acute HI under the windrow option would be 2.38, which would also constitute a **significant** impact.

For chronic risk, unlike acute risk, the maximum exposed receptor with regard to chronic exposure would be located at the dairy farm to the south of the site. The maximum chronic HI would target the respiratory system. For the maximum exposed worker, the chronic HI under the windrow option would be 0.025. Unlike acute exposure, the maximum exposed resident would be located east of the site along Stage Gulch Road. For the maximum exposed residence, the chronic HI under the windrow option would be 0.073. The chronic risk for the maximum exposed worker and residential receptors are well below the BAAQMD threshold of 1 and would be **less than significant**.

Cancer Risk

The following five carcinogens would be emitted under the Site 40 Alternative: (1) DPM; (2) methylene chloride; (3) benzyl chloride; (4) formaldehyde; and (5) acetaldehyde. Cancer risks at worker receptors were analyzed assuming an exposure frequency of 245 days per year (5 days per week/49 weeks per year) for 40 years with a worker breathing rate of 149 L/kg bodyweight – day. Cancer risks at residential receptors were analyzed based on the 80th percentile adult breathing rate of 302 L/kg-day. Exposure frequency for residents was assumed to be 350 days per year and exposure duration was assumed to be 70 years.

The maximum cancer risk under the windrow option for the worker receptors would be 4.6, which would not exceed the BAAQMD threshold of 10 in one million and would be **less than significant**. The maximum cancer risk associated with the windrow option for the residential receptors would be 60.0 cancers in a million, which would exceed the BAAQMD threshold of 10 in one million and would be **significant**.

PM2.5 Concentration

The maximum annual PM2.5 concentration as a result of the Site 40 Alternative construction would be 0.05 $\mu g/m^3$, which would not exceed the BAAQMD threshold of 0.3 $\mu g/m^3$ and would therefore constitute a **less than significant** impact. The maximum annual PM2.5 concentration as a result of the Site 40 Alternative operations would be 0.19 $\mu g/m^3$, which would not exceed the BAAQMD threshold of 0.3 $\mu g/m^3$ and would therefore constitute a **less than significant** impact.

Mitigation Measure

Mitigation Measure 15.6: Implement Mitigation Measure 15.2a (Pseudo-Biofilters).

Significance after Mitigation: Significant and Unavoidable.

Implementation of the pseudo-biofilter would reduce the acute risk at the maximum worker and residential receptor to 0.62 and 0.64, respectively; the chronic risk at the maximum worker and residential receptor would be reduced to 0.0078 and 0.021, respectively; and the cancer risk of the maximum worker and residential receptor would be reduced to 2.02 and 19.8, respectively. The chronic risk for the maximum exposed worker and residential receptor would be **less than significant**. With implementation of the pseudo-biofilter mitigation, the acute risk at the maximum exposed worker and resident, as well as the cancer risk for the maximum exposed worker, would be reduced to **less than significant**. However, the cancer risk for the maximum exposed resident would remain **significant** with the pseudo-biofilter.

Impact 15.7: Implementation of the Site 40 Alternative (ASP composting option) may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources. (Less than Significant)

Please see introductory information in Impact 15.6, which is the same for Impact 15.7.

Acute and Chronic Risk

The maximum exposed worker receptor was modeled at a dairy farm located north of the Site 40 location. The maximum HI would target the eyes. For the maximum exposed worker, the acute HI under the ASP option would be 0.12. For the maximum exposed residence (located west of the site on Periera Road), the acute HI under the ASP option would be 0.13. The acute risk for the maximum exposed worker and residential receptors are well below the BAAQMD threshold of 1 and would be **less than significant**.

For chronic risk, unlike acute risk, the maximum exposed receptor with regard to chronic exposure would be located at the dairy farm to the south of the site. The maximum chronic HI would target the respiratory system. For the maximum exposed worker, the chronic HI under the ASP option would be 0.0032. Unlike acute exposure, the maximum exposed resident would be located east of the site along Stage Gulch Road. For the maximum exposed residence, the chronic HI under the ASP option would be 0.0071. The chronic risk for the maximum exposed worker and residential receptors are well below the BAAQMD threshold of 1 and would be **less than significant**.

Cancer Risk

The following five carcinogens would be emitted under the Site 40 Alternative: (1) DPM; (2) methylene chloride; (3) benzyl chloride; (4) formaldehyde; and (5) acetaldehyde. Cancer risks at worker receptors were analyzed assuming an exposure frequency of 245 days per year (5 days per week/49 weeks per year) for 40 years with a worker breathing rate of 149 L/kg bodyweight – day. Cancer risks at residential receptors were analyzed based on the 80^{th} percentile adult breathing rate of 302 L/kg-day. Exposure frequency for residents was assumed to be 350 days per year and exposure duration was assumed to be 70 years. The maximum cancer risk under the ASP option for the worker and residential receptors would be 1.32 and 9.05 per million, respectively, which would not exceed the BAAQMD threshold of 10 in one million and would be **less than significant**.

PM2.5 Concentration

The maximum annual PM2.5 concentration as a result of the Site 40 Alternative construction would be 0.05 $\mu g/m^3$, which would not exceed the BAAQMD threshold of 0.3 $\mu g/m^3$ and would therefore constitute a **less than significant** impact. The maximum annual PM2.5 concentration as a result of the Site 40 Alternative operations would be 0.19 μg/m^3, which would not exceed the BAAQMD threshold of 0.3 μg/m^3 and would therefore constitute a **less than significant** impact.

Mitigation: None required.

Impact 15.8: Construction and operation of the Site 40 Alternative (windrow composting option) could result in a cumulatively considerable increase in greenhouse gas emissions. (Significant)

Please see introductory information in Chapter 5, Air Quality, Impact 5.8, which is the same for the Site 40 Alternative.

Site 40 Alternative Contribution to Cumulative Climate Change Effects from Greenhouse Gas (GHG) Emissions

The calculation presented below includes annual CO_2e GHG emissions from off-road equipment (CO_2), vehicular traffic (CO_2), energy consumption (CO_2, N_2O, CH_4), area sources (natural gas combustion and landscape equipment) (CO_2), and off-gas emissions (CH_4) from composting. The modeling methodology, emission factors, and quantified emissions would be the same for the Site 40 Alternative as those described in Chapter 5, Air Quality, Impact 5.8, except for on-road vehicle emissions, which would change due to the revised trip lengths for vehicles associated with the Site 40 Alternative operations.

GHG emissions associated with the construction phase of the project would result in a maximum annual generation of 647 metric tons of CO_2e. In addition, in light of the considerations outlined above**, Table 15-4** presents an estimate of the project's operational CO_2e emissions. Data in **Table 15-4** indicate that GHG emissions that would result from the project would exceed the 1,100 metric tons per year threshold established by BAAQMD by 1,925 metric tons of CO_2e per year. This would represent a cumulatively significant impact.

Notably, the methodology applied here does not account for the shift in emissions from diverting the organic waste from out-of-County landfills. The Site 40 Alternative would process organic materials (that might otherwise be disposed of as waste) from Sonoma County sources and produce a renewable resource within the County. Compost could be used in the County as a replacement for alternative products, such as fertilizers, that also require energy for production as well as transport to the County from the manufacturing facilities or distribution centers. Thus, the Site 40 Alternative would be inherently energy efficient by providing a local source of soil enrichment materials and reduce the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. In addition, because the effects of GHGs are global, if the Site 40 Alternative merely shifts the location of the GHG-emitting activities (off-road equipment, trucks, waste degradation) from landfills to the Site 40 site, there would not likely be a net new increase of emissions.

TABLE 15-4
SITE 40 ALTERNATIVE OPERATIONS (WINDROW COMPOSTING OPTION) GHG EMISSIONS

	Greenhouse Gas Emissions (metric tons/year)[1] CO_2e
Existing Operations – Projected Year 2011	
Off-road Equipment	786
On-road Vehicles	418
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	7
Total Unmitigated Emissions	**2,123**
Site 40 Alternative Operations - Year 2011	
Off-road Equipment	786
On-road Vehicles	830
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	145
Total Unmitigated Emissions	**2,673**
Net Emissions (Site 40 minus Existing)[2]	**550**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**No**
Site 40 Alternative Operations - Year 2030	
Off-road Equipment	1,578
On-road Vehicles	1,648
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	1,732
Indirect Emissions from Electricity Generation	145
Total Unmitigated Emissions	**5,148**
Net Emissions (Site 40 minus Existing)[2]	**3,025**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**Yes**

1. Emissions were modeled using several models and emission factors, which is described in more detail in Appendix AIR-3. These models and emission factors include URBEMIS2007 model (for off-road equipment and area sources), EMFAC2007 for on-road vehicle exhaust, GHG emission factors from the California Climate Action Registry *General Reporting Protocol* (California Climate Action Registry, 2009) for indirect emissions from electricity generation, and a CH_4 emission factor from the South Coast Air Quality Management District (SCAQMD, 2001) from green waste composting.

2. The "Net Emissions" are estimates of the Site 40 Alternative operational GHG emissions minus the Existing Sonoma Compost facility operational GHG emissions. These estimates represent the incremental increase in GHGs from the Site 40 Alternative.

With regard to any potential conflict with applicable Sonoma County plans, policies, or regulations adopted to reduce GHGs, Sonoma County has established a *Sonoma County Community Climate Protection Action Plan* (Climate Protection Campaign, 2008), which incorporates the target reduction goal of 25 percent below the 1990 level by the year 2015. The Site 40 Alternative would comply with the strategies presented in the Plan to reduce GHGs through increased recycling of organic materials via composting processes (described under the Agriculture and Forests, as well as Solid Waste subsections of the Plan). Therefore, the Site 40 Alternative would not conflict with any local regulations pertaining to GHGs.

Even with the above considerations, the Site 40 Alternative would exceed the BAAQMD threshold for GHGs and would be cumulatively significant without mitigation.

Mitigation Measures

Mitigation Measure 15.8a: Develop Annual GHG Inventory. The applicant shall become a reporting member of The Climate Registry. Beginning with the first year of composting and continuing for the duration of the Site 40 Alternative operations, the SCWMA shall conduct an annual inventory of GHG emissions, and report these to The Climate Registry. The annual inventory shall be conducted according to The Climate Registry protocols and third-party verified by a verification body accredited through The Climate Registry.

Mitigation Measure 15.8b: Greenhouse Gas Emissions Reduction Plan. SCWMA shall prepare and make available to the public a Greenhouse Gas Emissions Reduction Plan (GHG plan) containing strategies to ensure that GHG emissions do not exceed 1,100 MT CO_2e per year. The SCWMA shall implement the approved GHG plan, which will include, but not be limited to, the following measures:

- The SCWMA shall power on-road and off-road vehicles with electricity and/or alternative fuels (such as biodiesel and compressed natural gas) to the extent feasible.
- The SCWMA shall provide negative pressure buildings for indoor composting and treat collected air in a biofilter or air scrubbing system, if feasible.
- If the SCWMA is unable to reduce emissions to below 1,100 MT CO_2e per year using the above measures, the SCWMA shall offset all remaining Site 40 Alternative emissions above that threshold. Any offset of Site 40 Alternative emissions shall be demonstrated to be real, permanent, verifiable, enforceable, and additional. To the maximum extent feasible, as determined by the SCWMA in coordination with the BAAQMD, offsets shall be implemented locally. Offsets may include but are not limited to, the following (in order of preference):
    1. Onsite offset of Site 40 Alternative emissions, for example through development of a renewable energy generation facility or a carbon sequestration project (such as a forestry or wetlands project for which inventory and reporting protocols have been adopted). If the SCWMA develops an offset project, it must be registered with the Climate Action Reserve or otherwise approved by the BAAQMD in order to be used to offset Site 40 Alternative emissions. The number of offset credits produced would then be included in the annual inventory, and the net (emissions minus offsets) calculated.
    2. Funding of local projects, subject to review and approval by the BAAQMD, that will result in real, permanent, verifiable, enforceable, and additional reduction in GHG emissions. If the BAAQMD or Sonoma County develops a GHG mitigation fund, the applicant may instead pay into this fund to offset GHG emissions in excess of the significance threshold.
    3. Purchase of carbon credits to offset emissions to below the significance threshold. Only carbon offset credits that are verified and registered with the Climate Action Reserve, or available through a County-approved local

GHG mitigation bank or fund, may be used to offset Site 40 Alternative emissions.

Significance after Mitigation: Each year, the SCWMA will report actual emissions, in accordance with Mitigation Measure 15.8a. The annual inventory must demonstrate how the emissions threshold is achieved. In this way, Mitigation Measure 15.8a and 15.8b would together result in the reduction and offset of Site 40 Alternative GHG emissions to below the BAAQMD threshold of significance. Further, by implementing local offsets first, the Site 40 Alternative as mitigated would help to achieve Sonoma County's target for reducing GHG emissions. Notably, although enclosing the compost operations would potentially result in reduced GHGs, the intensive capital required for this measure would likely rule it infeasible. Overall, however, the impact after mitigation would be reduced to less than significant without enclosing the facility.

Impact 15.9: Construction and operation of the Site 40 Alternative (ASP composting option) could result in a cumulatively considerable increase in greenhouse gas emissions. (Significant)

Please see introductory information in Chapter 5, Air Quality, Impact 5.8, which is the same for the Site 40 Alternative.

Site 40 Alternative Contribution to Cumulative Climate Change Effects from Greenhouse Gas (GHG) Emissions

The calculation presented below includes annual CO_2e GHG emissions from off-road equipment (CO_2), vehicular traffic (CO_2), energy consumption (CO_2, N_2O, CH_4), area sources (natural gas combustion and landscape equipment) (CO_2), and off-gas emissions (CH_4) from composting. The modeling methodology, emission factors, and quantified emissions would be the same for the Site 40 Alternative as those described in Chapter 5, Air Quality, Impact 5.9, except for on-road vehicle emissions, which would change due to the revised trip lengths for vehicles associated with the Site 40 Alternative operations.

GHG emissions associated with the construction phase of the project would result in a maximum annual generation of 1,177 metric tons of CO_2e. In addition, in light of the considerations outlined above**, Table 15-5** presents an estimate of the project's operational CO_2e emissions. Data in **Table 15-5** indicate that GHG emissions that would result from the project would exceed the 1,100 metric tons per year threshold established by BAAQMD by 3,341 metric tons of CO_2e per year. This would represent a cumulatively significant impact.

TABLE 15-5
SITE 40 ALTERNATIVE OPERATIONS (ASP COMPOSTING OPTION) GHG EMISSIONS

	Greenhouse Gas Emissions (metric tons/year)[1] CO_2e
Existing Operations – Projected Year 2011	
Off-road Equipment	786
On-road Vehicles	418
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	7
Total Unmitigated Emissions	**2,123**
Site 40 Alternative Operations - Year 2011	
Off-road Equipment	711
On-road Vehicles	830
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	275
Total Unmitigated Emissions	**2,728**
Net Emissions (Site 40 minus Existing)2	**605**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**No**
Site 40 Alternative Operations - Year 2030	
Off-road Equipment	1,427
On-road Vehicles	1,648
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	1,732
Indirect Emissions from Electricity Generation	405
Total Unmitigated Emissions	**5,258**
Net Emissions (Site 40 minus Existing)2	**3,135**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**Yes**

1. Emissions were modeled using several models and emission factors, which is described in more detail in Appendix AIR-3. These models and emission factors include URBEMIS2007 model (for off-road equipment and area sources), EMFAC2007 for on-road vehicle exhaust, GHG emission factors from the California Climate Action Registry *General Reporting Protocol* (California Climate Action Registry, 2009) for indirect emissions from electricity generation, and a CH_4 emission factor from the South Coast Air Quality Management District (SCAQMD, 2001) from green waste composting.

2. The "Net Emissions" are estimates of the Site 40 Alternative operational GHG emissions minus the Existing Sonoma Compost facility operational GHG emissions. These estimates represent the incremental increase in GHGs from the Site 40 Alternative.

Notably, the methodology applied here does not account for the shift in emissions from diverting the organic waste from out-of-County landfills. The Site 40 Alternative would process organic materials (that might otherwise be disposed of as waste) from Sonoma County sources and produce a renewable resource within the County. Compost could be used in the County as a replacement for alternative products, such as fertilizers, that also require energy for production as well as transport to the County from the manufacturing facilities or distribution centers. Thus, the Site 40 Alternative would be inherently energy efficient by providing a local source of soil enrichment materials and reduce the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. In addition, because the effects of GHGs are global, if the Site 40 Alternative merely shifts the location of the GHG-emitting activities (off-road equipment, trucks, waste degradation) from landfills to the Site 40 site, there would not likely be a net new increase of emissions.

With regard to any potential conflict with applicable Sonoma County plans, policies, or regulations adopted to reduce GHGs, Sonoma County has established a *Sonoma County Community Climate Protection Action Plan* (Climate Protection Campaign, 2008), which incorporates the target reduction goal of 25 percent below the 1990 level by the year 2015. The Site 40 Alternative would comply with the strategies presented in the Plan to reduce GHGs through increased recycling of organic materials via composting processes (described under the Agriculture and Forests, as well as Solid Waste subsections of the Plan). Therefore, the Site 40 Alternative would not conflict with any local regulations pertaining to GHGs.

Even with the above considerations, the Site 40 Alternative would exceed the BAAQMD threshold for GHGs and would be cumulatively significant without mitigation.

Mitigation Measures

> **Mitigation Measure 15.9:** Implement Mitigation Measures 15.8a (Develop Annual GHG Inventory) and 15.8b (Greenhouse Gas Emissions Reduction Plan).
>
> **Significance after Mitigation:** Each year, the SCWMA will report actual emissions, in accordance with Mitigation Measure 15.8a. The annual inventory must demonstrate how the emissions threshold is achieved. In this way, Mitigation Measure 15.8a and 15.8b would together result in the reduction and offset of Site 40 Alternative GHG emissions to below the BAAQMD threshold of significance. Further, by implementing local offsets first, the Site 40 Alternative as mitigated would help to achieve Sonoma County's target for reducing GHG emissions. Notably, although enclosing the compost operations would potentially result in reduced GHGs, the intensive capital required for this measure would likely rule it infeasible. Overall, however, the impact after mitigation would be reduced to less than significant without enclosing the facility.

Impact 15.10: The Site 40 Alternative (windrow composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants. (Significant)

According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD, 2010). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As described above in Impact 15.1, construction of the Site 40 Alternative would result in significant and unavoidable emissions of NOx. Therefore, NOx emissions associated with construction activities would be cumulatively considerable and the impact would be **significant**.

As discussed in Impacts 15.2 and 15.4, the Site 40 Alternative would result in less than significant impact from criteria pollutant emissions with implementation of mitigation. Therefore, the Site 40 Alternative would not have a considerable contribution to cumulative air quality (criteria air pollutants) during operations, and the impact would be considered less than significant.

Mitigation Measure

> **Mitigation Measure 15.10:** Implement Mitigation Measures 15.1 (Construction Emission Controls), 15.2a (Composting VOC Reduction via Pseudo-Biofilters), and 15.2b (Fugitive Dust Control).
>
> **Significance after Mitigation:** Significant and unavoidable during Site 40 Alternative construction.

Cumulative Impact 15.11: The Site 40 Alternative (ASP composting option), together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants. (Significant)

According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD, 2010). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As described above in Impact 15.1, construction of the Site 40 Alternative would result in significant and unavoidable emissions of NOx. Therefore, NOx emissions associated with construction activities would be cumulatively considerable and the impact would be **significant**.

As discussed in Impact 15.3 and 15.4, the Site 40 Alternative would result in less than significant project impact from criteria pollutant emissions with implementation of mitigation. Therefore, the Site 40 Alternative would not have a considerable contribution to cumulative air quality (criteria air pollutants) during operations, and the impact would be considered less than significant.

Mitigation Measure

> **Mitigation Measure 15.11:** Implement Mitigation Measures 15.1 (Construction Emission Controls) and 15.2b (Fugitive Dust Control).
>
> **Significance after Mitigation:** Significant and unavoidable during Site 40 Alternative construction.

Cumulative Impact 15.12: Cumulative risk from all past, present and reasonably foreseeable sources within 1,000 feet of the Site 40 Alternative (associated with either windrow or ASP composting option) would expose sensitive receptors to PM2.5 and TACs which may lead to adverse health effects. (Less than Significant)

The BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD, 2010) provides estimated impacts from significant roadway within Sonoma County such as Routes 1, 12, 37, 101, 116, 121, and 128. Estimated impacts within a distance of 1,000 feet were developed for each of these roadways. Site 40 is located approximately 200 feet from Route 116. Thus, the impact from this roadway is expected to contribute an additional concentration of PM2.5 of 0.013 $\mu g/m^3$ and an additional cancer risk of 3.3 per one million. These values combined with the Site 40 Alternative impacts would be well below the cumulative BAAQMD thresholds of 0.8 $\mu g/m^3$ and 100 cancers per million persons and would therefore constitute a **less than significant** impact under either the windrow or ASP composting option.

Mitigation: None required.

15.4 References

Bay Area Air Quality Management District (BAAQMD), 1999. BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans, December 1999.

Bay Area Air Quality Management District, 2010. *CEQA Air Quality Guidelines*, adopted June 2, 2010. Available at www.baaqmd.gov

California Climate Action Registry, 2009. General Reporting Protocol, January 2009.

California Integrated Waste Management Board (CIWMB), 2007. Emissions Testing of Volatile Organic Compounds from Greenwaste Composting at the Modesto Compost Facility in the San Joaquin Valley. October 31, 2007, revised May 2008.

Climate Protection Campaign. 2008. Sonoma County Community Climate Action Plan. October, 2008.

Sonoma County, 2006. Sonoma County General Plan 2020 Draft Environmental Impact Report, January 2006.

South Coast Air Quality Management District (SCAQMD), 2001. Ammonia and Volatile Organic Compound (VOC) Emissions from a Greenwaste Composting Operation.

U.S. Environmental Protection Agency (U.S. EPA). 2001. Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, January 2001.

CHAPTER 16
Biological Resources/Site 40 Alternative

16.1 Introduction

This chapter provides background information on the biological resources and natural communities occurring within Site 40, outlines potential impacts to biological resources that may result from development of the Site 40 Alternative, and proposes mitigation measures to reduce those impacts to a less than significant level. These mitigation measures have been developed to focus on avoiding, reducing, or compensating for potentially significant impacts on biological resources. A discussion of federal, state, and local laws, policies, and regulations that influence biological resources at Site 40 is presented in Chapter 6, Biological Resources. The information presented in this chapter is unique to Site 40 and the reader is referred to Chapter 6, Biological Resources in cases where biological resource setting information and/or impact analysis is the same for the Site 40 Alternative as the project site.

16.2 Setting

Regional Setting

Site 40 is located in the Northern California Coast ecological region and the Santa Rosa Plain subsection and is characterized by gently rolling hills, in between the Pacific Ocean and the Santa Rosa Plain (Miles and Goudey, 1997). Refer to Chapter 6, Biological Resources for ecological region descriptions.

The predominant natural plant communities in the Santa Rosa Plain subsection are needlegrass grasslands and valley oak series in inland valleys. Other dominant plant communities include northern claypan vernal pools on the Santa Rosa Plain, Pacific reedgrass series and needlegrass grasslands on rolling hills westward to the coast, and coast live oak series on leeward slopes in the rolling hills. The climate is temperate to hot and humid, moderated by marine air advancing over the hills most of the time. Average annual precipitation in the Santa Rosa Plain subsection is approximately 20 to 40 inches, with summer fog. Mean annual temperature is approximately 50° to 58° F (Miles and Goudey, 1997).

Project Area Setting

Site 40 is located in an unincorporated area of Sonoma County, approximately seven miles north of Hwy 37 and one miles east of Lakeville Highway, and bounded by Stage Gulch Road (Highway

116) to the southeast and Adobe Road to the northeast (**Figures 3-1 and 14-1**). This location corresponds to Township 5N, Range 6W, Section 32 of the Petaluma River, CA U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (USGS, 1980). Site 40 consists of agricultural land which is currently used for cattle grazing. Surrounding land use includes rural residences, grazing lands, vineyards, and open space.

Methodology

This evaluation of biological resources includes a review of potentially occurring special-status species,[1] wildlife habitats, vegetation communities, and potential jurisdictional waters of the U.S. The results of this assessment are based upon field reconnaissance, literature searches and database queries. Site reconnaissance was conducted by ESA biologist LeChi Huynh on August 3, 2009. The primary sources of data referenced for this report included the following:

- Petaluma River, California, 7.5-minute topographic quadrangle (USGS, 1980);
- "Federal Endangered and Threatened Species that may be Affected by Projects in the Petaluma River, Sears Point, Petaluma Point, Petaluma, San Geronimo, Novato, Sonoma, Cotati, and Glen Ellen, California 7.5-Minute Topographic Quadrangles" (USFWS, 2009a);
- California Natural Diversity Database (CNDDB), Rarefind 3.1 computer program (CDFG, 2009);
- Threatened and Endangered Plants List (CDFG, 2009b);
- Threatened and Endangered Animals List (CDFG, 2009c);
- California Native Plant Society: Inventory of Rare and Endangered Plants (CNPS, 2009a)
- Ecological Subregions of California (Miles and Goudey, 1997);
- Review of color aerial photography for vegetative, topographic, and hydrologic signatures;
- Review of Natural Resources Conservation Service (NRCS) web soil survey data (NRCS, 2009) for information about soils and geomorphology;
- Review of the National Wetlands Inventory (NWI) map (USFWS, 2009b) for information on wetlands and natural water features previously delineated in the project area;
- Sonoma County General Plan (Sonoma County, 2008)

Vegetation Communities and Wildlife Habitats

Vegetation communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. Upland plant communities and habitats within the Site 40 project site include annual grassland and ruderal/disturbed. Plant communities and habitats associated with aquatic settings include potential waters of the U.S., seasonal freshwater emergent wetland, and seasonal drainages. The vegetation community descriptions and nomenclature used in this section generally correlate to wildlife habitat types described in *A Guide to Wildlife Habitats of California* or California Wildlife Habitats Relationships

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1 Species that are protected pursuant to Federal or State endangered species laws, or have been designated as Species of Concern by the USFWS or Species of Special Concern by the CDFG, or species that are not included on any agency listing but meet the definition of rare, endangered or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species."

(CWHR) (Mayer and Laudenslayer, 1988) and the classification provided in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). The types of wildlife habitat (in accordance with the CWHR classification system) present in the Site 40 project site can be found in **Table 16-1** and **Figure 16-1**. All wetlands and seasonal drainage features and approximate acreages have not been formally delineated and would require a formal delineation and verification by the U.S. Corps of Engineers. The wetland delineation will be completed after a project site is selected.

TABLE 16-1
VEGETATION COMMUNITIES WITHIN THE SITE 40 ALTERNATIVE COMPOSTING AREA

Vegetation Community		Acres / Percent of Site 40 Composting Area
Annual Grassland		54.8 / 96.1%
Disturbed/Ruderal		1.37 / 2.4%
Seasonal Drainages (and Seasonal Wetlands)		0.83 / 1.5%
	Total	**57 / 100.00%**

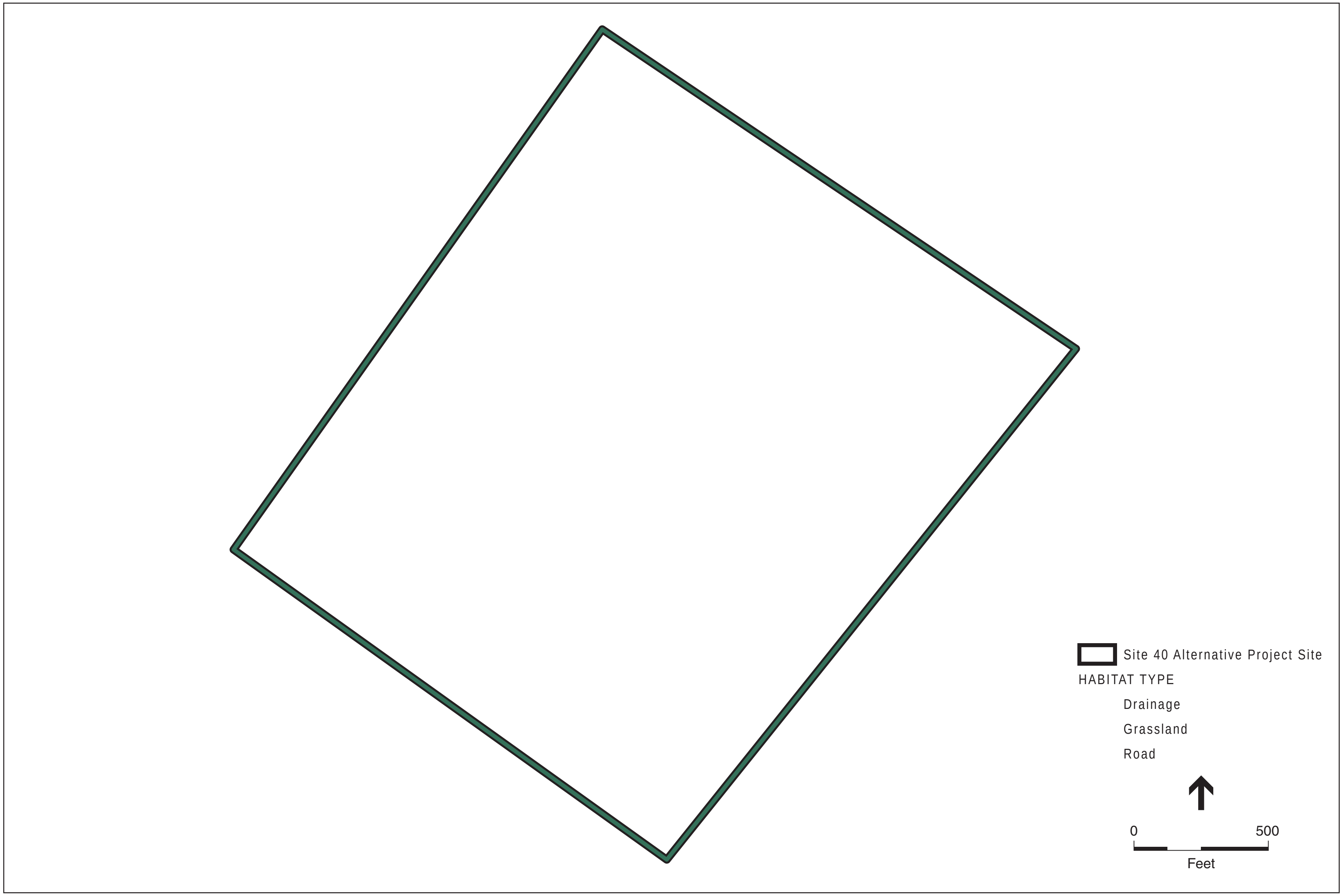
SOURCE: ESA, 2009.

Upland Plant Communities

Annual Grassland

The non-native annual grassland vegetation community occupies 54.8 acres of the Site 40 project site and is the dominant plant community throughout Site 40 (**Figure 16-1**). Annual grassland on the Site 40 project site is primarily used as ranching/grazing land and undeveloped lands. This community is dominated by nonnative Mediterranean annual grasses. An assemblage of native and nonnative forbs was noted in the grassland areas, including Italian ryegrass (*Lolium multiflorum*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), ripgut brome (Bromus diandrus), foxtail barley (*Hordeum murinum ssp. leporinum*), spring vetch (*Vicia* sativa), and milk thistle (*Silybum murianum*), among others. Vegetative cover is dense with vegetation height ranging from a few inches to a foot tall. No animal burrows, trees, or prominent shrubs are present within this habitat type.

Annual grassland provides habitat for a variety of wildlife species as described in **Chapter 6**. Because the Site 40 project site lacks unique habitat features and is currently used as grazing land, species diversity is generally low.



SOURCE: NAIP, 2006; and ESA, 2009

SCWMA Compost Facility EIR . 207312

Figure 16-1
Plant Communities and Habitats within the Site 40 Composting Area

Disturbed/Ruderal

Disturbed areas such as dirt roads and ruderal vegetation comprise 1.37 acres of the site (**Figure 16-1**). This vegetation type is subjected to ongoing or past disturbances (e.g., vehicle use, mowing, and herbicide application). Due to the disturbance regime, assemblages of native and introduced weedy species have established which the majority consists of various annual grasses and forbs of Eurasian origin; many of which also occur in the grasslands (See **Chapter 6** for full description). Because ruderal habitat within the Site 40 project site generally intergrades with annual grassland habitats, wildlife species that are found in annual grassland habitats will also occur in ruderal habitats. No mammal burrows were found in this habitat type.

Aquatic Plant Communities and Habitats

Freshwater Emergent Wetland

The Site 40 composting area supports a few potentially jurisdictional waters of the U.S. features, including freshwater emergent wetland. Freshwater emergent wetlands on the Site 40 composting area are limited in extent (0.02 acres) and support erect, rooted herbaceous plants that are hydrophytic and can withstand the anaerobic soil conditions created by extended periods of inundation (**Figure 16-1**). Vegetation cover ranges from sparse to continuous and moderately dense. Cattails (*Typha angustifolia*) are the dominant hydrophytic species found within these freshwater emergent wetlands.

See **Chapter 6** for a full description of habitat features and wildlife use of freshwater emergent wetlands. Due to cattle grazing activities and high nutrient runoffs within the Site 40 composting area, the potential wetlands have considerably degraded water quality and may support reduced numbers of wildlife species. Wildlife species found in the vicinity of this habitat type during the field reconnaissance include foraging passerine species.

Although the freshwater emergent wetland is located within Site 40, it is not located within the 57-acre portion planned for development. Impacts to freshwater emergent wetland in result of Site 40 development would be avoided.

Seasonal Freshwater Emergent Wetland

The Site 40 composting area supports potentially jurisdictional waters of the U.S., including seasonal freshwater emergent wetlands (seasonal wetlands). Seasonal wetlands are associated with seasonal drainages, and do not exceed approximately 0.83 acres within the Site 40 composting area (**Figure 16-1)**. Seasonal wetlands are ephemeral wetlands that pond or remain flooded for extended periods during a portion of the year, often the wet season, then may dry in spring or early summer. These features are typically associated with erosional drainage features or areas disturbed by cattle grazing. Seasonal wetlands in the Site 40 composting area occur in the shallow portions of erosional drainages and support few plant species. Common facultative wetland species in these features include sedges (*Carex* spp.) and willow (*Salix* spp.). Most seasonal wetlands and seasonal drainages were dry during the reconnaissance survey.

See **Chapter 6** for a full description of habitat features and wildlife use of seasonal freshwater emergent wetlands. Due to the high degree of disturbance by grazing cattle, these potential wetlands may support a lower number of species.

Seasonal Drainage

The Site 40 project site supports potentially jurisdictional waters of the U.S. features, including seasonal drainages (0.83 acres). These features are typically located between the toes of two adjoining hillsides (**Figure 16-1**). The drainages appear to be created by erosional processes and often occur abruptly in the landscape. These seasonal drainages drain water from upland areas during the rainy season (generally from west to east).

Special Status Species

Definitions of Special Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Refer to **Chapter 6** for a full description of the term "special-status."

Potentially Affected Listed and Proposed Species

A list of special-status plant and animal species that have the potential to occur within the vicinity of the project area was compiled based on data in the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) (CDFG, 2009), California Native Plant Society (CNPS) literature (CNPS, 2009a), and the United States Fish and Wildlife Service (USFWS) List of Federal Endangered and Threatened Species that may be Affected by Projects in the Petaluma River Quadrangle and eight surrounding quadrangles (USFWS, 2009a). Conclusions regarding habitat suitability and species occurrence are based on a reconnaissance-level area assessment conducted by ESA biologists, as well as existing literature and databases described previously.

ESA identified 12 species with a low potential, one (1) species with a medium potential, and no species with a high potential to occur in the vicinity of the Site 40 project site. The "Potential for Occurrence" category is defined in **Chapter 6**. **Table 16-2** lists one special-status species with the potential to occur within the Site 40 project site and the potential for the Site 40 Alternative to impact that species.

Life history and distribution of species with medium to high potential to occur within the vicinity of the project area are described in detail below. A complete Special-Status Species table is included as **Table BIO-3** located in **Appendix Bio-3**.

TABLE 16-2
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	State Status (CDFG/CNPS)	Listing Status (USFWS)	Habitat Association	Potential for Project to Impact
Reptiles				
Actinemys (Emys) marmorata marmorata northwestern pond turtle	CSC/None	None	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks.	Medium. Suitable habitat is present within Site 40; however, limited suitable egg-laying and basking habitat is present within the area proposed for composting. There is one CNDDB occurrence within Site 40, but is located approximately 0.75-1 mile east of the Site 40 project site.

STATUS CODES:

STATE
California Department of Fish and Game:
SE Listed as Endangered by the State of California
ST Listed as Threatened by the State of California
SR Listed as Rare by the State of California (plants only)
CSC California species of special concern
CFP California fully protected bird species

California Native Plant Society (CNPS):
List 1A Plants believed extinct
List 1B Plants rare, threatened, or endangered in California and elsewhere
List 2 Plants rare, threatened, or endangered in California but more common elsewhere
List 3 Plants about which more information is needed
List 4 Plants of limited distribution

CNPS Code Extensions
.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Fairly endangered in California (20-80% occurrences threatened)
.3 Not very endangered in California (less than 20% of occurrences threatened or no current threats known)

FEDERAL
U.S. Fish and Wildlife Service:
BEPA Bald Eagle Protection Act
FE Listed as Endangered by the Federal Government
FT Listed as Threatened by the Federal Government
FPD Proposed for De-listing
FPE Proposed for Listing as Endangered
FPT Proposed for Listing as Threatened
FC Candidate for Federal listing

SOURCE: CNPS, 2009; CDFG, 2009; USFWS, 2009a

Reptiles

Northwestern Pond Turtle

The northwestern pond turtle is a relatively large, mostly aquatic turtle that inhabits fresh to brackish, quiet water. Its carapace is broad and low and brown to olive in color. Pond turtles inhabit ponds, marshes, lakes, streams, irrigation ditches and vernal pools that contain adequate cover and basking sites. Despite its name the pond turtle regularly inhabits terrestrial habitats usually during summer and winter months during overland dispersal, oviposition (females) and mate seeking (males). Habitats that contain adequate refugia such as undercut banks, logs, submerged vegetation and mud banks are preferred. Basking sites such as emergent logs, open banks, rocks and root wads are utilized by turtles to thermoregulate their body temperature. They are omnivorous generalists and opportunistic predators eating insects, snakes, small mammals, birds, frogs, fish, and aquatic invertebrates. Pond turtles must ingest their food under water because they cannot swallow in the air.

The northwestern pond turtle exists in California north of the American River and integrates with the southwestern pond turtle from the San Joaquin Valley to south and east of San Francisco Bay. Throughout their range adult pond turtles are active year round, although farther north their activity can be limited. At aquatic sites turtles hibernate in muddy stream bottoms. On land, they move upland in search of hibernation spots. Mating occurs in April and May and oviposition occurs in July and August in adjacent wetland margins or uplands that will not flood.

Limited suitable habitat for the northwestern pond turtle exists within the Site 40 project site in the drainages. The nearest CNDDB occurrence for this species is within the Site 40 parcel, approximately 0.75-1 mile east of the Site 40 project site (CDFG, 2009).

Sensitive Habitats

The Site 40 project site does not support any known sensitive habitats besides potential jurisdictional waters of the U.S., as discussed above.

Critical Habitats

The Site 40 project site is not located within any known critical habitats (USFWS, 2009c).

Movement Corridors

The CDFG has not identified any areas within the vicinity of the project area as important wildlife movement corridors. The Site 40 project site is adjacent to, but not within, an important wildlife movement corridor identified by the Sonoma County General Plan 2020, Open Space and Resource Conservation Element (Sonoma County, 2008). The identified wildlife movement corridor located south of Glen Ellen connecting Sonoma Mountain and the Mayacamas Range is more than 5 miles north of the Site 40 project site.

16.3 Impacts and Mitigation Measures

Significance Criteria

This impact analysis focuses on foreseeable changes to the baseline condition in the context of the significance criteria presented in **Chapter 6**.

Impact Discussion

The Site 40 Alternative could have an impact on federally-protected wetlands, waters of the U.S., and special status species, as described below. Through implementation of mitigation measures, the project would not conflict with any local policies or ordinances protecting biological resources. The project would not substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

Impact 16.1: Implementation of the Site 40 Alternative has the potential to result in a loss of waters of the United States and/or waters of the state, including seasonal drainages and seasonal wetlands. (Significant)

The Site 40 Alternative would involve filling seasonal drainages within the Site 40 composting area, which would potentially result in the loss of waters of the state and/or waters of the U.S., including wetlands. The project could potentially fill the 0.83 acres of seasonal drainages, as identified by a qualified biologist during the site visit, which would result in adverse permanent and temporary impacts to potentially jurisdictional waters of the U.S. and/or waters of the state. State and federal regulations require that the project applicant avoid or minimize impacts to wetlands and waters and develop appropriate protection for wetlands (See Regulatory Framework in **Chapter 6**). Wetlands that cannot be avoided must be compensated to result in “no net loss” of wetlands. If the Corps determines that wetlands or other waters of the U.S. are isolated waters and not subject to Corps regulations under the Clean Water Act, the RWQCB may choose to exert jurisdiction over these waters under the Porter-Cologne Act as waters of the state.

Prior to project construction, SCWMA would be required to conduct and have verified a formal wetland delineation and obtain and comply with a Section 404 permit from the U.S. Army Corps of Engineers (Corps), a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), and a Section 1600 Streambed Alteration Agreement from the CDFG. Because wetlands and seasonal drainages provide important habitat and water quality functions, and are subject to regulation by the Corps, CDFG, and the RWQCB, this impact is considered **significant.**

Mitigation Measure 16.1 (which requires implementation of Mitigation Measures 6.1 and 6.2) requires the preparation and verification of a wetland delineation, submittal of the appropriate permits (depending on the results of the wetland delineation), and avoidance, minimization and compensation for impacts on wetlands and other waters of the U.S. A project site has not yet been selected for this project, but this measure spells out the appropriate measures to ensure this impact is reduced to a less-than-significant level. The final terms and conditions of the permits will be determined in consultation with the agencies, following project approval.

Mitigation Measure

Mitigation Measure 16.1 Implement Mitigation Measures 6.1 and 6.2. Although Mitigation Measure 6.1 refers to indirect impacts on water quality of marshlands, application of BMPs and standard procedures to reduce accumulation of water contaminants, erosion, and discharge of sediment and other hazardous materials are applicable to minimize indirect impacts on all wetlands, other waters of the U.S., and waters of the state.

Significance after Mitigation: Less than significant.

Impact 16.2: Implementation of the Site 40 Alternative could result in direct and indirect impacts to the northwestern pond turtle, a special status species. (Significant)

Implementation of the Site 40 Alternative would result in the removal of wetland and drainage habitat. This could result in adverse permanent and temporary impacts to northwestern pond turtle. This impact is considered **significant.**

Mitigation Measure

Mitigation Measure 16.2: To reduce potential impacts on northwestern pond turtles, SCWMA shall retain a biologist to conduct a survey for northwestern pond turtles within 24 hours prior to the start of construction activities in drainages, ponds, and other watercourses located in the work area. If a turtle is found in the work area, the biologist shall try to passively move the turtle out of the area. If a turtle becomes trapped during construction activities in the waterway, a biologist shall remove the turtle from the work area and place it downstream of construction activities or in a suitable habitat in the vicinity of the project.

Significance after Mitigation: Less than significant.

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CHAPTER 17
Cultural Resources/Site 40 Alternative

17.1 Introduction

The information presented in this chapter is unique to Site 40 and the reader is referred to Chapter 7, Cultural Resources in cases where cultural resources setting information and/or impact analysis are the same for Site 40 as the project site.

17.2 Setting

Environmental Setting and Historical Background

Site 40 is located in the Northern California Coast ecological region and the Santa Rosa Plain subsection. While the project site (Site 5A) is located on the San Pablo Bay Flats subsection, in an area that is generally less than 10 feet above mean sea level, Site 40 is located in an area that is characterized by gently rolling hills in between the Pacific Ocean and the Santa Rosa Plain (Miles and Goudey, 1997).

The predominant natural plant communities in the Santa Rosa Plain subsection are needlegrass grasslands and valley oak series in inland valleys. The climate is temperate to hot and humid, moderated by marine air advancing over the hills most of the time. Average annual precipitation in the Santa Rosa Plain subsection is approximately 20 to 40 inches, with summer fog. Mean annual temperature is approximately 50° to 58° F (Miles and Goudey, 1997). Site 40 is on a 389.9-acre parcel of agricultural land which is currently used for cattle grazing. Surrounding land use includes rural residences, grazing lands, vineyards, and open space.

The area identified for composting is located on the western side of Site 40. The Site 40 Alternative would be accessed from Stage Gulch Road (Hwy 116) at Bourke Road. The terrain on Site 40 is characterized by gently rolling hills, with elevations ranging from 150 to 400 feet above mean sea level with existing elevation in the area identified for composting generally being 200 to 300 feet above mean sea level. Due to the presence of rolling hills and lack of soil erosion control through natural or artificial means, erosional gullies (seasonal drainages) exist throughout the site.

The study area is mapped as Pliocene and Miocene sedimentary rock. A band of Holocene alluvium is located along the unnamed intermittent drainage in the northern section of Site 40 however this is outside of the potential area of direct impact for the project (Blake, Graymer, and Jones, 2000). Sedimentary rock does not have the potential to contain deeply-buried archaeological resources (Meyer and Rosenthal, 2007).

Paleontological Setting

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found. The paleontological setting of the project area was established through review of geologic maps, the vertebrate fossil collections database at the University of California Museum of Paleontology, and relevant literature.

Site 40 is underlain by the Petaluma Formation (USGS, 2000), which reflects a landscape transition from a lake and estuarine setting to a non-marine, fluvial environment during the late Miocene and early Pliocene (approximately 3.5 to 11 million years ago) (AEG, 2008). Within the Petaluma Formation as a whole, which extends from Sears Point to north of Cotati, nine locations have yielded vertebrate fossils (of hoofed mammals in particular) in both natural and excavated exposures of rock (UCMP, 2009). The Stony Point Rock Quarry east of Petaluma, for example, has yielded a fossil of a late Miocene (Hemphillian) horse tooth (AEG, 2008). Due to its age and composition, the Petaluma Formation does not naturally produce many large rock outcroppings, and thus opportunities to study the formation and its fossils are limited.

Nonetheless, within two miles of Site 40, three vertebrate fossils have been found, including an unknown species of horse, a rabbit or hare, and a three-toed horse (UCMP, 2009; AEG, 2008). The closest of these finds is less than a half mile southwest of the project boundary. Fossil discoveries of this kind provide scientific value because they help establish a historical record of past plant and animal life and have assisted geologists in dating rock formations and correlating them with other formations in the region. Because the Petaluma Formation has yielded vertebrate fossils, it qualifies under the Society of Vertebrate Paleontology (SVP) guidelines as a unit of high paleontological potential[1] (SVP, 1995).

Prehistoric Background

The prehistoric background is the same as discussed in Chapter 7, Cultural Resources, Section 7.2.

Ethnographic Background

The ethnographic background is the same as discussed in Chapter 7, Cultural Resources, Section 7.2.

Historical Background

The early historic-period of the region and Petaluma is discussed in Chapter 7, Cultural Resources, Section 7.2. Historic maps that show Site 40 indicate that by the late 1870s a house and orchard were located within the boundaries of the current ranch complex. The property has been used for ranching and dairy purposes since this period. Also by the 1870s the Eureka District School had been established on the east side of Stage Gulch Road at the corner of Adobe Road. Site 40 continues to be a rural site used for cattle grazing and agricultural purposes.

1 Paleontological potential refers to the probability that a rock unit will yield a unique or significant paleontological resource.

Archaeological Records Search and Results

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on July 10, 2009 (File No. 09-0044). The same records search methods were employed as discussed in Chapter 7, Cultural Resources, Section 7.2.

The records search at the NWIC indicated that the Site 40 parcel was previously surveyed for cultural resources in 2000 and 2001 (Quinn and Origer, 2000; Quinn and Origer, 2001). Those surveys did not include the current ranch with an approximate 500-foot boundary. Four additional cultural resources studies have been conducted immediately adjacent to Site 40 (Adams and Buss, 1980; Flynn, 1980; Jones & Stokes, 2000; and Roop, 1980).

The 2000 survey covered the northeast portion of Site 40 and was completed using an intensive survey strategy that consisted of a three-person crew walking in 10–20 meter-wide transects. Surface visibility was mixed, with some limiting vegetation. Soil was periodically scraped with tools to reveal ground surface (Quinn and Origer, 2000). No prehistoric or historic-period cultural resources were located during the survey.

The 2001 survey was completed for the southwest section of Site 40. A five-person crew surveyed in 10–20-meter wide transects. Surface visibility was also mixed and soil was periodically scraped to reveal ground surface. One isolated obsidian flake was found at Site 40. The flake is indicative of the general Native American use and occupation in the vicinity, however it does not constitute an archaeological site according to the State of California as no other cultural indicators such as a bedrock milling station, midden soils, or shell fragments, were identified along with the obsidian flake. No prehistoric or historic-period archaeological resources have been located within Site 40 or within a one-mile radius. While Site 40 has not been surveyed in its entirety, the lack of artifacts uncovered in previous surveys and the lack of other archaeological resources within one mile suggest that it is very unlikely this site will contain previously unknown archaeological resources.

Native American Consultation

On July 8, 2009, a letter was sent to Dr. Greg Sarris c/o Nick Tipon of the Federated Indians of the Graton Rancheria (FIGR). Mr. Tipon, Chairman of the Sacred Sites Protection Committee, responded on July 23, 2009 stating that the Tribe has knowledge of the use of this area by their ancestors. They requested project plans to review to make a final determination on the level of impact, types of avoidance or possible mitigation. He requested that the lead agency (SCWMA) contact them to begin government to government consultation regarding the project. ESA informed the project applicant of this request and SCWMA is currently engaged in consultation with the Tribe.

Architectural Field Survey Results and Evaluation

One structure within the project area, the single family residence, is more than 50 years old and is therefore potentially eligible as a historical resource under the California Environmental Quality

Act (CEQA). The residence, originally constructed in the 1950s, is a wood frame, single-story building with an irregular floor plan, modern windows, and a hipped roof with composite shingles.

The project area has been in use as a ranching and dairy operation since the late 19th century. The current residence was originally constructed circa 1950, although residences have been noted on historic maps within the vicinity since the 1870s. With the addition of the surface pond and associated water storage tank and pump house to the east of the property in the late 1950s, the property was able to expand as a dairy facility with the construction of additional barns, housing for workers, and the expansion of the single-family residence (EBA Engineering, 2008). According to the building permit records maintained by Sonoma County, the single-family residence was extensively remodeled in the 1970s, including an additional family room and bedroom that doubled the square footage of the residence and resulted in the irregular floor plan (Sonoma County, 2009) (**Figure 17-1**).

The ancillary buildings, including a milking barn, three loafing barns, a duplex residence, and two modular residences were all added to the property between 1963 and 1971, and therefore do not meet the 50 year age requirement.

SOURCE: ESA, 2009

Sonoma County Compost Facility. 207312

Figure 17-1
1035 Stage Gulch Road Single Family Residence

The single-family residence is not considered a historical resource, as it lacks integrity and does not appear to meet the criteria for listing in the California Register. National, state and local registers were reviewed, and this resource was not listed. ESA's review of previous reports and information retained by Sonoma County did not determine that any known direct associations with events or people that have had a broad-reaching impact on the community at the local, state, or national level. Archival research has revealed no relevant information regarding the history or significance of the property or its owners. Furthermore, the structure does not embody the characteristics of a distinctive type, period, or method of construction, or represent the work of a master architect or builder. Finally, it does not appear to have the potential to yield information important to an understanding of the prehistory or history of the local area, the state, or the nation. Therefore, the resource does not appear to be eligible for the California Register and lacks overall historical significance.

17.3 Impacts and Mitigation Measures

Significance Criteria

The significance criteria are the same as those discussed in Chapter 7, Cultural Resources, Section 7.3.

Impact Discussion

Impact 17.1: The Site 40 Alternative would not affect significant architectural/structural resources. (Less than Significant)

One structure within the project area, the single family residence, was determined to be more than 50 years old and therefore potentially eligible as a historical resource under CEQA. The residence, originally constructed in the 1950s, has been extensively modified due to remodeling and an addition constructed in the 1970s. The building lacks integrity, and does not meet the criteria for listing in the California Register. The resource does not appear to be eligible for the California Register and lacks overall historical significance. The single family residence is not within the footprint of the area that would be used for composting, but the residence would be near the entrance road leading from Stage Gulch Road to the Site 40 composting area. The impact would be **less than significant**.

Mitigation: None required.

Impact 17.2: The Site 40 Alternative could inadvertently discover cultural resources. (Significant)

It does not appear that Site 40 contains archaeological resources; however this possibility cannot be entirely discounted. Project personnel should be alerted to the possibility of encountering archaeological materials during construction, and apprised of the proper procedures to follow in the event that such materials are found. Without mitigation, this could be a **significant** impact.

Mitigation Measure

> **Mitigation Measure 17.2:** Implement Mitigation Measure 7.2.
>
> **Significance after Mitigation:** Less than significant.

Impact 17.3: The Site 40 Alternative could inadvertently discover human remains. (Significant)

It does not appear that Site 40 contains human remains; however this possibility cannot be entirely discounted. Project personnel should be alerted to the possibility of encountering human remains during construction, and apprised of the proper procedures to follow in the event that they are found. Without mitigation, this could be a **significant** impact.

Mitigation Measure

> **Mitigation Measure 17.3:** Halt work if human skeletal remains are identified during construction. Implement Mitigation Measure 7.3.
>
> **Significance after Mitigation:** Less than significant.

Impact 17.4: The Site 40 Alternative could inadvertently discover paleontological resources. (Significant)

As discussed in the setting, the Petaluma Formation underlying Site 40 has yielded several vertebrate fossils within two miles and qualifies under the SVP guidelines as a unit of high paleontological potential. While no information exists to refute or confirm specific fossil occurrences beneath the site, the Petaluma Formation has a high potential to yield fossils and subsurface excavations beyond previously disturbed soils or natural topsoil could potential unearth, disturb or destroy a paleontological resource. Site 40 would grade numerous natural slopes to prepare the site for active composting, build the process and administrative buildings and create a stormwater detention pond. Due to the moderately hilly nature of the site, significant cuts (potentially as deep as 30 feet) into the Petaluma Formation are likely. Without proper prevention measures, this activity would constitute a *potentially significant* impact to paleontological resources. Mitigation measures are available that could reduce this impact to a less than significant level by educating earth moving crews on the appearance of fossils, establishing procedures to follow if any are discovered, and ensuring that a paleontologist assess the significance of any fossil find, and recovers it, if appropriate. Without mitigation this could be a **significant** impact.

Mitigation Measures

> **Mitigation Measure 17.4a:** Prior to the start of any subsurface excavation, all construction forepersons and field supervisors shall receive training by a qualified professional paleontologist, as defined by the SVP (1995), who is experienced in teaching non-specialists. Topics to be covered will include the scientific importance of fossil remains; the potential for fossil remains being uncovered and/or disturbed by project-related earth moving; where such remains are most likely to be encountered during earth moving; and procedures to be employed if fossil remains are discovered during excavations. Procedures to be employed if fossil remains are discovered include halting construction within 50 feet of any potential fossil find and notifying a qualified paleontologist, who shall evaluate its significance. Training on paleontological resources shall also be provided to all other construction workers, but may

involve using a videotape of the initial training and/or written materials rather than in-person training by a paleontologist. If a fossil is determined to be significant and avoidance is not feasible, the paleontologist shall develop and implement an excavation and salvage plan as described in Mitigation Measure 17.4b.

Mitigation Measure 17.4b: A qualified professional paleontologist, as defined by the SVP (1995), shall monitor and inspect excavated faces for paleontological resources during initial ground disturbance for each construction phase of the project. After initial ground disturbance, onsite monitoring may cease if the paleontologist determines that the potential to uncover fossils at the project site is low. This determination can be made based upon his or her professional judgment and the specific stratigraphic facies[2] within the Petaluma Formation where excavation is occurring. However, the paleontologist shall remain on-call throughout the project duration in the event of an unanticipated find during subsequent construction activities (as described in Mitigation Measure 17.4a).

The paleontologist shall assess the nature and importance of all potential fossil discoveries. If a fossil is determined to be significant and avoidance is not feasible, the paleontologist, in consultation with SCWMA, shall develop and implement an excavation and salvage plan in accordance with SVP standards (SVP, 1995; SVP, 1996). Measures would focus on identifying an institution willing and able to accept the specimen, plaster jacketing the specimen, and promptly removing the specimen from the construction site for study in a paleontology lab.

Significance after Mitigation: Less than significant.

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CHAPTER 18

Hydrology and Water Quality/Site 40 Alternative

18.1 Introduction

The information presented in this chapter is unique to Site 40 and the reader is referred to Chapter 8, Hydrology and Water Quality**,** in cases where hydrologic resources setting information and/or impact analysis are the same for the Site 40 Alternative as the project site.

18.2 Setting

Surface Water Hydrology and Drainage

Topography at Site 40 is hilly, and grades from approximately 420 feet mean sea level (msl) at a peak near the southern corner of the site, to approximately 180 feet msl in the vicinity of Adobe Road, near the northeastern side of the site. Water features at Site 40 include an ephemeral, unnamed stream that runs southeast to northwest in the vicinity of Adobe Road, as well as several smaller, unnamed drainages that feed into that stream from various points on site. The stream is impounded near the eastern corner of Site 40, near the intersection of Adobe Road and Stage Gulch Road. This small reservoir (Pinheiro Reservoir) is filled by natural streamflow along the unnamed stream, emanating from the areas to the south and east of the site. Leaving Site 40, the unnamed stream winds northwest, and then southwest, until it merges with the Petaluma River, near the southern end of the City of Petaluma. The Petaluma River eventually discharges to the San Pablo Bay, approximately 11 miles downstream.

The Pinheiro Reservoir presently has a capacity of 87 acre feet (AF). A water rights application to expand the reservoir was recently approved by the State Water Resources Control Board (SWRCB), as discussed below under Water Supply.

A discussion of the Petaluma River and associated hydrology and water quality is contained in Chapter 8, Hydrology and Water Quality.

Groundwater

Site 40 is located outside of the California Department of Water Resources (DWR's) groundwater basin delineation system (DWR, 2003). Detailed groundwater level data for Site 40 were not found to be available. A search of available data maintained by the DWR indicated a handful of wells that are routinely monitored within several miles of Site 40. However, all monitored wells for which data are available are located along flatlands/areas of minimal topographical relief, located to the east, west, and southwest of Site 40. These wells are anticipated to be screened within very different formations as compared to Site 40, and are not anticipated to be representative of Site 40. Therefore, no relevant groundwater level data were found to be available.

One groundwater well is presently located on site, and is currently used to supply on-site operations. The well is screened at a depth of 440 feet, and has a production rate of 16 gpm or 25.8 AF per year (AF/yr) This production rate from the existing well would satisfy approximately 30 percent of the total 82.9 AF/yr of water required in support of the Site 40 Alternative. In the event that groundwater were selected as the sole source of water supply for the Site 40 Alternative, additional groundwater wells could potentially be installed in order to meet total Site 40 Alternative water demand. Four additional wells located adjacent to Site 40 were identified via a DWR well log records search. These wells are located on adjacent properties immediately east and south of Site 40. Records indicate that these wells are screened at depths ranging from 68 to 500 feet below ground surface (bgs), and range in production rate from 10 to 25 gpm.

Flooding

No areas within Site 40 have been delineated as being within a Federal Emergency Management Agency (FEMA)-defined 100-year flood zone. However, the unnamed drainage channels located on site would be anticipated to carry flood flows during storm events. Flood flows at Site 40 have not been quantified or estimated in support of the Site 40 Alternative.

Water Supply

Water supply requirements for the Site 40 Alternative would be the same as those indicated in Chapter 8, Hydrology and Water Quality. However, water supply for Site 40 could be supplied by groundwater, surface water supplied from the reservoir located on Site 40, and/or from reclaimed water provided by the City of Petaluma's water recycling facility.

On-Site Reservoir

On October 14, 1999, the present property owner of Site 40 filed Application 30978 with the State Water Resources Control Board for appropriative rights to expand the existing impoundment and utilize up to 164 AF/yr of water from the resulting expanded Pinheiro Reservoir. Although the existing impoundment has not yet been expanded, the Application was approved in June, 2008, and Permit for Diversion of Water Use 21217 was issued to the present owner of the property. Currently permitted uses of the water stored in the reservoir include stockwatering of up to 1000 dairy cattle, and irrigation and frost protection of approximately 300 acres. In order to utilize water stored in Pinheiro Reservoir for the proposed facility, the beneficial uses indicated in Permit 21217 would need to be updated to reflect composting operations as a permitted use.

As indicated in Chapter 8, Hydrology and Water Quality approximately 130 AF/yr would be required to supply the Project with water sufficient for composting operations and other on-site activities.

Recycled Water

Recycled water is presently utilized at the Teixeira Ranch, and pipelines are available in the vicinity of the Site 40 composting area. The pipelines could be used to convey recycled water to composting operations. Recycled water would be provided via pipeline from the City of Petaluma's Ellis Creek Water Recycling Facility (ECWRF). The facility generates approximately 2,150 AF/yr of recycled water for use in the City of Petaluma, as well as the hills located east of the City, including the Teixeira Ranch. The ECWRF is planned to expand to a capacity of 3,280 AF/yr through 2025, consistent with General Plan buildout for the City of Petaluma. The goal of this expansion is to maximize Petaluma's water resources by expanding the beneficial reuse of water in the City of Petaluma, while maintaining sensitivity to public health, the environment and costs. The ECWRF provides secondary and tertiary-treated water.

Recycled water would be provided to Site 40 via existing pipelines, for use in composting operations. Sufficient recycled water supply for composting operations would be made available to Project operations via existing allocations to Teixeira Ranch, or as additional supply provided by the ECWRF, as available. As of 2006, approximately 520 AF/yr of recycled water was provided to the Teixeira Ranch (Site 40) by the City of Petaluma.

Suitability of Recycled Water for Composting

Use of recycled water provided by the City of Petaluma is required to meet state standards for recycled water usage. Although the recycled water provided to the project site could contain some level of coliform or salmonella pathogens, all composters are required to undergo a two-part pathogen reduction process. Herein, all composters must subject the compost to a 15-day period where the compost temperature exceeds 131 degrees F, and is turned 5 times. Pathogen reduction also requires compliance with routine laboratory testing, for fecal coliform and salmonella, to ensure minimization of these bacteriological pathogens.

Water Supply Assessment

Background

Compliance with the California Public Resources Code (PRC) §21151.9 requires, where necessary, that a proposed project prepare a Water Supply Assessment (WSA) to ensure that long term water supplies are sufficient to meet the project's demands in normal, single dry and multiple dry years for a period of 20 years. Preparation of a WSA is required if a project meets the statutory definition of a "project," where a project is defined as "a proposed industrial, manufacturing, or processing plant, or industrial park occupying more than 40 acres of land..."[1]

The project, if implemented at Site 40, would require 57 acres within a 390-acre site, wherein the composting operations would occupy 48 of the 57-acre area of the property. Therefore, the project meets the definition of a project, and preparation of a WSA was completed in support of the proposed operations for the Site 40 Alternative (Tully and Young, 2011). See Appendix WSA.

Water Sources and On-Site Water Demands

The following potential sources of water were identified on site, which are expected to be available to the project:

- Recycled water from the City of Petaluma via an existing pipeline that delivers to the project site;
- Groundwater via a domestic groundwater well located on the hill above the current residence location;
- Existing licensed and permitted water rights on an unnamed on-site reservoir, on an unnamed stream on the property. This stream is tributary to Petaluma Creek; and
- Stormwater stored in the proposed on-site 24 acre-foot stormwater detention pond.

Several aspects of Site 40 would use water under the project. These are as follows:

- Compost processing, which requires water to facilitate composting, to control dust, and to clean equipment;
- Buildings and employee facilities, which require potable water to meet the needs of on-site personnel;
- Landscaping for aesthetic and visual screening, which requires water to meet plant evapotranspiration needs, and;
- Fire suppression, which requires a stand-by quantity of water to assist with controlling and extinguishing fires.

Quantification of Project Water Demand

Historic water demands for the 390-acre site include a total annual usage of approximately 496 acre-feet. This includes approximately 408 acre-feet of recycled water for pasture irrigation, up to 87 acre-feet of surface water from the existing on site reservoir, used for stock watering and daily operations, and approximately 0.75 acre-feet of groundwater used for potable water (Tully and Young, 2011).

Water demand that would be required for project operation is shown in Table 18-1. The water demand amounts shown are expected to be relevant to all water year types, including dry and consecutive dry years. Water use shown for compost piles is based on the use of an open windrow composting method. This method was selected for evaluation in support of the WSA because it

[1] California Water Code § 10912(a)(5)

would require more water than aerated static piles (ASP), which are also under consideration for the project. Therefore the water demand values shown below represent a conservative estimate for anticipated water use. Annual non-potable water demand is estimated to be 129 acre-feet per year, equivalent to an average of approximately 117,000 gallons per day. This quantity of water is based on an estimated 200,000 tons of raw organic material processing per year, or an average of approximately 560 tons per day based on a 359-day work-year.

TABLE 18-1
PROJECT WATER DEMAND, ALL WATER YEAR TYPES

	Water Use Category			
	Landscaping (Non-Potable)	**Compost Piles (Non-Potable)**	**Miscellaneous Outdoor Uses (Non-Potable)**	**Potable Water**
Annual Demand (acre-feet/year)	3.3	114	11.7	0.8
Annual Demand, Grand Total (acre-feet/year)	130			

SOURCE: Tully and Young, 2011.

Potable water demand on site was estimated based on Federal Energy Management Program estimates for water use at commercial sites, which specify a range of 8-20 (average 15) gallons per employee per day. The project is estimated to require 48 staff, resulting in a water use of approximately 263,000 gallons per year, or about 0.8 acre-feet per year (Table 18-1).

Water would also be required on site for fire suppression. Water for fire suppression would not be required on an ongoing annual or predictable basis, and therefore is not scheduled into the annual water demand figures listed above. Fire suppression flows would require a flow rate of approximately 5,250 gallons per minute over a period of four hours. This is equivalent to approximately 1.26 million gallons, or about 5 acre-feet. This amount of water could be stored in the on-site stormwater detention pond, or in the existing on-site reservoir, as a fire protection contingency (Tully and Young, 2011).

Adequacy of Water Supplies

The primary source of water supply to the proposed project would be recycled water from the City of Petaluma, delivered through an existing pipeline to the project site. Historic deliveries of recycled water to the property, during 2005-2009, ranged from 304 to 516 acre-feet per year. Anticipated upgrades to Petaluma's recycled water facility are expected to result in additional supply availability for recycled water. Water would be delivered to the project site based on a periodically renewable contract, that would be established for the delivery of secondary treated recycled water, between Petaluma and the project applicant. In 2010, total deliveries of recycled water by Petaluma to agricultural users, including the project site, were over 1,500 acre-feet. Future projections are estimated at nearly 2,000 acre-feet per year, with water available to the project site at least until 2035, based on planning documents promulgated by Petaluma (Tully and Young, 2011).

Additional potential water supplies for the project site include surface water rights at the on-site reservoir, the proposed 24 acre-foot stormwater detention basin, and groundwater. Of these potential water sources, only groundwater is proposed for use on an ongoing basis. Groundwater would be used to meet potable water demands, equivalent to approximately 0.8 acre-feet per year, as described above. Note that this water usage rate is only slightly higher than existing water use on site, estimated at 0.75 acre-feet per year (see previous discussion). A pump test, conducted at the time of drilling of the proposed potable water supply well, indicated a well yield of 16 gallons per minute. This is equivalent to approximately 25 acre-feet per year if pumped on a continuous basis, substantially more than the required 0.8 acre-feet per year.

As discussed in greater detail in the WSA (Tully and Young, 2011), the water supplies available to the project are determined to be sufficient for at least the next 20 years, based upon the following primary conclusions:

- The project anticipates an annual demand of 130 acre-feet per year, which includes 129 acre-feet of non-potable demands and approximately one acre-foot of potable demand. The non-potable demands include a conservatively high estimate of water to enable composting functions, as well as estimated water necessary to irrigate trees, to control dust, and to maintain equipment.
- Petaluma will continue to provide adequate supplies of secondary-treated recycled water to the Site 40 property, as reflected in the City's 2010 Urban Water Management Plan (April 2011 Public Draft).
- The existing domestic well would continue to be used to meet potable demands generated by the project that are similar in quantity and use pattern to those of historic and existing domestic uses located on site.

For additional discussion of project water supplies and anticipated demands, refer to Tully and Young (2011).

Wastewater

Sanitary wastewater treatment would be provided by an on-site, Class A permitted septic system, which has been approved at Site 40, and which would be amenable to the proposed use at the composting facility. The approved system is an 8-unit septic system, which would be suitable for use in support of the Site 40 Alternative. Additional areas suitable for septic systems could be developed on site if needed.

18.3 Impacts and Mitigation Measures

Significance Criteria

Significance criteria relevant to Site 40 are provided in Chapter 8, Hydrology and Water Quality. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change, as defined by the California Environmental Quality Act (CEQA). Implementation of the Site 40 Alternative would not result in the installation or construction of housing facilities or other residences, and would not result in the installation of any facilities within a 100-year flood zone. Also, the Site 40 Alternative would not disturb or otherwise increase the risk of failure of any levee or dam, and would not place facilities in an area that would be subject to inundation as a result of levee or dam failure. Finally, no large water bodies are located near the Site 40 Alternative site that would cause the Site 40 Alternative to be susceptible to seiche, and the site is located well above sea level, such that it would not be affected in the event of a tsunami. No impact would occur under any of these categories, and therefore these impacts are not discussed further within this section.

Impact Discussion

Impact 18.1: The Site 40 Alternative could violate a water quality standard or waste discharge requirement, or otherwise substantially degrade water quality. (Significant)

As discussed in Chapter 8, Hydrology and Water Quality, during construction, the operation of heavy equipment, and other construction related activities could result in the release of water quality pollutants into natural waters. During the operation phase of the Site 40 Alternative, routine operations could also result in the accumulation and release pollutants to natural waters. Water applied to compost piles would be managed such that no runoff would occur. Releases of these pollutants could result in a **significant** impact associated with degradation of water quality.

As discussed previously, sanitary wastewater would be treated via an approved, Class A on-site septic system. Use of this system would comply with County, State, and Federal standards, and is not anticipated to result in a significant degradation of water quality.

Mitigation Measure

> **Mitigation Measure 18.1**: Implement Mitigation Measure 8.1
>
> **Significance After Mitigation:** Less than Significant.
>
> Implementation of the proposed mitigation would prevent or reduce potential for the emission of water quality pollutants, and thereby reduce potential impacts associated with water quality degradation**.**

Impact 18.2: The Site 40 Alternative could 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 or conflict with Sonoma County General Plan policies regarding groundwater. (Significant)

As discussed previously, the Site 40 Alternative would use groundwater on site, in order to provide potable water to the Site 40 Alternative. Groundwater could also be used to supply some portion of composting operations; however, the total volume of groundwater used to supply potable water would be approximately 0.8 acre-feet per year, as discussed previously. This proposed use rate would be similar to existing and historic groundwater use on site (estimated 0.75 acre-feet per year). Therefore, project-related groundwater usage is not anticipated to significantly draw down the local or regional aquifer, in comparison to existing conditions, and is not anticipated to result in significant reduction in the level of water in other nearby wells.

Installation of the project would result in the construction of impervious surfaces to support composting operations. However, most of the project site would remain as pervious surfaces, and adjacent areas would also remain pervious. Additionally, stormwater emanating from constructed impervious surfaces would be contained in detention basin on site, which could be lined to prevent percolation, depending on final site design and permitting. Therefore, the project is not anticipated to significantly alter groundwater levels on site or in adjacent areas.

Although the project is not anticipated to result in reduced groundwater levels, implementation of Mitigation Measure 8.2a would be required in order to remain consistent with Sonoma County General Plan Policy WR-2d, as described previously in the discussion of the Sonoma County General Plan in Chapter 8, Hydrology and Water Quality. Also, in order to maintain compliance with Sonoma County General Plan Policies WR-4b, WR-4g, and WR-4k, implementation of Mitigation Measure 8.2b would be required. Without mitigation this impact would be **significant**.

Mitigation Measure

Mitigation Measure 18.2: Implement Mitigation Measure 8.2a and 8.2b

Significance After Mitigation: Less than Significant.

Impact 18.3: The Site 40 Alternative could 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 which would result in substantial erosion or siltation on- or off-site, or result in flooding on- or off-site. (Significant)

Installation of the Site 40 Alternative would not alter the course of the unnamed drainages located on site. Potential expansion of the Pinheiro Reservoir was previously evaluated for environmental impact, and underwent analysis in compliance with CEQA, during the approval process for Permit for Diversion of Water Use 21217.

However, similar to the discussion in Chapter 8, Hydrology and Water Quality, the Site 40 Alternative could result in changes in localized flow patterns or runoff such that localized flooding could result, or increases in erosion or sedimentation on site or downstream. Without mitigation this impact would be **significant**.

Mitigation Measures

Mitigation Measure 18.3. Implement Mitigation Measure 8.3b.

Significance After Mitigation: Less than Significant.

Impact 18.4: The Site 40 Alternative could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Significant)

Implementation of the Site 40 Alternative would result in construction of impervious surfaces and stormwater drainage facilities as discussed in Chapter 8, Hydrology and Water Quality. Implementation of **Mitigation Measure 8.3b** would be required.

Mitigation Measures

Mitigation Measure 18.4. Implement Mitigation Measure 8.3b

Significance After Mitigation: Less than Significant.

18.4 References

California Department of Water Resources (DWR), 2003. California's Groundwater Bulletin 118. Available August 22, 2009 at: http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm

Tully and Young, 2011. Water Supply Assessment. Prepared for Sonoma County Waste Management Agency Site 40 Composting Facility. November 2011. See Appendix WSA.

CHAPTER 19
Land Use and Agriculture/Site 40 Alternative

19.1 Introduction

The information presented in this chapter is unique to the Site 40 Alternative and the reader is referred to Chapter 9, Land Use and Agriculture, in cases where land use and agriculture setting information and/or impact analysis is the same as that previously discussed for the project site.

19.2 Setting

The regional land use and agricultural setting discussion for Sonoma County is the same as the discussion in Chapter 9, Land Use and Agriculture.

Site 40 and Vicinity

Site 40 Description

A general description of Site 40 including location, natural features, structures and existing uses is included in Chapter 14, Alternatives. Additional information on biological resources is included in Chapter 16, Biological Resources.

Surrounding Uses

As with the project site, Site 40 is located within the Petaluma and Environs Planning Area of Sonoma County where the majority of land is used for agricultural purposes. The immediate vicinity of Site 40 contains vineyards and grazing among other agricultural uses. The closest residence to the Site 40 composting area is approximately 1,750 feet to the west. Other residences which occur on lands with agricultural uses are approximately 1,835 feet to the east and 2,450 feet to the north. A dairy farm is approximately 1,750 feet to the south. The nearest airport is Petaluma Municipal Airport located approximately 3.25 miles northwest of Site 40.

Regulatory Framework

The regulatory settings for land use planning and agriculture are discussed below. The Countywide Integrated Waste Management Plan (CoIWMP) prepared pursuant to the California Integrated Waste Management Act, is discussed in Chapter 11, Public Services and Utilities.

Land Use Planning

Sonoma County General Plan 2020

The General Plan and relevant goals, policies and objectives concerning the Site 40 Alternative are the same as those discussed in Chapter 9, Land Use and Agriculture (Sonoma County, 2008b). **Figure 9-1** presents Sonoma County General Plan land use designations for Site 40 and the vicinity. Site 40 has a General Plan Land Use Designation of Land Extensive Agriculture (LEA). The adjacent parcels are also designated LEA.

Sonoma County Zoning Ordinance

Site 40 is zoned LEA with several combining districts. These combining districts include B6 (with a density designation of 60), Z Second Unit Exclusion, and Valley Oak Habitat (VOH; Sonoma County, 2008a). Details on these zonings are included in Chapter 9, Land Use and Agriculture.

Federal Aviation Administration Advisory Circular for Hazardous Wildlife Attractants on or near Airports

Federal Aviation Administration (FAA) Advisory Circular 150/5200-33B is discussed in Chapter 9 including recommended distances of airports from composting operations. For the Petaluma Municipal Airport, Site 40 is located outside of the 10,000 foot recommended separation distance for Waste Disposal Operations but within the 5-mile recommended separation for protection of approach, departure and circling airspace.

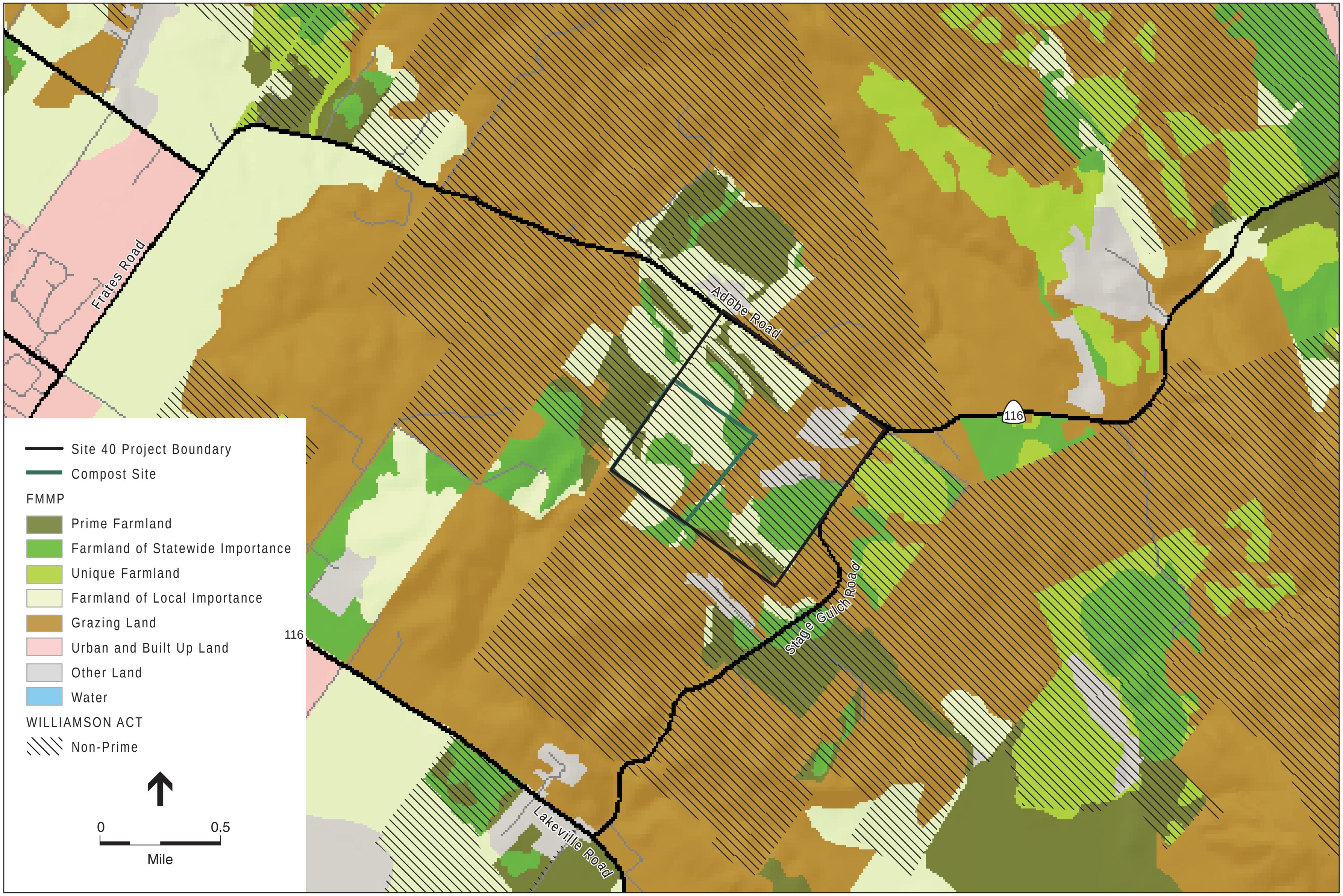
Agriculture

California Land Conservation Act (Williamson Act)

Chapter 9, Land Use and Agriculture, provides background information on the Williamson Act. **Figure 19-1** provides a map of properties in the vicinity of Site 40 that are currently under Williamson Act contracts. As shown, Site 40 is currently under a Type II Williamson Act contract.

California Department of Conservation Farmland Mapping and Monitoring Program

A summary of the Important Farmland Mapping and Monitoring Program (FMMP) is included in Chapter 9, Land Use and Agriculture. **Figure 19-1** provides a map of the FMMP classifications for Site 40 and surrounding vicinity. Site 40 contains prime farmland, farmland of statewide importance, farmland of local importance and grazing land. Large expanses surrounding Site 40 are classified as grazing land. Prime farmland and farmland of statewide importance are located adjacent to Site 40 to the northwest and southwest.



SOURCE: FMMP, 2006; Williamson Act, 2006; NAIP, 2006; ESRI, 2007; and ESA, 2009

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Figure 19-1
FMMP Land Classifications and Williamson Act Contracts for Site 40

19.3 Impacts and Mitigation Measures

Significance Criteria

Refer to Chapter 9, Land Use and Agriculture, Section 9.3 for significance criteria that are used in the impact analysis for the Site 40 Alternative.

As with the project site, Site 40 is not located within the area of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan. Consequently, there would be no impact in regard to this criterion and accordingly, this issue is not discussed further.

Impact Discussion

Impact 19.1: The Site 40 Alternative has the potential to physically divide an established community. (Less than Significant)

Site 40 is located in a largely undeveloped area of Sonoma County. The majority of land uses in the vicinity of the site are agricultural in nature with scattered residences in the area. The Site 40 Alternative would not result in any physical barriers to traffic and circulation or otherwise divide an established community; thus, impacts would be **less than significant**.

Mitigation: None Required.

Impact 19.2: The Site 40 Alternative has the potential to conflict with the Sonoma County General Plan and Zoning Ordinance, resulting in adverse physical effects. (Significant)

Operation of this alternative would not stimulate growth or residential development, nor would it encourage a shift to more urban, commercial, or industrial uses that would result in indirect impacts to agricultural lands or operations outside of Site 40.

General Plan Land Use Designation and Zoning

LEA Designation and Zoning: The project does not appear to be consistent with the existing LEA land use designation/zoning. Sonoma County Permit and Resource Management Department has completed a general plan consistency analysis for the Site 40 Alternative (2011). The Site 40 Alternative does not appear to fit the requirements of an agricultural supporting use because: 1) the project would be the dominant use of the property (traffic, employment, public services and utilities usage) and the project would not be subordinate to the agricultural use of the rest of the property and 2) support of agriculture would not be the main function of the facility (less than 10 percent of the compost feedstock is anticipated to be agricultural waste and about 15 percent of compost and mulch would be sold for agricultural purposes). Adoption of a County of Sonoma General Plan Amendment including re-designation of the project site from LEA to PQP and approval of a rezone from LEA District to PF District are included as required approvals in the project description (Section 3.6), which would also apply to the Site 40 Alternative. The existing compost facility operates on property that is within the PQP designation and PF District zoning. It was previously determined that the compost facility was consistent with this designation and zoning and thus the same is assumed for the project.

Zoning

B6 Combining District with a density designation of 60Z: No residential units are proposed under this alternative; therefore there would be no conflict with this combining district.

VOH Combining District: The VOH combining district does not prohibit uses but rather requires mitigation for removal of valley oaks. Given that there are no valley oaks in the Site 40 composting area and Site 40 is disturbed from dairy farming and grazing, there would be no conflict with this combining district.

General Plan

Inconsistency with public plans creates significant impacts under CEQA only when an adverse physical effect would result from the inconsistency. Relevant General Plan policies are discussed in the various technical sections of the EIR and were reviewed for inconsistency after implementation of mitigation. After mitigation, the Site 40 Alternative is potentially inconsistent with the General Plan policies listed in **Table 19-1**.

TABLE 19-1
GENERAL PLAN CONSISTENCY FOR SITE 40

General Plan Policy		Consistency Discussion
Land Use Element		
Agricultural Resources		
LU-9d	Deny General Plan amendments that convert lands outside of designated Urban Service Areas with Class I, II, or III soils (USDA) to an urban or rural residential, commercial, industrial, or public/quasi public category unless all of the following criteria, in addition to the designation criteria for the applicable land use category, are met: (1) The land use proposed for conversion is not in an agricultural production area and will not adversely affect agricultural operations, (2) The supply of vacant or underutilized potential land for the requested use is insufficient to meet projected demand, (3) No areas with other soil classes are available for non resource uses in the planning area, and (4) An overriding public benefit will result from the proposed use… Public uses such as parks and sewage treatment plants may be approved if an overriding public benefit exists.	The project proposes conversion of agricultural land to a non-agricultural use. This document explores several alternative sites; however, an overriding public benefit may warrant a General Plan amendment. The physical impacts associated with this inconsistency are related to loss of agricultural land. This impact is discussed below and was found to be significant due to the type of soils affected by the conversion of approximately 57 acres of land containing the following Prime Farmland (0.7 acres), Farmland of Statewide Importance (17.3 acres), Farmland of Local Importance (27.6 acres), and Grazing Land (11.4 acres).
Open Space and Resource Conservation Element		
Air Quality		
OSRC-16i	Ensure that any proposed new sources of toxic air contaminants (TACs) or odors provide adequate buffers to protect sensitive receptors and comply with applicable health standards.	Impacts related to TACs could affect the existing residential uses surrounding Site 40. If the windrow option was chosen the impact from TACs would remain significant and unavoidable. If the aerated static piles (ASP) option was chosen, the impacts from toxic air contaminants would be less than significant as discussed in **Chapter 15**, Air Quality.

As discussed in **Table 19-1**, the project's inconsistency with the General Plan has **significant** physical impacts related to agricultural resources and air quality.

Mitigation Measure

Mitigation Measure 19.2: Implement ASP composting at Site 40.

Significance after Mitigation: The use of ASP composting would result in less than significant health impact from emission of TACs and would be consistent with the General Plan. However, project development on Site 40 would be inconsistent with the County Objective LU-9.1 and associated Policy LU-9d, which pertain to the conversion of agricultural lands and impacted soils. This would be a significant and unavoidable impact, further discussed in Impact 19.3 below.

Impact 19.3: The Site 40 Alternative would result in the conversion of agricultural land, specifically Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance and Grazing Land. (Significant)

The Site 40 Alternative would result in the conversion of approximately 57 acres of land containing the following FMMP categories: Prime Farmland (0.7 acres), Farmland of Statewide Importance (17.3 acres), Farmland of Local Importance (27.6 acres), and Grazing Land (11.4 acres). The Site 40 composting area is currently used for grazing. The topography and site conditions would not allow for intensive agricultural uses such as row crop production but may be able to support vineyards. After conducting the Land Evaluation and Site Assessment Model (LESA), it was determined that the project would have a Land Evaluation (LE) subscore of 21.64 and a Site Assessment (SA) subscore of 46.50 (see LESA Appendix). The combined Final LESA Score is 68.14, which is considered significant unless either the LE or SA subscore is less than 20 points, neither of which are; thus the project's agricultural impact is considered significant under the California Agricultural LESA Model. The availability of water, abundance of surrounding agricultural land and the fact that the project site and a majority of surrounding properties are currently under Williamson Act contracts lead to the significant Final LESA Score. Therefore, the Site 40 Alternative impact on these resources would be **significant**.

Mitigation Measure

Mitigation Measure 19.3: Implement Mitigation Measure 9.4.

Significance after Mitigation: Significant and Unavoidable.

Impact 19.4: The Site 40 Alternative would conflict with an existing Williamson Act Contract. (Significant)

Site 40 is currently restricted to agricultural use under a Williamson Act contract. The County would not be able to permit this alternative until the Williamson Act contract governing the property is terminated. While this impact does not have ramifications on the physical environment, the project could not proceed on land with a Williamson Act Contract and thus this impact is considered **significant**.

Mitigation Measure

Mitigation Measure 19.4: Implement Mitigation Measure 9.4.

Significance after Mitigation: Less than significant.

Impact 19.5: The Site 40 Alternative has the potential to conflict with airport operations. (Significant)

Composting operations have the potential to conflict with operations at Petaluma Municipal Airport, as identified in FAA Advisory Circular 150/5200-33B. Existing throughput for the County composting facility primarily consists of green material (yard waste) but does include a smaller percentage of food materials. Composting throughput containing food materials can result in increased numbers of gulls or other scavenging birds at the site, thus increasing the risk of bird strikes for aircraft departing or approaching the airport. Additionally, stormwater detention ponds can attract birds. It should be noted that the Petaluma Municipal Airport is located near existing water sources such as the Petaluma River (less than 2.5 miles south of the airport), Shollenberger Park (165 acre park with extensive wetlands located 2 miles to the south of the airport) and Lucchesi Park (community park with pond located one mile to the southwest of the airport). These sites are located at closer distances to the Petaluma Municipal Airport than Site 40. As the composting operations associated with the alternative and the stormwater detention pond could potentially create a hazardous wildlife attractant within 5 miles of the public airport, this impact is **significant**. Mitigation Measure 19.5 is recommended to reduce impacts to the extent feasible.

Mitigation Measure

Mitigation Measure 19.5: Implement Mitigation Measure 9.5 to reduce risks associated with wildlife hazards near Petaluma Municipal Airport.

Significance after Mitigation: Less than significant.

19.4 References

HDR Engineering, 2008. *Composting Facility Siting Study for Sonoma County, CA.* HRD Engineering, Inc. Prepared for Sonoma County Waste Management Agency. June 16, 2008.

Sonoma County, 2008a. Assessors Parcel Map, Book Number 066-070, Assessor's Parcel Number 068-120-002, December 31, 2008. Sonoma County Permit and Resource Management Department, Official Zoning Database website. Retrieved on February 5, 2009 from: http://www.sonoma-county.org/PRMD/docs/zoning_data/index.htm.

Sonoma County, 2008b. *Sonoma County General Plan 2020.* Sonoma County Permits and Resource Management Department, Sonoma, CA. Adopted by Resolution No. 08-0808 of the Sonoma County Board of Supervisors on September 23, 2008. Available at: http://www.sonoma-county.org/prmd/gp2020/adopted/index.htm.

CHAPTER 20
Noise/Site 40 Alternative

20.1 Introduction

The information presented in this chapter is unique to Site 40 and the reader is referred to Chapter 10, Noise in cases where noise setting information and/or impact analysis is the same for Site 40.

20.2 Setting

The setting section in Chapter 10, Noise provides general setting information regarding noise and noise regulations in Sonoma County, the following sections provide noise setting information unique to Site 40.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses.

The majority of the Site 40 surrounding area is open space and/or agricultural. Sensitive receptors in the immediate vicinity of the project are limited to residences. The closest residence to the Site 40 composting area is approximately 1,750 feet to the west. Other residences are approximately 1,835 feet to the east and 2,450 feet to the north. A dairy farm is approximately 1,750 feet to the south. All adjacent properties have a General Plan Land Use Zoning Designation of Land Extensive Agriculture (LEA).

Existing Noise Environment

The noise environment surrounding Site 40 site is influenced primarily by agricultural-associated operations and truck and automobile traffic on local roadways. The noise environment along likely haul routes is also primarily influenced by local traffic noise.

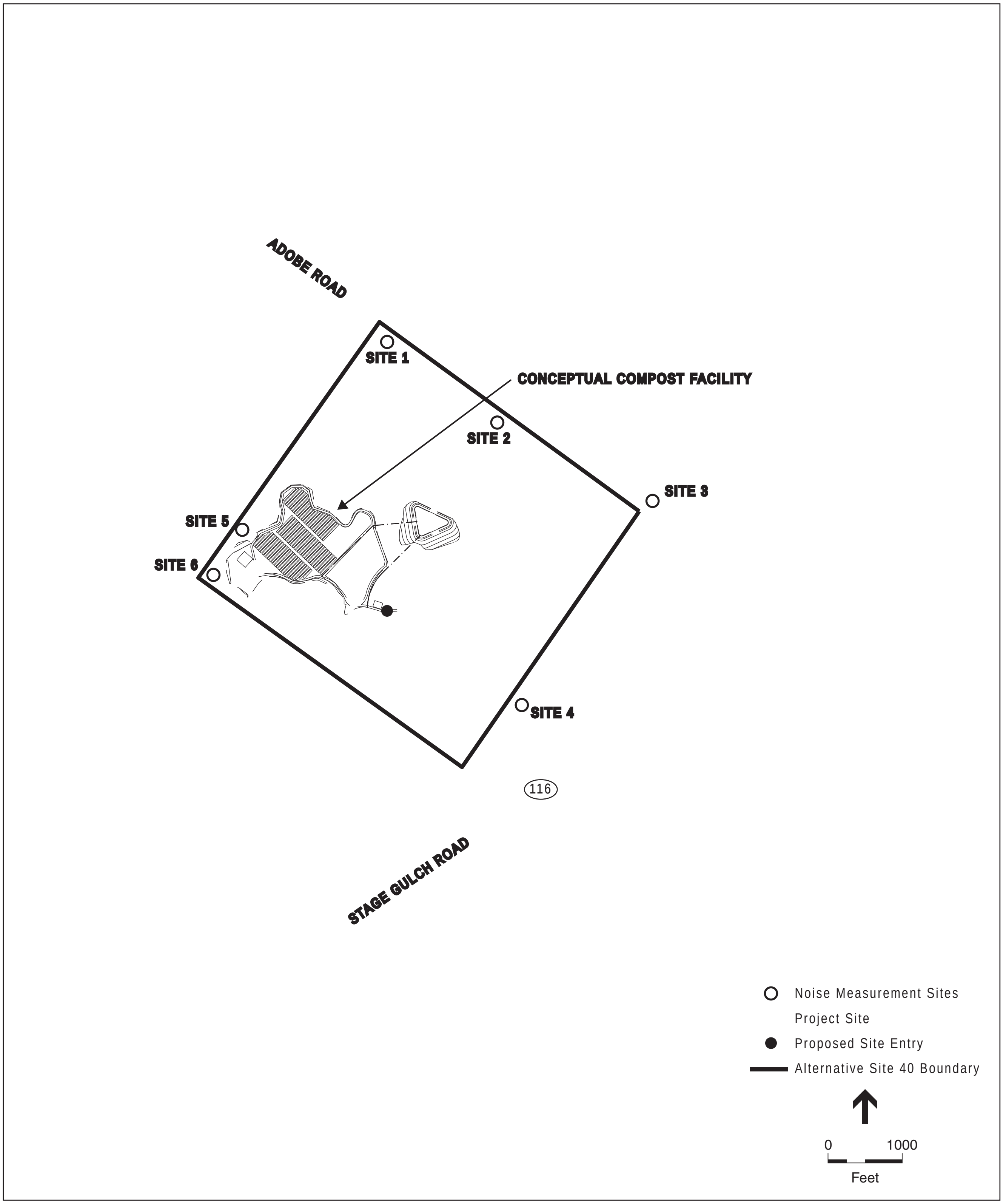
In order to characterize the existing operations environment as well as the Site 40 noise environment, short term and 24-hour noise measurements were conducted July 31st thru August 4th, 2009. Two long term measurements were taken at Site 40: one along Adobe Road at the northern corner of the property and one along Stage Gulch Road on the southeastern edge of the property. Ten short term measurements were taken at five different locations. The locations of the noise measurements are shown in **Figure 20-1**. Noise measurement results for all study locations are summarized in **Table 20-1**. Noise plots of the Site 40 long-term measurements are shown in **Figures 20-2** through **Figure 20-7**.

TABLE 20-1
SOUND-LEVEL MEASUREMENTS FOR THE SITE 40 ALTERNATIVE[A]

Location	Time Period	Leq(dBA)	Noise Sources
Site 1. Northern boundary of Site 40. 40 feet from center of Adobe Rd.	24– hour CNEL measurements were: Sat. Aug. 1: 76 dBA Sun. Aug. 2: 75 dBA Mon. Aug. 3: 76 dBA	Hourly Average Leq range: Aug 1: 67 – 73 Aug. 2: 61 – 73 Aug. 3: 62 - 75	Unattended noise measurements do not specifically identify noise sources.
Site 2. 40 feet from center of Adobe Rd.	Fri. July 31 1:05 – 1:15 p.m.	5-minute results: Leq's = 72, 75	Traffic 71 dBA Sprinklers Wind
Site 2. 40 feet from center of Adobe Rd.	Tue. August 4 12:04 – 12:14 p.m.	5-minute results: Leq's = 74, 72	Traffic 74 dBA Sprinklers Wind
Site 3. 50 feet from the center of intersection at Adobe Road and Stage Gulch Rd.	Fri. July 31 11:40 – 11:50 a.m.	5-minute results: Leq's = 75, 75	Traffic 84 dBA
Site 3. 50 feet from the center of intersection at Adobe Road and Stage Gulch Rd.	Tue. August 4 11:44 – 11:54 a.m.	5-minute results: Leq's = 72, 73	Traffic 82 dBA
Site 4. Southeastern property boundary, 50 feet from center of Stage Gulch Rd.	24– hour CNEL measurements were: Sat. Aug. 1: 66 dBA Sun. Aug. 2: 66 dBA Mon. Aug. 3: 65 dBA	Hourly Average Leq range: Aug 1: 49 – 68 Aug. 2: 52 – 67 Aug. 3: 52 - 67	Unattended noise measurements do not specifically identify noise sources.
Site 4. Southeastern property boundary, 50 feet from center of Stage Gulch Rd.	Fri. July 31 12:43 – 12:53 p.m.	5-minute results: Leq's = 57, 59	Traffic 66 dBA Wind Cows
Site 4. Southeastern property boundary, 50 feet from center of Stage Gulch Rd.	Tue. August 4 10:13 – 10:23 a.m.	5-minute results: Leq's = 55, 64	Truck using brakes 79 dBA Wind Airplanes
Site 5. Western corner of proposed project area	Fri. July 31 10:56 – 11:06 a.m.	5-minute results: Leq's = 53, 53	Wind 51 dBA Birds
Site 5. Western corner of proposed project area	Tue. August 4 10:54 – 11:04 a.m.	2-minute results: Leq's = 45, 46	Wind 57 dBA Sprinklers
Site 6. Western corner of Site 40	Fri. July 31 10:35 – 10:45 a.m.	5-minute results: Leq's = 55, 52	Wind 60 dBA Sprinklers
Site 6. Western corner of Site 40	Tue. August 4 11:07 – 11:17 a.m.	5-minute results: Leq's = 50, 49	Wind 61 dBA Sprinklers

a. All noise levels measured in A-weighted decibels (dBA). Noise measurement data presented here using a Metrosonics dB-308 sound level meter, calibrated prior to use.

As shown in **Table 20-1**, the measured noise levels for the long-term measurement locations had hourly average sound levels that ranged from 49 to 75 A-weighted decibels (dBA), which are sound levels expected at the measured distances on rural roads with light to moderate traffic. In the project area, noise levels are primarily a function of the distance from the road and the time of day, with the higher noise averages occurring during rush-hour traffic, and the lowest noise levels occurring during the nighttime hours. Other than traffic, there were no major noise sources identified in the vicinity of Site 40. As was noted during the short-term measurements on the project site, winds can be the main source of noise, masking anthropomorphic sources.



SOURCE: NAIP, 2006; ESRI, 2007; HDR, 2009; and ESA, 2009

Figure 20-1
Long and Short Term Noise Measurement Locations

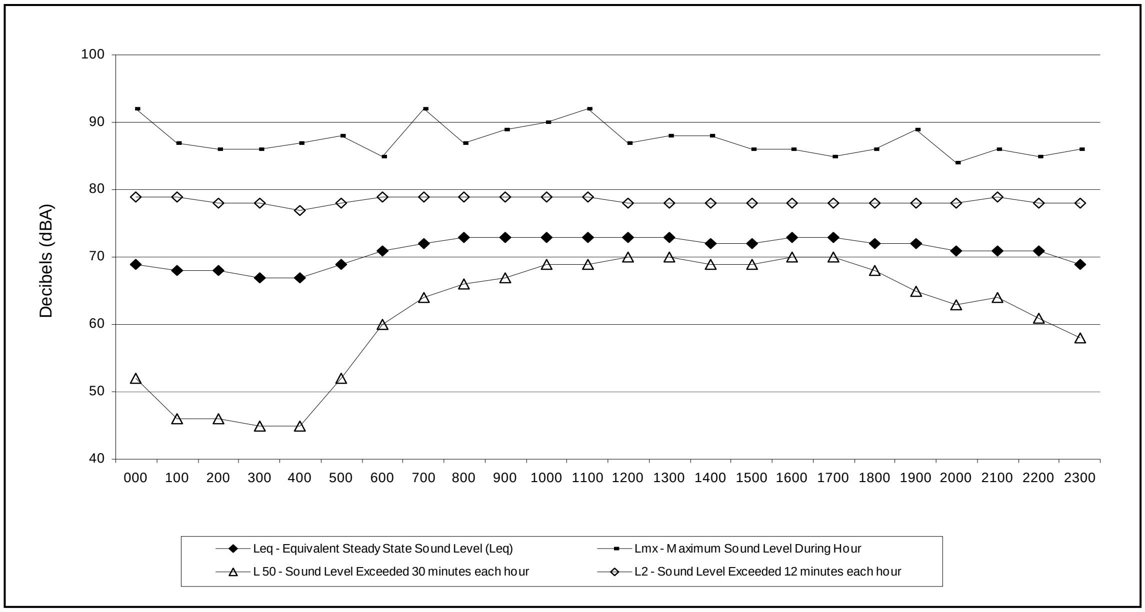


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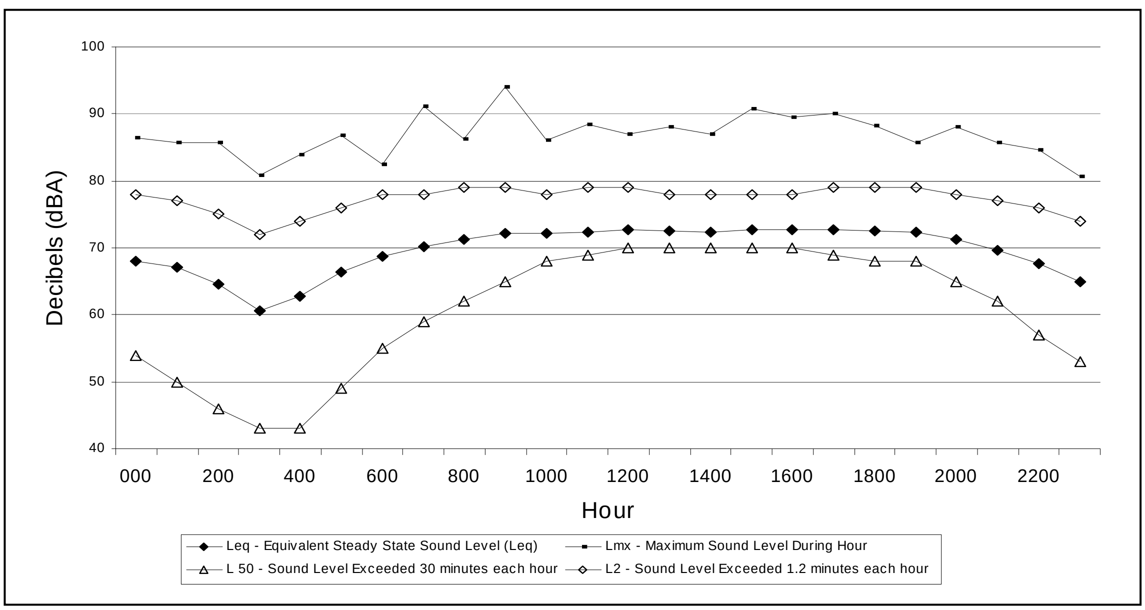
Figure 20-2

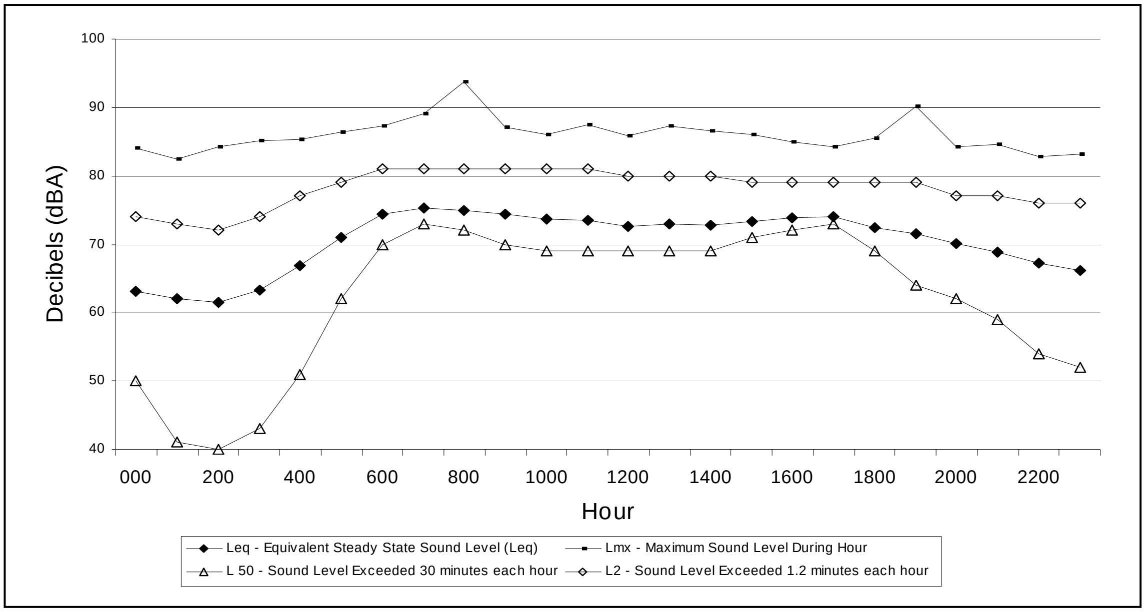
Site 1: 40 Feet from center of Adobe Rd.
Saturday August 1st, 2009



SCWMA Compost Facility EIR. 207312

Figure 20-3

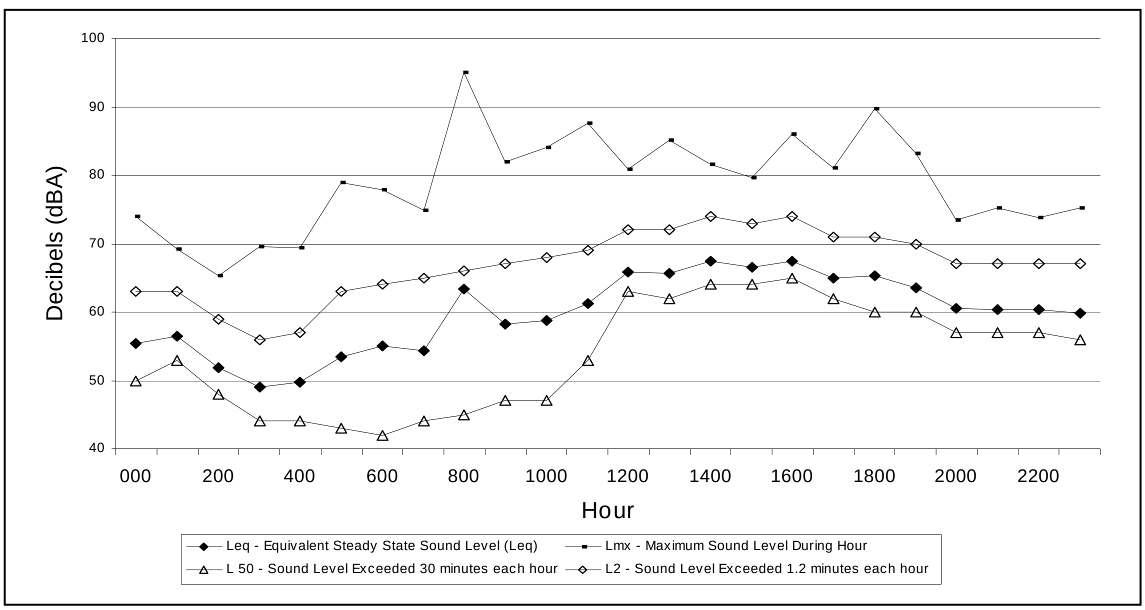
Site 1: 40 Feet from center of Adobe Rd.
Sunday August 2nd, 2009



SCWMA Compost Facility EIR. 207312

Figure 20-4

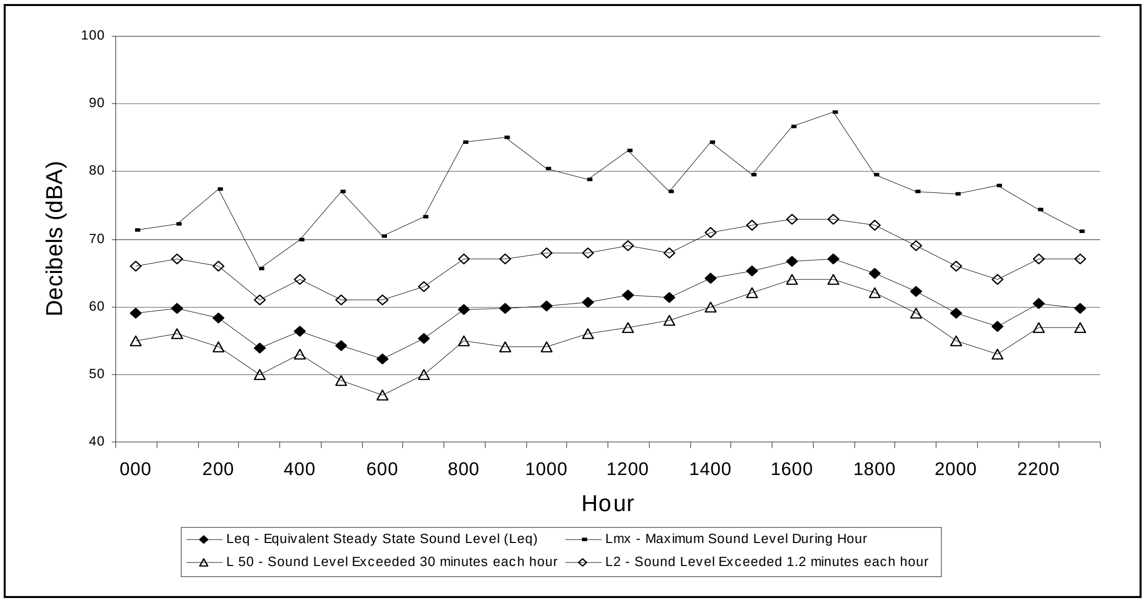
Site 1: 40 Feet from center of Adobe Rd.
Monday August 3rd, 2009



SCWMA Compost Facility EIR. 207312

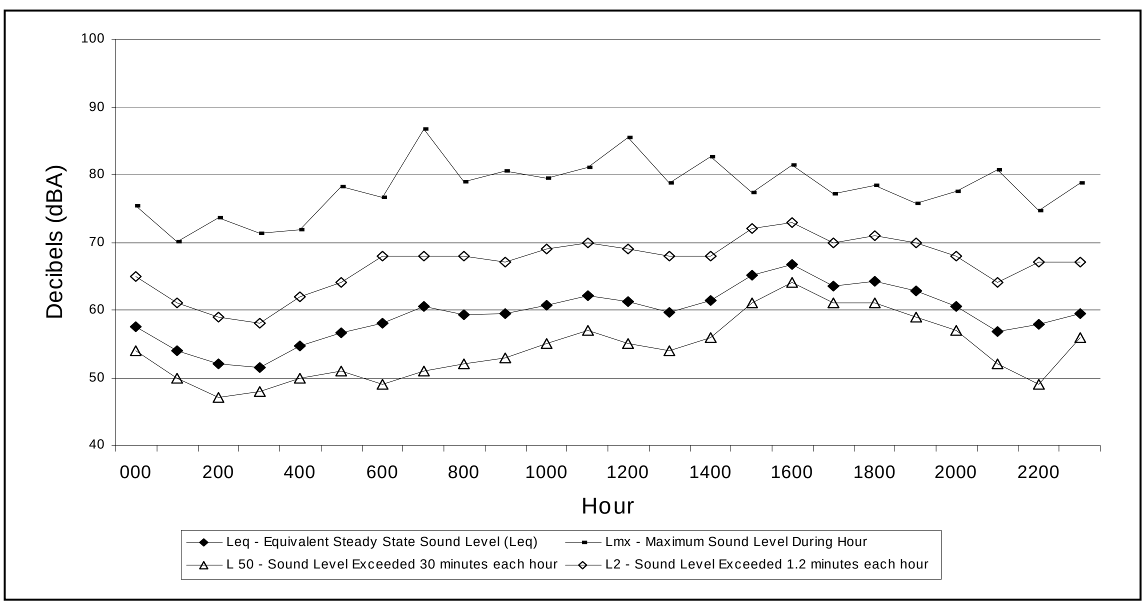
Figure 20-5

Site 4: 50 Feet from center of Stage Gulch Rd.
Saturday August 1st, 2009



SCWMA Compost Facility EIR. 207312

Figure 20-6
Site 4: 50 Feet from center of Stage Gulch Rd.
Sunday August 2nd, 2009



SCWMA Compost Facility EIR. 207312

Figure 20-7
Site 4: 50 Feet from center of Stage Gulch Rd.
Monday August 3rd, 2009

20.3 Impacts and Mitigation Measures

Significance Criteria

Refer to Chapter 10, Noise, Section 10.3 for significance criteria that are used in the analysis of noise impacts for the Site 40 Alternative.

Impact Discussion

Impact 20.1: Construction at Site 40 could expose persons to or generate excessive noise levels. (Significant)

Construction activity noise levels at and near the construction areas would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. **Table 20-2** shows typical noise levels during different construction stages. **Table 20-3** shows typical noise levels produced by various types of construction equipment.

Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling distance. Based on the proposed Site 40 layout and terrain, an attenuation of 7.5 dBA will be assumed because the site is consistent with the characteristics of a "soft site." The closest residence would be approximately 1,750 feet from the main construction areas. Residences along haul routes would also be exposed to increased traffic levels due to trucks around the project site. A small amount of truck traffic would increase on the haul routes (approximately 35 trips per day). Construction would be temporary; approximately one year. The doubling of a moving noise source produces only a 3 dBA increase in sound pressure level which is barely detectable by the human ear (Caltrans, 2009). Construction traffic would not double the existing traffic in the area of Site 40.

Table 20-2 shows that excavation and finishing are the loudest phases of construction; the noise from these phases of construction would be up to 89 dBA at a reference distance of 50 feet. If attenuated out to 1,750 feet, this receptor would experience noise levels of approximately 50 dBA during finishing and excavation, the loudest of construction activities that would occur.

Sonoma County generally decides upon daytime construction hours on a case-by-case basis. No construction noise thresholds exist as long as the construction is temporary. Without hourly restrictions on construction activities, noise from construction activities would be considered **significant**.

TABLE 20-2
TYPICAL CONSTRUCTION NOISE LEVELS[a]

Construction Phase	Noise Level[a] (dBA, Leq)
Ground clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

TABLE 20-3
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level[a] (dBA, Leq at 50 Feet)
Dump truck	88
Portable air compressor	81
Concrete mixer (truck)	85
Scraper	88
Jackhammer	88
Dozer	87
Paver	89
Generator	76
Backhoe	85
Rock Drilling	98

a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

Mitigation Measure

Mitigation Measure 20.1: Implement Mitigation Measure 10.1.

Significance after Mitigation: Less than significant.

Impact 20.2: Operation of the Site 40 composting facility could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies. (Significant)

The loudest equipment that would be in operation at the composting facility site would be the grinder and bulldozer. A windrow turner was also considered but it creates less noise than the other equipment and its noise levels would be masked by the other equipment. The noise levels generated by the loudest expected operations equipment are shown in **Table 20-4**.

As seen in **Table 20-4** below, the residence closest to the grinder would result in levels of approximately 52 dB, at a distance of 1,950 feet. However, there would be a significant amount of shielding by a ridge top that blocks the line-of-sight between the nearest residence and the Site 40 composting area. Therefore an 8-10 dB reduction offset may be applied to the residence noise levels. After accounting for shielding, the noise levels at the nearest property line are predicted to be approximately 42-44 dB Leq. None of the daytime operations equipment would exceed the 50 decibel daytime limit as set by the Sonoma County General Plan. Given that the maximum levels would be below 50 decibels, no other daytime standards (L25, L8, or L2) would be exceeded.

TABLE 20-4
DAYTIME NOISE LEVELS ASSOCIATED WITH PROJECT OPERATIONS AT THE NEAREST RECEPTORS

Equipment	Reference Noise Level	Distance to Nearest Receptor	Maximum Noise Level of Equipment at Nearest Receptor (dBA)	Does equipment violate County daytime 30-Minute Standard (dBA)?	Attenuation needed to meet Standard
Grinder[a]	77 dBA at 200 feet	1,950	52	No[c]	None[c]
Bulldozer[b]	87 dBA at 50 feet	1,750	48	No	None

a This reference noise level derives from multiple measurements from separate projects with similar conditions and equipment. The highest noise levels produced were used as reference levels providing the most conservative level available.
b Reference noise level provided by Cunniff, 1977.
c Although the noise levels from the grinder at 1,950 feet would exceed the Sonoma County General Plan noise standards based on distance alone, a ridge approximately 40 feet tall blocks the view of the project site from the nearest residence and would further attenuate noise levels to less than 50 dBA.

SOURCE: ESA, 2009

In the case of aerated static piles (ASP), large blowers (fans) would push and/or pull the air through the piles. These blowers (fans) may operate 24 hours per day. A ducting system would be used to direct air flows. Accurate noise levels during operation are unknown as the ASP details are conceptual and several types of systems by different vendors could be selected. A study documenting an ASP system contends that generation of noise is not a major issue as small 3 horse-power aeration blowers, a shop-sized air compressor, and a 15 horse-power exhaust fan were components of the aeration system (Carter & Burgess, 2004). The ASP blowers are not expected to be as loud as the grinder or bulldozers, but they would operate 24 hours a day and would be subject to the lower nighttime standards of 45 dBA. Depending on various factors the blowers could exceed 45 dBA at night at the nearest receptor if not adequately attenuated. This would be a **significant** impact without mitigation.

Mitigation Measure

Mitigation Measure 20.2: Implement Mitigation Measure 10.2 (ASP equipment control).

Significance after Mitigation: Less than significant.

Impact 20.3: Traffic associated with operation of the project could result in an increase in ambient noise levels on nearby roadways used to access the project site. (Less than Significant)

The Site 40 Alternative would generate new motor vehicle trips on the local road network. Truck trips could begin as early as 7:00 a.m. These trips would be distributed over the local road network and would affect roadside noise levels at sensitive receptor locations.

To assess the impact of project traffic on roadside noise levels, noise level projections were made using the FHWA TNM Lookup 2.5 model for those road segments that would be used by the haul trucks and other vehicles (as determined in the Chapter 22, Traffic and Transportation) that would pass by sensitive receptors. The results of the modeling effort are shown in **Table 20-5**, below. The traffic volumes used for the modeling effort are morning weekday peak-hour volumes and weekend peak periods during periods when the compost facility is operating at peak production. Estimated noise levels under various Site 40 Alternative scenarios are shown in Table 20-5. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the Leq during the peak-hour is roughly equivalent (within about 2 dBA) to the CNEL at that location.

Stage Gulch Road north of the Site 40 entrance road would receive a weekend 2030 incremental increase of 3.4 dBA as shown in Table 20-5**.** However, the model assumes a receptor distance of 100 feet, whereas the residence on Stage Gulch Road actually lies over 150 feet from the center of the road. This distance would attenuate traffic noise to less than 60 dBA, deeming it less than significant. Adobe Road and Frates Road would also receive an estimated 80 percent of the traffic from the composting facility at Site 40. Given their average daily traffic (ADT) rates, the traffic increase from the 2030 plus project scenario would result in an insignificant increase of less than 1 dBA when compared to the existing traffic levels.

As shown in Table 20-5, the Site 40 Alternative traffic would cause a minimal noise impact to surrounding receptors when compared to existing noise levels. This impact would be **less than significant** without mitigation.

Mitigation: None required.

TABLE 20-5
AM PEAK-HOUR TRAFFIC NOISE LEVELS ALONG ROADWAYS IN THE PROJECT VICINITY

	AM and Saturday Peak-Hour Noise Level, dBA, Leq									
Roadway Segment[1, 2]	**Existing (A)**	**Existing plus Project (B)**	**Incremental Increase (B - A)**	**Significant? (Yes or No)[3]**	**Cumulative 2030 No Project (C)**	**Cumulative 2030 plus Project (D)**	**Incremental Increase (D-A)**	**Significant? (Yes or No)[3]**	**Incremental Increase (D-C)**	**Cumulatively Considerable? (Yes or No)[3]**
1. Stage Gulch Road North of Site 40 Entrance (Weekday)	56.2	57.1	0.9	No	57.6	58.9	2.7	No	1.3	No
2. Stage Gulch Road South of Site 40 Entrance (Weekday)	56.2	56.3	0.1	No	57.6	57.6	1.4	No	0.0	No
3. Stage Gulch Road North of Site 40 Entrance (Saturday)	57.5	58.9	1.4	No	58.8	60.9	3.4	**Yes**	2.1	No
4. Stage Gulch Road South of Site 40 Entrance (Saturday)	57.5	57.6	0.1	No	58.8	58.9	1.4	No	0.1	No

1 Road center to receptor distance is 30 meters (approximately 100 feet) for values shown in this table. Noise levels were calculated using the FHWA Traffic Noise Prediction Model (FHWA TNM) LookUp Program Software Version 2.1, 2007. Look-Up data generated by TNM Version 2.5. Prepared by US Department of Transportation, Research and Innovative Technology Administration, Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division.
2 Vehicle mix based on existing truck percentages from traffic data with the addition of project vehicle trips. The speed limit for these segments was assumed to be 55 miles per hour.
3 Considered significant if the incremental increase in noise is greater than 3 dBA and result in noise levels above those considered compatible with County Noise Goals (NE-1b).
4 The closest sensitive receptor to Stage Gulch Road lies 150 feet from the center of the road which would allow traffic noise levels to attenuate to less than 60dBA.

SOURCE: ESA, 2009

Impact 20.4: Increases in traffic from the Site 40 Alternative in combination with other development would result in cumulative noise increases. (Less than Significant)

A cumulative impact arises when two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current, and probable future projects.

To assess the cumulative impact of Site 40 Alternative traffic on roadside noise levels, noise level projections were made using the FHWA TNM Version 2.5(2007). As discussed earlier in this chapter, as depicted in **Table 20-5**, the project itself would not result in substantial and significant increases in noise on local roadways. Roadway segment 3 in Table 20-5 does indicate an increase of greater than 3 dBA along in the future. However, the nearest residence is approximately 150 feet from the road in this location and at that distance the estimated traffic noise would be less than 60 dBA. Exterior noise levels less than 60 dBA are compatible with the County Noise Element compatibility guidelines for residences. The incremental increase from project traffic would also be less than 3 dBA for the cumulative scenarios on all of the segments. Thus, the incremental noise increases from the Site 40 Alternative would not be cumulatively considerable and would have a **less than significant** cumulative impact on noise.

Mitigation: None required.

20.4 References

Acker, Crystal, Environmental Specialist, Sonoma County Permit and Resource Management Department, telephone conversation, April 15, 2010.

Caltrans, Technical Noise Supplement, 1998.

Caltrans, Technical Noise Supplement, 2009.

Carter & Burgess, Composting Design Narrative, November 2004. Accessed online April 7th, 2010: http://www.cityhs.net/pdfs/pw/utilities/compost_design_narrative.pdf

Cunniff, Patrick, *Environmental Noise Pollution*, 1977.

FHWA Traffic Noise Prediction Model (FHWA TNM) LookUp Program Software Version 2.1, 2007. Look-Up data generated by TNM Version 2.5. Prepared by US Department of Transportation, Research and Innovative Technology Administration, Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division.

FTA, *Traffic Noise and Vibration Impact Assessment.* May, 2006.

Sonoma County, *General Plan 2020 Noise Element*, September, 2008.

U.S. Environmental Protection Agency, Bolt, Beranek, and Newman, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, 1971

CHAPTER 21
Public Services and Utilities/Site 40 Alternative

21.1 Introduction

The information presented in this chapter is unique to the Site 40 Alternative and the reader is referred to Chapter 11, Public Services and Utilities, in cases where public services and utilities setting information and/or impact analysis is the same for the Site 40 Alternative as the project site.

21.2 Setting

Water

Site 40 is not currently served by a public water supplier for potable water. The nearest supplier is Sonoma County Water Agency, which provides water to the City of Petaluma, west of Site 40. Potable water is supplied by an on-site well on the southern portion of the property, installed in 1996 (EBA Engineering, 2008). The well has a production capacity of 16 gallons per minute (Tose, pers. comm., 2009). Site 40 has accepted treated effluent from the City of Petaluma Wastewater Treatment Plant since the early 1990s, which is used for irrigation on site. Approximately 522 acre feet were received in 2006 (Frost, pers. comm., 2009).

Wastewater

Residences and businesses in the vicinity of Site 40 utilize on-site septic systems. Site 40 has a septic system which serves the existing residences on site. The nearest municipal wastewater service is provided by the City of Petaluma, which serves the incorporated areas of the City.

Solid Waste

The solid waste setting discussion is the same as that discussed in Chapter 11, Public Services and Utilities, for the project site.

Electricity, Natural Gas, and Propane

As with the project site, electrical service is provided by Pacific Gas and Electric Company (PG&E). PG&E currently provides service to the residences on site. No natural gas service is provided to Site 40. Propane gas delivery service is provided by several private companies in the area.

Police

Site 40 law enforcement services are provided by the Sonoma County Sheriff's Office with law enforcement along state routes provided by the California Highway Patrol. As with the project site, Site 40 is located within Sheriff's Office Zone 5. Chapter 11 provides additional background on these law enforcement agencies.

Fire Protection

Site 40 fire protection and emergency medical services are provided by Lakeville Volunteer Fire Department. The nearest station to Site 40 is located at 5100 Lakeville Road, approximately 2.5 miles south of the site. The City of Petaluma provides ambulance transport services to the area. Petaluma Valley is the nearest hospital and is located approximately 5 miles northwest of Site 40. Chapter 11, Public Services and Utilities, provides additional background on these fire protection and emergency medical service providers.

Schools, Parks, Libraries

There are no public schools or libraries within 2 miles of Site 40. Tolay Lake Ranch is located approximately one mile southeast of Site 40. The County of Sonoma Regional Parks Department plans to develop the site into a regional park, including the restoration of Tolay Lake and restoration of any existing structures. This will require preparation of a Park Master Plan and California Environmental Quality Act (CEQA) documentation (Sonoma County, 2010).

21.3 Impacts and Mitigation Measures

Significance Criteria

The significance criteria used for the Site 40 analysis are the same as those used for the project site and discussed in Chapter 11, Public Services and Utilities.

Site 40 would not be served by municipal providers for potable water or wastewater service or affect existing providers of these services, thus there would be no impact to potable water or wastewater service providers related to the construction of new water or wastewater infrastructure. For impacts related to groundwater supply and wastewater discharge, see Chapter 18. Site 40 could continue to receive treated effluent from the City of Petaluma should it remain available, which would be negotiated by a contract with the City as discussed in Chapter 4, Alternatives. Since the project does not propose to add schools, parks or libraries and the project would not increase demands on these kinds of facilities, there would be no impacts to public schools, parks or libraries. The compost facility would be required to comply with CalRecycle regulations regarding composting operations found at Title 14, Chapter 3.1. Thus, the project would comply with regulations related to solid waste. As the project would have no effect on these issues, they are not discussed further in this document.

Impact Discussion

Impact 21.1: The Site 40 Alternative would generate solid waste which would require disposal at a landfill. (Less than Significant)

The primary source of solid waste requiring disposal at the project would be residual waste within arriving feedstocks which could not be composted. These materials are currently sent to landfills and thus they do not represent a new waste stream. Employees and general administrative functions would generate a minor amount of trash which would require disposal. However, the project overall would result in a net reduction in the amount of solid waste sent to landfill due to the removal of compostable materials from the existing waste stream. This would result in additional capacity at landfills utilized by Sonoma County and thus would be **less than significant**.

Mitigation: None Required.

Impact 21.2: The Site 40 Alternative and implementation of certain mitigations, would increase energy demands. (Less than Significant)

The Site 40 Alternative would generate energy demands primarily in the form of electricity, propane, and petroleum based fuels (i.e., diesel and gasoline) from operation of buildings (e.g., lighting and heating/cooling), stationary processing equipment (e.g., grinders, blowers, etc.), and portable equipment (e.g., loaders, water trucks, forklifts, haul trucks, etc.). The specific electricity requirements of this alternative would be determined by PG&E after the operator submits a formal application for service. At that time, PG&E would review the application and identify what additional on- and/or off-site requirements would be needed to deliver electrical service to the site. This alternative would likely utilize electric appliances or propane gas for heating.

For the purposes of this CEQA review, it is estimated that by 2030 the project would require an increase in annual electrical demand between approximately 350 megawatt-hours (MW-hrs) and 1,000 MW-hrs (depending on the methods used to operate the project; e.g., windrow composting verses ASP composting) compared to the current demand of the existing facility, and any use of propane would be negligible on a regional basis. For details related to the estimated electrical demand that would be associated with this alternative, refer to Appendix AIR-1 (electrical demand associated with Site 40 would be the same as the proposed project). The precise amount of petroleum fuel demand that would be required under this alternative is uncertain; however, based on estimated greenhouse gas emission estimates (see Chapter 15, Air Quality) for the Site 40 Alternative and U.S. Energy Information Administration fuel coefficient data (USEIA, 2011), by year 2030, it is expected that this alternative could require the use of between approximately 180,000 and 200,000 combined gallons of diesel and gasoline each year.

The Site 40 Alternative would not include activities that would be considered to result in inefficient, wasteful, or unnecessary consumption of energy. In addition, the project would not reduce or interrupt existing electrical services due to insufficient supply. It should also be noted as discussed in Chapter 15, Air Quality, the Site 40 Alternative would be inherently energy efficient by providing a local source of soil enrichment materials and reducing the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. Also, because the Site 40 Alternative would merely shift the location of the fuel consumption associated with off-road equipment and trucks from landfills to the project site, there would not likely be a net increase of fuel consumption in the region. Because the Site 40 Alternative would be inherently energy efficient, would not substantially increase fuel consumption in the region, and the operator of the facility would pay improvement and operating costs for available electricity and/or natural gas, this impact would be **less than significant**.

Mitigation: None Required.

Impact 21.3: The Site 40 Alternative would require law enforcement services from the Sonoma County Sheriff's Office. (Less than Significant)

Law enforcement services for this alternative would be provided by the Sonoma County Sheriff's Office. Calls for service to Site 40 would be typical of existing calls for service in the vicinity such as trespassing or vandalism. Calls for service from the existing composting facilities are rare. Typically criminal trespassing is associated with the adjacent landfill (Bakx, pers. comm., 2009). As with existing operations, Site 40 is not anticipated to create a volume of calls which would affect the ability of the Department to provide adequate law enforcement services to the general area, or require the construction or alteration of police facilities. Thus, effects to police protection services would be **less than significant**.

Mitigation: None Required.

Impact 21.4: The Site 40 Alternative would increase demand for fire protection and emergency medical services including response to wildland fires. (Less than Significant)

Fire protection services and emergency medical services would be provided by the Lakeville Volunteer Fire Department. The City of Petaluma Ambulance provides emergency ambulance service for the area. Response by the Lakeville Volunteer Fire Department to Site 40 would be primarily associated with potential structural or compost fires, medical emergencies, on-or off-site vehicular accidents and off-site wildland fires.

The composting process creates heat which can cause fires. Other fire causes such as smoking, arson and lightning are rare but could occur. Composting facilities in California are required to comply with CCR Title 14 composting regulations (Title 14, Chapter 3.1. Article 6, §17867(8)) which requires operations to provide fire prevention, protection and control measures, including but not limited to:

- Temperature monitoring of windrows and aerated static piles

- Adequate water supply for fire suppression
- Isolation of potential ignition sources from combustible materials
- Fire-lanes shall be provided to allow fire control equipment access to all operation areas.

In addition to those mentioned specifically within the composting regulations, standard operational measures which would minimize the duration and intensity of fires, as well as the likelihood of fires spreading off-site, include limiting the size of piles, ensuring a minimum amount of space between piles and employee training for fire emergencies. Standard operational measures which aid in preventing fires include turning the windrows and watering the windrows. When excessive temperatures or fires are detected equipment including a water truck, front end loader, excavator, hose and fire extinguishers would be available. As with existing operations, this alternative is not anticipated to create a volume of calls which would affect the ability of the fire departments to provide adequate services to the general area, or require the construction or alteration of fire protection facilities. Thus, effects to fire protection and emergency medical services would be **less than significant**. Fire prevention controls incorporated into the project would also reduce risks from wildland fire to a **less-than-significant** level.

Mitigation: None Required.

Impact 21.5: The Site 40 Alternative would include new stormwater drainage facilities, the construction of which could create impacts. (Less than Significant)

The Site 40 Alternative would incorporate new on-site storm water drainage facilities which would route storm water to an on-site detention pond. The construction and operational impacts of the on-site drainage system are incorporated into the alternative's project description and thus analyzed throughout the document. However, impacts could occur as a result of construction and operation of the on-site drainage system. The construction of on-site detention ponds and stormwater drainage facilities would reduce any impact on off-site public stormwater drainage facilities. Thus, the impact of this alternative related to construction of new stormwater drainage facilities would be **less than significant**.

Mitigation: None Required.

21.4 References

In addition to those references listed in Chapter 11, Public Services and Utilities, the following reference was used:

Bakx, William, 2009. Owner of Sonoma Compost Company, telephone conversation, June 16, 2009.

EBA Engineering, 2008. Phase I Environmental Site Assessment, Teixeira Property, 1035 Stage Gulch Road, Petaluma, California. January 2008.

Frost, Eric, 2009. Property Realtor for Teixeira Ranch. Telephone conversation with Paul Miller, Environmental Science Associates, on September 3, 2009 regarding recycled water and septic system for Site 40.

Sonoma County, 2010. Tolay Lake Regional Park Information from Sonoma County Regional Parks Department. Available online at: http://www.sonoma-county.org/parks/pk_tolay.htm. Last updated October 30, 2009.

Tose, Alan, 2009. Property Realtor for Teixeira Ranch. Telephone conversation with Paul Miller, Environmental Science Associates, on September 3, 2009 regarding water supply for Site 40.

CHAPTER 22

Traffic and Transportation/Site 40 Alternative

22.1 Introduction

The analyses in this chapter provide information on the local roadway network, operating levels of service, potential impact of traffic associated with the Site 40 Alternative, traffic and bicycle/pedestrian safety, road wear, and identification of mitigation measures necessary to mitigate potential significant impacts.

The transportation analysis is prepared for five scenarios, including:

- Existing (2009);
- Near-Term Cumulative Base (Year 2011);
- Near-Term Cumulative Base with Project (Year 2011);
- Long-Term Cumulative Base (Year 2030); and
- Long-Term Cumulative Base with Project (Year 2030)

Traffic count data and LOS calculations for this analysis are provided in Appendix TRAFFIC-2.

22.2 Setting

The transportation system in the Site 40 Alternative region is composed of an interconnected network of State, County, local roadways, and bicycle facilities. Major roadways in the Site 40 Alternative area are described below.

Roadway System and Site Access

The Site 40 surrounding roadway network is shown on Figures 3-1, 14-1 and 14-2. The Site 40 Alternative area is served primarily by a network of rural two-lane roadways. These roadways typically lack curbs and sidewalks. Site 40 is located in southern Sonoma County and is accessed off a private road via Stage Gulch Road (State Route 116). Site 40 is approximately 8 miles southeast of the City of Petaluma, and 7 miles west of The City of Sonoma. Regional access to the area is provided by U.S. Highway 101 (U.S. 101), State Route 116 (SR 116), and SR 37.

U.S. Highway 101 is a principal north-south freeway in Sonoma County, extending northward to Mendocino County, and southward to Marin County and points beyond. U.S. 101 provides access to/from Site 40 via interchanges at SR 116 and SR 37. U.S. 101 carries average daily traffic (ADT) volumes of 146,000 vehicles south of SR 37 and ADT volumes of 86,000 vehicles south of SR 116 (Caltrans, 2010).

State Route 116 is a major, generally north south route in Sonoma County, extending between SR 1 in the west and SR 121 in the east, and providing direct access to U.S. 101. In the Site 40 Alternative vicinity, SR 116 (Stage Gulch Road west of Adobe Road) is a two-lane rural arterial with 12-foot-wide travel lanes and no paved shoulders. The posted speed limit on SR 116 is 55 miles per hour (mph). SR 116 (Stage Gulch Road) carries an ADT of 3,200 vehicles in front of Site 40. SR 116 (Lakeville Highway) is a four-lane major arterial west of Frates Road (ADT of 25,000 vehicles) and a two-lane arterial with paved shoulders and an ADT of 16,000 vehicles to the north of Stage Gulch Road (Caltrans, 2010).

State Route 37 extends 21 miles along the northern shore of San Pablo Bay and connects U.S. 101 in Novato to I-80 in Vallejo. SR 37 is an east-west highway with two to four lanes and carries an ADT volume of 35,000 vehicles in the vicinity of the Lakeville Road intersection (Caltrans, 2010).

Frates Road is a two-lane collector/rural arterial that extends in a generally east-west direction for approximately 1.4 miles between SR 116 (at Lakeville Highway) and Adobe Road. This road would serve as part of the haul route for Site 40 Alternative traffic traveling to and from the north and west areas of the County (via U.S. 101). In the vicinity of SR 116, Frates Road is divided with a raised median and contains approximately 12-foot wide travel lanes plus turn lanes at intersections. The four to six-foot wide paved shoulders serve as Class II bicycle lanes. Frates Road carries an ADT of 11,280 vehicles west of Ely Boulevard during weekdays and 9,940 vehicles on weekends (Marks Traffic Data, 2009).

Adobe Road is a two-lane rural arterial that extends in a north-south direction for approximately 3.2 miles between Frates Road and Stage Gulch Road. The posted speed limit on Adobe Road is 55 mph. This road would also serve as part of the haul route for Site 40 Alternative traffic traveling to and from the north and west areas of the County (via U.S. 101). Adobe Road is undivided with 12-foot-wide travel lanes and five- to six-foot-wide paved shoulders. Adobe Road carries an ADT of 14,810 vehicles north of Stage Gulch during weekdays and 12,900 vehicles on weekends (Marks Traffic Data, 2009).

Existing Traffic Operating Conditions

Study Intersections

Intersection analysis was conducted at the proposed Site 40 Alternative access driveway and Stage Gulch Road and at two intersections on Lakeville Highway:

1. Access Driveway at Stage Gulch Road (side-street stop controlled)
2. Lakeville Highway at Stage Gulch Road (side-street stop controlled)
3. Lakeville Highway at Frates Road (signalized)

Existing Peak Weekday and Weekend Traffic Volumes

Based on potential significant effects associated with the Site 40, it was determined that weekday a.m. and weekend peak hour conditions would be evaluated. Twenty-four hour volume counts were taken on Stage Gulch Road at the site access driveway for one week (seven consecutive days) in July 2009, to determine the peak-hour through volumes (east and west) on Stage Gulch Road. The traffic counts indicated that the peak traffic hours appropriate for this analysis are weekdays 8:00 to 9:00 a.m. and weekends 12:00 p.m. to 1:00 p.m.[1]

The Site 40 access driveway was observed during the peak-hour periods in July and August 2009. There were no vehicles observed entering or exiting the site during the peak-hour periods. For purposes of the existing and base conditions analysis, it was assumed that four vehicles entered and exited the site (two from the east and west off Stage Gulch Road and two southbound left and right turning vehicles onto Stage Gulch Road) for the peak-hour periods. Intersection peak period turning movement volumes are provided in Appendix TRAFFIC-2.

Intersection Level of Service Analysis Methodology

The operation of a local roadway network is commonly measured and described using a grading system called Level of Service (LOS). The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of vehicle traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay experienced by motorists) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in long delays). This LOS grading system applies to both roadway segments and intersections. The LOS calculation methodology for intersections is dependent on the type of traffic control device, traffic signals or stop signs. A detailed description of the LOS methodologies used for this analysis is provided in Chapter 12, Transportation and Traffic (*Intersection Level of Service Analysis Methodology*).

As shown in **Table 22-1**, the study intersections currently operate at acceptable levels of service (LOS C or better) during the weekday a.m. peak-hour, and weekend midday peak hour. LOS calculation sheets are provided in Appendix TRAFFIC-2.

Peak Hour Signal Warrants

To assess the need for signalization of stop-controlled intersections the *California Manual on Uniform Traffic Control Devices* describes eight signal warrants (Caltrans, 2010). Meeting one of the signal warrants could justify signalization of an intersection; however, the full set of warrants should be considered as part of an evaluation and survey before the decision to install a signal is made. Peak hour volume warrant (Warrant 3) analysis for rural conditions was conducted for this study. The results of the traffic signal warrant analysis are provided for each analysis scenario and the signal warrant calculations are provided in Appendix TRAFFIC-2. The peak hour volume traffic signal warrant is not met at either of the unsignalized study intersections during the weekday a.m. and weekend peak hours.

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[1] The p.m. peak hour condition was not analyzed for the following reasons: the current compost facility closes at 3:00 p.m., as would the project facility; and the p.m. peak hour of background traffic on Lakeville Road at Twin House Ranch Road occurs between 4:30 p.m. and 5:30 p.m. Therefore, there would be no measurable p.m. peak hour vehicle contribution of project traffic during the p.m. peak hour.

TABLE 22-1
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
EXISTING CONDITIONS[a]

Intersection	Traffic Control[b]	Weekday AM		Weekend Midday	
		Delay[c]	LOS	Delay[c]	LOS
Stage Gulch Road at Site 40 Access Driveway	SSSC	9.2	A	9.5	A
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	22.6	C	14.7	B
Frates Road at Lakeville Highway	Signal	17.9	B	18.5	B

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodologies.

Planned Roadway Improvements

The *2009 / 2014 Sonoma County Capital Project Plan* does not list any roadway improvement projects as funded or scheduled for Stage Gulch Road in the vicinity of the Site 40 Alternative.

Existing Vehicle Speed on Project Haul Roads

In order to evaluate existing travels speeds on Site 40 Alternative haul routes, speed data was collected at three locations during the same time period (July 30-August 5, 2009) as the 24-hour traffic count data. The three locations are:

- Frates Road west of Ely Boulevard
- Adobe Road north of Stage Gulch Road
- Stage Gulch Road west of Adobe Road

The posted speed limit on Frates Road near Ely Boulevard is 45 mph. Adobe Road has a posted speed of 55 mph and Stage Gulch Road is 55 mph in the vicinity of Site 40. The posted speed on Stage Gulch Road varies between 55 mph and 30 mph between Adobe Road and Lakeville Highway based on roadway topography (curves, elevations, etc.).

The 85th percentile speed collected on Frates Road was just over 40 mph.[2] The mean, or 50th percentile average speed, was approximately 35 mph, with a 10 mph pace speed between 30 and 40 mph.[3] Overall, the speed survey indicates vehicles on Frates Road are currently traveling at speeds higher than the posted speed limit. Data for this analysis are provided in Appendix TRAFFIC-2.

Data collected on Adobe Road found that the 85th percentile speed was 61 mph. The mean, or 50th percentile average speed, was approximately 56 mph, with a 10 mph pace speed between

2 The 85th percentile speed is the speed at or below which 85 percent of the motorists drive on a given road unaffected by slower traffic or poor weather. This speed indicates the speed that most motorists on the road consider safe and reasonable under ideal conditions.

3 Pace speed is the 10 mph range in which the majority of vehicles are traveling.

52 and 61 mph. Overall, the speed survey indicates vehicles on Frates Road are currently traveling at speeds higher than the posted speed limit.

The 85th percentile speed collected on Stage Gulch Road west of Adobe Road was just over 59 mph. The mean, or 50th percentile average speed, was approximately 53 mph, with a 10 mph pace speed between 48 and 57 mph. Overall, the speed survey indicates vehicles on Stage Gulch Road are currently traveling at speeds higher than the posted speed limit.

Pedestrian and Bicycle Traffic

A description of pedestrian and bicycle facility categories is provided in Chapter 12, Transportation and Traffic, Section 12.2 (*Pedestrian and Bicycle Traffic*).

Within the vicinity of Site 40, there are currently no designated pedestrian or bike facilities. The 2010 Sonoma County Bicycle and Pedestrian Plan classifies Lakeville Highway (Priority 3), Stage Gulch Road (Priority 1), and Adobe Road (Priority 1) as proposed Class II bike lanes.[4] Frates Road provides Class II bike lanes and sidewalks on both sides of the street roughly between Lakeville Highway and Ely Boulevard. There was no bicycle activity observed on Stage Gulch Road or Adobe Road in the vicinity of the Site 40 access road during the peak hour weekday morning, evening and weekend observations conducted in July and August 2009. However, week-long traffic counts documented between 30 and 80 bicyclists on Stage Gulch Road in late July – early August 2009. Weekend bicycle traffic was substantially higher than on weekday (see Appendix TRAFFIC-2).

Regulatory Framework

The development and regulation of the Site 40 Alternative area transportation network primarily involves state and local jurisdictions. All roads within the Site 40 Alternative area are under the jurisdiction of state and local agencies. State jurisdiction includes permitting and regulation of the use of state roads, while local jurisdiction includes implementation of state permitting, policies, and regulations, as well as management and regulation of local roads. Applicable state and local laws and regulations related to traffic and transportation issues are discussed below.

California Department of Transportation

The California Department of Transportation (Caltrans) manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. Heavy trucks accessing Site 40 would use roadways that fall under Caltrans' jurisdiction, primarily U.S. 101, SR 37 and SR 116. Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials, and for construction-related traffic disturbance.

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[4] The Sonoma County Bicycle and Pedestrian Advisory Committee has prioritized each individual project included in the 2010 Bicycle and Pedestrian Master Plan into one of three categories (Priority 1: High; Priority 2: Medium; and Priority 3: Low).

Sonoma County

Lakeville Road is under the jurisdiction of Sonoma County. County policies and regulations regarding the design, use, or obstruction of roadways are detailed in the Sonoma County General Plan 2020 *Circulation and Transit Element* (Sonoma County PRMD, September 23, 2008). The majority of these goals and policy guidelines in the Circulation and Transit Element pertain to the development and planning of roadways and transit systems.

The *Draft 2009 Countywide Transportation Plan* for Sonoma County provides further guidance for transportation planning and associated goals and policies (SCTA, 2009). This plan focuses on the design and implementation of improvements to the county circulation system, including roadways, bikeways, and rail service.

Sonoma County's General Plan 2020 Circulation and Transit Element Objectives related to level of service standards include:

Objective CT-3.1 Maintain LOS C or better on roadway segments unless a lower LOS has been adopted.

Objective CT-3.2 Maintain LOS D or better at roadway intersections.

Objective CT-3.3 Allow the above levels of service to be exceeded if it is determined to be acceptable due to environmental or community values, or if the project(s) has an overriding public benefit that outweighs lower levels of service and increased congestion.

22.3 Impacts and Mitigation Measure

Intersection Operating Conditions

Hours of Operation

The existing composting facility located at the Sonoma County Central Disposal Site (Sonoma Compost Company) currently accepts material during the hours of 7:00 a.m. to 3:00 p.m. Monday through Saturday, with general operation of the facility during the hours of 6:30 a.m. to 5:30 p.m.[5] Although the project may be open to the public on Sundays, the hours of operation would not change for the Site 40 Alternative.

Project Trip Generation

The vehicle trip generation for the Site 40 Alternative was estimated by reviewing annual historical Sonoma County Waste Management Agency data for green material and wood waste processed at the Central Compost Facility. Additional data was received from Sonoma Compost Company, the private company that manages the compost operation under contract to the SCWMA and the County. A detailed description of current and future (2030) Site 40 Alternative trip generation is provided in Chapter 12, Traffic and Transportation, Section 12.3 (*Project Trip Generation)*.

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5 The facility is permitted to accept material on Sundays too, but due to budgetary considerations, the site is currently closed to the general public on Sundays.

Project Vehicle Distribution Patterns

Contractor haul trucks would be distributed primarily to the north and west of Site 40. Trucks traveling from the Annapolis, Guerneville and Healdsburg Transfer Stations would continue southbound on U.S. 101 to the SR 116 Lakeville Highway exit and continue south on Lakeville Road to Frates Road. Haul trucks would proceed northeast on Frates Road, south on Adobe Road and west on Stage Gulch Road to the site access road. Other contract haul trucks destined for the current compost facility at Petaluma would likewise use U.S. 101 to the SR 116 Lakeville Highway exit and turn left onto Frates Road. Trucks traveling from the Sonoma Transfer Station would travel west on Stage Gulch Road to the site access road.

Self haul vehicles hauling green materials are distributed throughout the Central and Southwest areas of the County. Much of the self haul traffic is from the Santa Rosa, Rohnert Park, Cotati, Petaluma corridor. This traffic would also be expected to use U.S. 101 to the SR 116 exits at Lakeville Highway. Employee and compost sales traffic would follow similar distribution patterns to the self haul vehicles.

The County currently prohibits contract haulers from making a left-turn from southbound Lakeville Highway to Stage Gulch Road due to safety concerns. For the purpose of intersection analysis, Site 40 Alternative traffic was distributed to the site entrance at 80 percent to and from the north (on Lakeville Highway to Frates Road on the inbound direction and Stage Gulch Road to Lakeville in the outbound direction). Project traffic from the east (Sonoma) was estimated at 15 percent and 5 percent to and from the south off SR 37 via Lakeville Road to Stage Gulch Road.

Traffic Volume Growth Rate

Year 2011 (Near-Term Cumulative) and 2030 (Long-Term Cumulative) Site 40 area growth in traffic volumes were developed using the recently updated Sonoma County Transportation Authority (SCTA) Transportation Demand Model (2005-2035).

The applied growth rates were developed based primarily on the link volume data (ADT and p.m. peak hour) from the SCTA model for Lakeville Road, Adobe Road and Stage Gulch Road in the vicinity of the Site 40 access road. The model provided baseline 2005 and forecast 2035 for daily and p.m. peak hour directional volumes. Within the general area of Site 40 an overall 49 percent increase in peak hour traffic was forecasted for the 30 year model growth projection. A 1.5 percent annual growth rate was developed and applied to the intersection volumes on Stage Gulch Road during the weekday a.m. and weekend peak hours based on the SCTA link volume data.[6]

Significance Criteria

According to Appendix G of the CEQA *Guidelines*, a project that would "cause an increase in traffic which is substantial in relation to existing traffic load and capacity of the street system" may be deemed to have a significant adverse impact on the environment.

6 The SCTA model does not generate traffic volumes for the weekday a.m. and weekend peak hours, and the annual growth rate for those peak-hour periods was assumed to be the same as for the weekday p.m. peak hour.

Sonoma County Significance Criteria

The following applicable County significance criteria were used to judge the transportation impacts[7]:

- At County intersections, the project would have a significant impact if the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate worse than the County's LOS D standard (i.e., at LOS E or F). This criterion applies to all signalized, all-way stop-controlled, and side street stop-controlled intersections with project traffic volumes over 30 vehicles per hour per intersection approach or per exclusive left-turn movement.
- If a County intersection currently operates, or is projected to operate, worse than the County LOS standard (i.e., at LOS E or F), then the project's impact would be significant if it causes the average vehicle delay to increase by five seconds or more. The delay will be determined by comparing intersection operations with and without the project's traffic for both the existing baseline and project future conditions. This criterion applies to all signalized, all-way stop-controlled, and side street stop-controlled intersections with project traffic volumes over 30 vehicles per hour per intersection approach or per exclusive left-turn movement.
- The County traffic study guidelines indicate that a project would result in a significant impact if it failed to meet minimum standards for any of the following areas of analysis:
    - On-site and Frontage Improvements – Proposed on-site circulation and street frontage would not meet the County's minimum standards for roadway or driveway design, or potentially would result in safety hazards, as determined by the County in consultation with a registered traffic engineer.
    - Emergency Access – The project site would have inadequate emergency access.
    - Alternative Transportation – The project would provide inadequate facilities for alternative transportation modes (e.g., bus turnouts, bicycle racks, pedestrian pathways) and/or the project would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation.
    - Road Hazards – Hazards are increased due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment, heavy pedestrian or truck traffic).
    - Vehicle Queues – The addition of project traffic would cause the 95th percentile queue length to exceed roadway turn lane storage capacity.
    - Signal Warrants – The addition of the project's vehicle or pedestrian traffic would cause an intersection to meet or exceed Caltrans' signal warrant criteria.
    - Turn Lanes – The addition of project traffic would cause an intersection to meet or exceed criteria for provision of a right- or left-turn lane on an intersection approach.
    - Sight Lines – The project constructs an unsignalized intersection (including driveways) or adds traffic to an existing unsignalized intersection approach that does not have adequate sight lines based upon Caltrans criteria for state highway intersections and County criteria for County roadway intersections.

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7 These significance criteria are from the County traffic study guidelines, which are consistent with County General Plan guidelines, and are treated as an elaboration of the latter.

In addition, for purposes of this EIR, the following additional significance criterion was used to judge the transportation impacts:

- The project would have a significant impact to roadwear if it would increase heavy truck traffic volumes that would increase the Traffic Index (TI) by more than 1.5 on roadways built to accommodate heavy truck traffic, and by more than 0.5 on other roadways, or would add vehicles whose weight exceeds weight limit restrictions on the affected roadway.

Impact Discussion

Near-Term Cumulative Base (Year 2011)

The Site 40 Alternative if approved would begin operations sometime in 2011. The results of the LOS analysis for Near-Term Cumulative Base Conditions are summarized in **Table 22-2**.

TABLE 22-2
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
NEAR-TERM CUMULATIVE BASE CONDITIONS[a]

Intersection	Traffic Control[b]	Scenario	Weekday AM		Weekend Midday	
			Delay[c]	LOS	Delay[c]	LOS
Stage Gulch Road at Site 40 Access Drwy.	SSSC	Existing Near-Term Base	9.2 9.2	A A	9.5 9.5	A A
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	Existing Near-Term Base	22.6 24.0	C C	14.7 15.1	B C
Frates Road at Lakeville Highway (SR 116)	Signal	Existing Near-Term Base	17.9 18.3	B B	18.5 18.9	B B

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Near-term Cumulative Base traffic conditions at the study intersections are projected to operate at acceptable levels of service (LOS C or better) during both peak hours. The peak-hour traffic volume signal warrant is not met under any of the near-term peak-hour conditions.

Near-Term Cumulative Base Plus Project Traffic Impacts

Impact 22.1: The Site 40 Alternative would contribute to Near-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour. (Less than Significant)

Near-Term Cumulative Base plus Project conditions are defined as Near-Term Cumulative Base plus traffic added by the Site 40 Alternative. Estimated vehicle trip generation for the Site 40 Alternative is the same as the project, as shown under Chapter 12, Transportation and Traffic, Section 12.3 (*Project Trip Generation*, Table 12-4). Site 40 Alternative impacts are then identified by comparing the LOS results under Near-Term Cumulative plus Project conditions to those under

Near-Term Cumulative Base conditions. Traffic volumes were adjusted to reflect a passenger car equivalent (PCE) of 1.5 for medium truck traffic and 3.0 for heavy truck traffic.[8]

The results of the LOS analysis for Near-Term Cumulative Base plus Project conditions are shown in **Table 22-3**. With the addition of Site 40 Alternative-generated traffic, the study intersections are projected to continue to operate at an acceptable LOS C or better during both peak hours. The peak-hour traffic volume signal warrant is not met under any of the near-term plus Site 40 Alternative peak-hour conditions. This impact would be **less than significant**.

TABLE 22-3
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
NEAR-TERM CUMULATIVE BASE PLUS PROJECT CONDITIONS[a]

			Weekday AM		Weekend Midday	
Intersection	**Traffic Control[b]**	**Scenario**	**Delay[c]**	**LOS**	**Delay[c]**	**LOS**
Stage Gulch Road at Site 40 Access Driveway		Existing	9.2	A	9.5	A
		Near-Term Base	9.2	A	9.5	A
	SSSC	Near-Term Plus Project	9.2	A	9.5	A
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road		Existing	22.6	C	14.7	B
	SSSC	Near-Term Base	24.0	C	15.1	C
		Near-Term Plus Project	23.0	C	15.3	C
Frates Road at Lakeville Highway (SR 116)		Existing	20.0	B	18.5	B
	Signal	Near-Term Base	20.5	B	18.9	B
		Near-Term Plus Project	21.0	C	20.0	B

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

While peak hour intersection operations would not be significantly affected under near-term conditions by Site 40 Alternative generated traffic at Site 40, there are safety and design related issues that would pose potential significant impacts in the near-term. These issues are addressed in the bicycle/pedestrian safety, traffic safety and access road sections.

Mitigation Measure: None Required.

Near-Term Cumulative Traffic Safety

Access Road Improvements

Impact 22.2: The Site 40 Alternative could worsen traffic safety due to design features or incompatible uses. (Significant)

The Site 40 composting facility would be accessed via the site access road (on the north side of Stage Gulch Road) about one-half mile west from Adobe Road. This is a two-way, narrow paved driveway in poor condition with an estimated ADT of fewer than 20 vehicles per day. Site 40

8 For this analysis, a heavy truck would be equivalent to three passenger cars.

Alternative traffic in the near-term is projected to add approximately 350 vehicle trips during a typical weekday and close to 500 vehicle trips on weekend days. Approximately 30 percent of the weekday vehicle trips would consist of heavy haul trucks.

The existing conditions of the access roadway would not meet the needs of the Site 40 Alternative traffic in terms of capacity or safety. The roadway would need to be reconstructed to adequately accommodate two-way truck traffic with sufficient space at the intersection with Stage Gulch Road to allow incoming and outbound vehicles to maneuver without adversely affecting traffic operation in the public right-of-way. This is a **significant** impact.

Mitigation Measures

> **Mitigation Measure 22.2:** Prior to the start of project operations, SCWMA shall widen (to County standards) the Site 40 Access Road cross-section between Stage Gulch Road and the project site to provide two 12-foot-wide lanes, a dedicated left-turn lane on the access road intersection approach to Stage Gulch Road, and sufficient inbound lane width (westbound traffic) to fully accommodate southbound right-turning trucks from Stage Gulch Road.
>
> **Significance after Mitigation:** Less than significant.

Alternative Transportation

Impact 22.3: The Site 40 Alternative would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation. (Significant)

The Site 40 Alternative would cause a substantial increase in vehicle and truck traffic on Stage Gulch Road and would increase the opportunity for conflicts between Site 40 Alternative traffic and bicyclists and/or pedestrians. The potential for conflicts would be considered greatest in circumstances where the identified haul roads would be regularly used by bicyclists or pedestrians and/or is a designated proposed bikeway, and the road does not meet current County roadway design standards (including paved shoulders of sufficient width for use by bicycles). In addition, Site 40 Alternative haul trucks could lose debris from their trailers which could end up on shoulders and in bike lanes, potentially creating a hazard for bicyclists.

As discussed in the Setting, the *2010 Sonoma County Bicycle and Pedestrian Master Plan* classifies Lakeville Road (south of SR 116 and north of SR 37), Adobe Road and Stage Gulch Road as proposed Class II bike lanes. Frates Road currently provides Class II bike lanes and sidewalks between Lakeville Highway and Ely Boulevard. While no bicyclists or pedestrians were observed using Stage Gulch Road or Adobe Road during the peak hour weekday and weekend observations in July and August 2009, week-long machine counts taken in late July – early August 2009 documented that Stage Gulch Road was, in fact, used by between 30 and 80 bicyclists per day. It is assumed that Adobe Road is currently used by bicyclists.

Although the project would not prevent the county from implementing bicycle improvements included in the Bicycle and Pedestrian Master Plan, project-generated increase in traffic volumes on Lakeville Road between U.S. 101 and SR 37, Frates Road (east of Ely Boulevard), Adobe Road (between Frates Road and Stage Gulch Road), and Stage Gulch Road (between Adobe and Lakeville Highway) would create potential conflicts with the plan to provide Class II bike lanes. In addition, debris falling from project vehicles could cause safety issues for bicyclists along the haul route, and this impact is considered **significant**.

Mitigation Measures

Mitigation Measure 22.3a: Implement Mitigation Measure 12.3a (ensure that all contract haul trucks are covered to prevent spillage of materials onto haul routes).

Mitigation Measure 22.3b: The operator shall conduct regular sweeping of the intersection of Stage Gulch Road at the Site 40 access road so that the intersection remains free of debris and dirt that may accumulate from exiting trucks.

Significance after Mitigation: Less than Significant.

Road Hazards

Impact 22.4: The Site 40 Alternative would generate turning movements by heavy vehicles to and from Stage Gulch Road at the Site 40 access road, increasing the potential for road hazard conflicts between Site 40 Alternative traffic and through traffic. (Significant)

The Site 40 Alternative would cause an increase in traffic including heavy trucks on Stage Gulch Road. The majority of the Site 40 traffic would travel to and from Adobe Road on Stage Gulch Road. This distribution pattern of Site 40 traffic would result in increased numbers of westbound vehicles slowing to turn right onto the Site 40 access road and likewise an increase in traffic turning left from the access road across two through lanes of traffic onto Stage Gulch Road. Currently, both of these movements are very infrequent on a daily basis. A review of the stopping sight distance requirements for Stage Gulch Road at the Site 40 access road found the available sight distance to be adequate in both directions.

The analysis of near-term traffic impacts indicated that the intersection of Stage Gulch Road / Site 40 Access Road would continue to operate at acceptable LOS B or better with Site 40 Alternative traffic. However, the introduction of increased turning movements to and from Stage Gulch Road at Site 40 Access Road would increase the potential for vehicle conflicts and collisions in the Site 40 Alternative area. The posted speed limit on Stage Gulch in the vicinity of Site 40 is 55 mph. Based on speed data collected on Stage Gulch Road at the site entrance it was determined that the average (mean) speed was 53 mph and the 85th percentile speed was 57 mph.[9]

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[9] A vehicle traveling at 60 mph needs approximately 230 feet in order to come to a complete stop (NHTSA, 1998).

Site 40 Alternative traffic is expected to operate at acceptable levels of service during peak hours of background traffic under near-term cumulative conditions. However, the Site 40 Alternative would introduce an active traffic generating use to the area compared to the minimal existing traffic from the agricultural use. The introduction of a substantial number of vehicles turning off and onto Stage Gulch Road where there were previously very low numbers of such vehicles could increase the potential for vehicle collisions. Without mitigation this impact would be **significant**.

Mitigation Measure

Mitigation Measure 22.4: Prior to the start of Site 40 Alternative operations the SCWMA shall post warning signs on Stage Gulch Road 250 feet in advance of the access driveway (Site 40) that cautions drivers about truck traffic entering and exiting the roadway.

The warning signs shall follow guidelines set forth in the *California Manual on Uniform Traffic Control Devices* (Caltrans, 2010).

Significance after Mitigation: Less than significant.

Long-Term Cumulative Base (Year 2030)

Year 2030 was selected as the subject year for buildout of the proposed compost facility, given the assumed first year of operation of the Site 40 Alternative (2011) and the 20-year forecasts developed for the *Sonoma Countywide Composting Feasibility Study*. For Long-Term Cumulative Base conditions, it is assumed that no off-site road improvements in the study area would be in place. The results of the LOS analysis for Long-Term Cumulative Base conditions are summarized in **Table 22-4**.

Under Long-Term Cumulative Base traffic conditions, the southbound approach (Stage Gulch Road) of the intersection of Stage Gulch Road / Lakeville Highway – Lakeville Road would operate at an unacceptable LOS E during the weekday a.m. peak hour (and at an acceptable LOS C during the weekend peak hour). The intersections of Stage Gulch Road / Site 40 Access Driveway and Frates Road / Lakeville Highway would operate at acceptable levels of service (LOS C or better) during the weekday a.m. and weekend peak hours.

Long-Term Cumulative Base plus Project Impacts

Impact 22.5: The Site 40 Alternative would contribute to Long-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour. (Less than Significant)

TABLE 22-4
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
LONG-TERM CUMULATIVE BASE CONDITIONS[a]

Intersection	Traffic Control[b]	Scenario	Weekday AM		Weekend Midday	
			Delay[c]	LOS	Delay[c]	LOS
Stage Gulch Road at Site 40 Access Driveway	SSSC	Existing Long-Term Base	9.2 9.2	A A	9.5 9.5	A A
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	Existing Long-Term Base	22.6 46.2	C E	14.7 19.2	B C
Frates Road at Lakeville Highway (SR 116)	Signal	Existing Long-Term Base	17.9 26.3	B C	18.5 23.0	B C

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Long-Term Cumulative Base plus Project conditions are defined as Long-Term Cumulative Base conditions plus traffic added by the Site 40 Alternative. Year 2030 vehicle trip generation for the proposed compost facility is shown under Chapter 12, Transportation and Traffic, Section 12.3 (*Project Trip Generation*, Table 12-6). The 2030 Site 40 Alternative trip generation is estimated to more than double the trips at the existing Sonoma Compost Company compost facility. Project impacts are then identified by comparing the LOS results under Long-Term Cumulative Base plus Project conditions to those under Long-Term Cumulative Base conditions.

The results of the LOS analysis for Long-Term Cumulative Base plus Project conditions are shown in **Table 22-5**. With the addition of Site 40 Alternative project-generated traffic, service level on the westbound approach (Stage Gulch Road) of the intersection of Stage Gulch Road / Lakeville Highway – Lakeville Road would remain at LOS E during the weekday a.m. peak hour, but the average vehicle delay would not increase by more than the five-second threshold of significance. The other study intersections would continue to operate at an acceptable LOS C or better during both peak hours. The peak-hour traffic volume signal warrant would not be met under any of the long-term plus Site 40 Alternative peak-hour conditions. This impact would be **less than significant**.

Mitigation: None Required.

TABLE 22-5
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
LONG-TERM CUMULATIVE BASE PLUS PROJECT CONDITIONS[a]

Intersection	Traffic Control[b]	Scenario	Weekday AM Delay[c]	Weekday AM LOS	Weekend Midday Delay[c]	Weekend Midday LOS
Stage Gulch Road at Site 40 Access Driveway	SSSC	Existing	9.2	A	9.5	A
		Long-Term Base	9.4	A	9.9	A
		Long-Term Plus Project	9.6	A	10.4	B
Stage Gulch Road (SR 116) at Lakeville Highway (SR 116) – Lakeville Road	SSSC	Existing	22.6	C	14.7	B
		Long-Term Base	46.2	E	19.2	C
		Long-Term Plus Project	46.2	E	21.1	C
Frates Road at Lakeville Highway (SR 116)	Signal	Existing	17.9	B	18.5	B
		Long-Term Base	26.3	C	23.0	C
		Long-Term Plus Project	30.6	C	31.0	C

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Long-Term Cumulative Traffic Safety

Road Hazards

Impact 22.6: The project would generate turning movements by heavy vehicles to and from Stage Gulch Road at the Site 40 Alternative access road, increasing the potential for road hazard conflicts between project traffic and through traffic. (Significant)

As described under Impact 22.4, the project would cause an increase in traffic including heavy trucks on Stage Gulch Road, and the distribution pattern of project traffic would result in increased numbers of southbound vehicles turning right onto the Site 40 Alternative access road and of traffic turning left from the access road onto Stage Gulch Road. The analysis of long-term traffic conditions (2030) showed that the intersection of Stage Gulch Road / Site 40 Access Road would continue to operate at LOS B or better with Site 40 Alternative traffic. Through 2030 traffic on Stage Gulch Road is estimated at 220 vehicles during the weekday a.m. peak hour and 335 vehicles during the weekend peak hour. This relatively low volume of through peak hour traffic allows for a sufficient number of gaps in the through traffic stream to accommodates Site 40 Alternative traffic.

However, the Site 40 Alternative would introduce an active traffic generating use to the area compared to the minimal existing traffic from the agricultural use. The introduction of a substantial number of vehicles turning off and onto Stage Gulch Road where there were previously very low numbers of such vehicles could increase the potential for vehicle collisions. Without mitigation this impact would be **significant**.

Mitigation Measures

Mitigation Measure 22.6a: Implement Mitigation Measure 22.4 (posting of warning signs on Stage Gulch Road in advance of the access road (Site 40) that cautions drivers about truck traffic entering and exiting the roadway).

Mitigation Measure 22.6b: Implement Mitigation Measure 22.2 (intersection improvements).

Significance after Mitigation: Less than Significant.

Roadwear Impacts

Impact 22.7: The Site 40 Alternative would contribute to the degradation of pavement on public roads. (Less than Significant)

The truck trips generated by the Site 40 Alternative would cause incremental damage and wear to roadway pavement surfaces along the haul route. The degree to which this impact would occur depends on the roadway's design (pavement type and thickness) and its current condition. Freeways and state routes, such as U.S. 101 and SR 116, are designed to handle a mix of vehicle types, including heavy trucks, and thus, the Site 40 Alternative's impact on those facilities would be negligible. Local roadways, such as Frates Road and Adobe Road however, are generally not designed to accommodate heavy vehicles, and truck travel on these roads would have the potential to adversely affect the pavement condition. Roadway damage can include conditions such as loose asphalt and potholes that have the potential to make driving conditions less safe. Roadways significantly affected from Site 40 Alternative truck traffic would have to be upgraded to support heavy trucks.

The capability of a roadway to handle a traffic load is measured by deflection testing, coring, and visual condition surveys of the road. These methods allow the roadway's traffic index (TI) to be assessed. The TI is a logarithm-based scale that indicates the ability of the pavement structure to support the repetitive wheel and axle loads of large trucks, given a sound structural roadway subbase. Typically, TI ratings of 7.0 to 9.0 are calculated for roadways that are not expected to carry appreciable amounts of truck traffic. Higher TI values of 9.0 to 10.0 are typical of major arterial roadways with heavy truck traffic, and values of 10.0 or more are common for freeways and freeway ramp systems. The effects on pavement life from passenger cars, pickups, and two-axle, four-wheel trucks are considered to be negligible.

To evaluate the Site 40 Alternative impact on roadway condition and maintenance, the estimated TI for current and Site 40 Alternative conditions was calculated for roadway segments on Frates Road, Adobe Road and Stage Gulch Road. The TI was calculated in accordance with the procedures specified in the Caltrans *Highway Design Manual* on the basis of a 20-year roadway design period (the standard period used by Caltrans) and on vehicle classification data collected on the three roadways during July and August 2009. Detailed vehicle classification data is provided in Appendix TRAFFIC-2. A summary of the TI calculations for roadways on the Site 40 Alternative haul route are presented in **Table 22-6**.

TABLE 22-6
CALCULATED TRAFFIC INDEX (TI) FOR SITE 40 ALTERNATIVE HAUL ROUTES [a]

Roadway	Existing	Existing plus Project
Stage Gulch Road	9.1	9.7
Frates Road	11.8	11.9
Adobe Road	11.4	11.6

a. Traffic Indices in this table represent values calculated on the basis of existing and project truck traffic volumes, and Equivalent Single-Axles Load factors in the Caltrans Highway Design Manual.

Bold typeface signifies a significant impact.

SOURCE: ESA, 2009 and the Caltrans *Highway Design Manual* Traffic Index methodology.

The existing TI for Stage Gulch Road in the vicinity Site 40 is 9.1. The addition of Site 40 Alternative daily truck traffic would increase the TI to 9.7. This is below the 1.5 significance criteria TI increase threshold for roadways built to accommodate heavy truck traffic. The increase in the TI on Frates Road and Adobe Road due to Site 40 traffic would be **less than significant** because the increase in TI would not exceed the threshold of 0.5 for roadways not designed to accommodate heavy truck traffic.

Mitigation: None Required.

Construction

Impact 22.8: Project construction would result in temporary increases in truck traffic and construction worker traffic. (Significant)

Please see the discussion of Impact 12.8 (Construction Impacts) in Chapter 12, Traffic and Transportation. This impact would have similar effects as Impact 12.8, but with a somewhat higher number of haul truck trips than for the proposed project site.

Construction of the facility at Site 40 would require a total of approximately 16,670 truckloads of excavated soil assuming the use of a nine cubic yard truck. On average over the five-month construction period, 334 one-way truck trips (or 167 round-trips) would occur on a daily basis. This also equates to approximately 42 one-way truck trips per hour during a typical workday. Without mitigation, this impact would be **significant**.

Mitigation Measure

Mitigation Measure 22.8: Implement Mitigation Measure 12.8

Significance after Mitigation: Less than Significant.

22.4 References

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Sonoma County Transportation Authority, Traffic Model Outputs: ADT and PM Peak Hour for 2005 and 2035, contact Christopher Barney, June 17, 2009.

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CHAPTER 23
Aesthetics/Site 40 Alternative

23.1 Introduction

This chapter discusses the existing visual character of Site 40 and analyzes the potential for the alternative to affect the existing visual characteristics and views of Site 40. A site visit was conducted on July 29, 2009 to evaluate views from Site 40 and on September 2, 2009 to evaluate views of Site 40 from the surrounding area. The information presented in this chapter is unique to Site 40 and the reader is referred to Chapter 13, Aesthetics, in cases where aesthetic setting information and/or impact analysis is the same for Site 40 as the project site.

23.2 Setting

Regional Characteristics

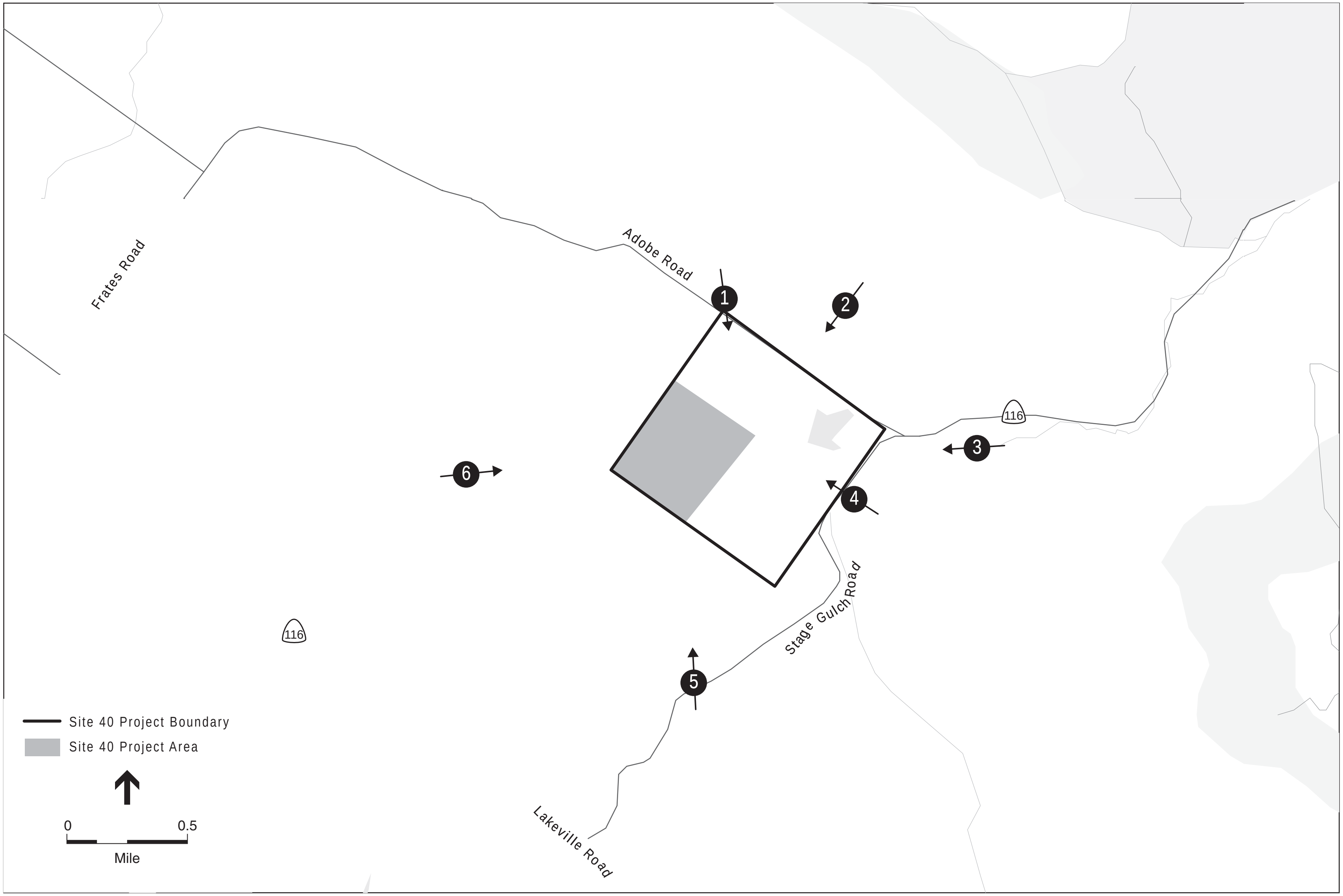
Site 40 is also located within the Petaluma and Environs Planning Area. The regional characteristics of this area are discussed in Chapter 13, Aesthetics. Site 40 is located in a rural and agrarian area, near active agricultural operations just east of the City of Petaluma.

Site 40 Characteristics

Site 40 consists of agricultural land which is currently used for cattle grazing. The site contains structures associated with past dairy farming operations. The immediate vicinity includes rural residences, grazing lands, vineyards and open space. Site 40 is located in an area with rolling hills. Site elevation ranges from approximately 150 to 400 feet above mean sea level. Site 40 is not within an area designated as a community separator or scenic landscape unit. State Route 116 (or Stage Gulch Road) and Adobe Road are designated as scenic corridors by Sonoma County.

Viewpoints

The Site 40 composting area would be visible from the surrounding area. A definition of short-range and long-range is provided in Chapter 13, Aesthetics. Due to the location of the composting area on Site 40, there are no short-range views of the site. Based on a review of aerial photography and July/September 2009 site visits, several long-range viewpoints were chosen to characterize off-site views, as shown on **Figure 23-1**.



SOURCE: ESA, 2009

SCWMA Compost Facility EIR . 207312

Figure 23-1
Site 40 Viewpoint Map

Long-Range Views

Long-range views of Site 40 include public roadways and private property. Private properties include single-family residences and commercial agricultural operations such as dairy farming or vineyards. **Figure 23-2a and 2b** provides photographs of several long-range views of Site 40. Site 40 is visible from Adobe Road (Viewpoint 1), Stage Gulch Road (east of the site, Viewpoint 4) and partially visible from Riscioni Road (Viewpoint 3). From these off-site views Site 40 blends with the surrounding grazing land and open space with rolling hills. Motorist views along these roads are short due to the speed of travel, and intermittent due to topography. From Soldat Road (Viewpoint 2) there is not a direct view of the site due to a hill and trees between this point and Site 40. Stage Gulch Road from the south (Viewpoints 5) and Periera Road (Viewpoint 6) are located on the opposite side of large hills which block views of Site 40.

Visual Sensitivity

The Sonoma County's Permit and Resource Management Department provides Visual Assessment Guidelines which are discussed in Chapter 13, Aesthetics. Site 40 would be considered of moderate visual quality. Site 40 and the surrounding vicinity are rural and characterized by agricultural uses and open space on rolling hills. Site 40 is not located within a scenic corridor setback (defined as 30 percent of the depth of the lot to a maximum of 200 feet from the centerline of the roadway), and the site's zoning and land use designation do not identify it as a protected scenic resource. The rolling hills and agricultural use on Site 40 contribute to the rural character along the nearby scenic corridors. The site itself does not contain individual landscape or architectural features with significant aesthetics value.

Regulatory Environment

California Scenic Highway Program and Scenic Corridor Protection Program

The State's Scenic Highway Program is described in Chapter 13, Aesthetics. State Route 116 is not an officially designated or eligible state scenic highway in the vicinity of Site 40 (California Scenic Highway Mapping System, 2007).

Sonoma County General Plan 2020

The relevant objectives and policies of the Sonoma County General Plan 2020 for aesthetic issues are discussed in Chapter 13, Aesthetics. Site 40 is not located within a community separator area or scenic landscape unit. A scenic landscape unit is located approximately 0.5 miles west of Site 40. State Route 116 and Adobe Road are designated as scenic corridors.

Viewpoint 1 looking south, view of Site 40.

Viewpoint 3 looking west, Site 40 site partially visible in background.

SOURCE: ESA, 2009

Figure 23-2a
Site 40 Viewpoint Photographs

Viewpoint 4 looking northwest, Site 40 visible in background.

Looking north from Stage Gulch Road, Viewpoint 5 and structures visible in background with hill blocking view of Site 40.

SOURCE: ESA, 2009

Figure 23-2b
Site 40 Viewpoint Photographs

23.3 Impacts and Mitigation Measures

Significance Criteria

The significance criteria are the same as those discussed in Chapter 13, Aesthetics.

Impact Discussion

Impact 23.1: The Site 40 Alternative would alter the visual character of Site 40. (Significant)

While SCWMA is not required to use County Visual Assessment Guidelines, they provide a useful method for analyzing visual impacts within Sonoma County. As discussed in the Visual Sensitivity setting information above, Site 40 is considered of moderate visual sensitivity. The visual dominance of the Site 40 alternative is dependent on many elements or characteristics of the development (See Chapter 13, Aesthetics, **Table 13-2**). Building structures would be single-story and neutral in color. Without screening, the visual dominance of the Site 40 Alternative would be co-dominant or dominant. In terms of significance, under the County Visual Assessment Guidelines, a co-dominant project would not be considered significant in an area of moderate sensitivity, however, a dominant project would be considered significant in the same area (See Chapter 13, Aesthetics, **Table 13-3**). Due to the subjective nature of the assessment, it is possible that the dominance of this alternative for off-site viewers is a **significant** impact.

Mitigation Measure

> **Mitigation Measure 23.1:** The alternative shall incorporate landscaping or other screening measures, such as the use of native trees and/or a vegetated berm, along the northeastern and southeastern boundaries of the Site 40 composting area.
>
> **Significance after Mitigation:** Less than significant.

Impact 23.2: This alternative could result in the production of new sources of light and/or glare. (Significant)

The Site 40 Alternative does not contain components which are anticipated to create a substantial amount of glare such as metal or glass; however, Mitigation Measure 23.1 discussed above would aid in reducing day-time glare. Typical hours of operation for the alternative would be between 7:00 a.m. and 4:00 p.m., Monday through Sunday. The site could operate infrequently during the permitted evening hours, for activities such as temperature monitoring. Within the Site 40 composting area, existing nighttime lighting is associated with farm structures, residences, and automobiles traveling along nearby roadways. This lighting is of low-intensity and dispersed. The Site 40 Alternative would introduce new nighttime lighting sources for security and operational purposes. This impact is **significant**.

Mitigation Measure

Mitigation Measure 23.2: Implement Mitigation Measure 13.2.

Significance after Mitigation: Less than significant.

23.4 References

California Scenic Highway Mapping System, 2007. Officially Designated and Eligible Scenic Highways in Sonoma County. Last updated 12-07-2007. Available at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Sonoma County, 2008. *Sonoma County General Plan 2020.* Sonoma County Permits and Resource Management Department, Sonoma, CA. Adopted by Resolution No. 08-0808 of the Sonoma County Board of Supervisors on September 23, 2008. Available at: http://www.sonoma-county.org/prmd/gp2020/adopted/index.htm.

CHAPTER 24
Air Quality/Central Site Alternative

24.1 Introduction

This chapter evaluates the potential impacts of the Central Site Alternative on regional and local air quality from both stationary and mobile sources of air emissions. The information presented in this chapter is unique to the Central Site Alternative and the reader is referred to Chapter 5, Air Quality, in cases where air quality setting information and/or impact analysis is the same for the Central Site as the project site.

24.2 Setting

Topography, Climate and Meteorology

Much of the information regarding general Climate and Meteorology is the same for the Central Site as the project site. The reader is referred to Chapter 5, Air Quality, for this information.

Regulatory Context

Information regarding the Regulatory Context for the Central Site is the same as for the project site. The reader is referred to Chapter 5, Air Quality, for this information.

Existing Air Quality

Existing levels of air quality in the Central Site area can generally be inferred from ambient air quality measurements conducted by the Bay Area Air Quality Management District (BAAQMD) at its nearby monitoring stations. The Central Site is approximately 16.5 miles northwest of the project site, 10 miles southwest of the Santa Rosa monitoring station, and 26 miles northwest of the San Rafael monitoring station. The Santa Rosa and San Rafael air quality monitoring station data described in Chapter 5, Air Quality, for ozone and respirable particulates (PM10 and PM2.5) would be representative of existing regional air quality at the Central Site as well. The reader is referred to Chapter 5, Air Quality, for this information.

Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include age, health problems, proximity to the emissions source, and duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air-quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The Central Site is adjacent to the existing composting facility location (Sonoma Compost, Inc.). Sensitive receptors would be similar to the current scenario. The nearest potential sensitive receptors to the proposed Central Site composting area would be residences approximately 500 feet north, 1,000 feet to the south, 4,500 feet to the east and 5,000 feet to the southeast. Dunham Elementary School is approximately 4,000 feet north of the site. Additionally, residences along haul routes may also be considered sensitive receptors during construction and operation of the Central Site Alternative.

24.3 Impacts and Mitigation Measures

Significance Criteria

The Significance Criteria for the air quality analysis for the Central Site is the same as for the project site. The reader is referred to Chapter 5, Air Quality, for this information.

Impact Discussion

Unlike the proposed project, composting for the Central Site Alternative would utilize only aerated static piles (ASP). The air quality impacts of this option are described below.

Impact 24.1: Construction of the Central Site Alternative could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, PM10, and PM2.5 that could contribute to existing nonattainment conditions and further degrade air quality. (Significant)

Construction of the Central Site Alternative would have similar impacts, regulations, and controls as those described under Chapter 5, Air Quality, Impact 5.1. BAAQMD has adopted new daily mass significance thresholds for construction-related activities in its *CEQA Air Quality Guidelines*. These thresholds are 54 pounds per day of ROG, NOx, or PM2.5 and 82 pounds per day for PM10. The URBEMIS2007 model was used to quantify construction emissions. Unmitigated and mitigated construction-related emissions for the Central Site Alternative are presented in **Table 24-1** for Phase 1 (year 2010) and Phase 2 (year 2018) construction. As can be seen from the data in **Table 24-1**, NOx emissions generated during Phase 1 construction would exceed the BAAQMD threshold and would be significant without mitigation. Criteria pollutant emissions generated during Phase 2 construction would not exceed the BAAQMD thresholds and would be less than significant.

TABLE 24-1
PEAK DAY CONSTRUCTION-RELATED POLLUTANT EMISSIONS (Pounds/Day)[a]

Construction Phase	ROG	NOx	CO	SO_2	Exhaust PM10[b]	Exhaust PM2.5[b]
Phase 1 - Year 2010						
2010 (Unmitigated Emissions)	6	55	29	<1	3	3
2010 (Mitigated Emissions)[c]	6	47	29	<1	2	2
BAAQMD Construction Threshold	54	54	None	None	82	54
Significant Impact?	No	No	No	No	No	No
Phase 2 - Year 2018						
2018 (Unmitigated Emissions)	5	41	26	<1	2	2
BAAQMD Construction Threshold	54	54	None	None	82	54
Significant Impact?	No	No	No	No	No	No

a. Emissions were modeled using URBEMIS2007 and assuming 2.5 acres of the total 10 acre-site (Phase 1) and 3.9 acres of the total 15.6 acre-expansion (Phase 2) would be disturbed on the worse-case day. Default URBEMIS2007 equipment assumptions were assumed for construction. 150,000 and 400,000 cubic yards of soil was assumed to be exported under Phase 1 and Phase 2, respectively. Construction activities were assumed to occur for a duration of one year. Additional information is included in Appendix AIR-5.
b. BAAQMD's proposed construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.
c. Mitigation measures were incorporated into the URBEMIS2007 model as surrogates for the Basic and Additional Control Measures described below under Mitigation Measure 24.1, per the BAAQMD *CEQA Air Quality Guidelines*.

Mitigation Measure

Mitigation Measure 24.1: Implement the 'Basic Control Measures' and 'Additional Control Measures' specified in Mitigation Measure 5.1 (Construction Emission Controls) during Phase 1 construction, and implement only the 'Basic Control Measures' (which are required for all construction projects in the BAAQMD jurisdiction) included in Mitigation Measure 5.1 for Phase 2 construction.

Significance after Mitigation: Less than Significant.

As depicted in **Table 24-1**, with mitigation implementation, NOx emissions during construction would be reduced below the BAAQMD threshold. This impact would be less than significant.

Impact 24.2: Operation of the Central Site Alternative would result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. (Less than Significant)

The Central Site Alternative-related air quality impacts fall into two categories: fugitive dust impacts (re-entrainment on local roadways and on-site disturbed areas) and criteria pollutant impacts due to off-road equipment, on-road vehicles, area sources (natural gas combustion, landscaping equipment, architectural coatings), and composting off-gas emissions. The modeling methodology and emission factors would be the same for the Central Site Alternative as those described in Chapter 5, Air Quality, Impact 5.3.

Conditions were assessed for the Existing Sonoma Compost facility (for year 2011), and for the Central Site Alternative's assumed first year of operation (Phase 1, year 2011) and maximum projected throughput (Phase 2, year 2019). **Table 24-2**, below, presents estimated maximum (worst-case) daily emissions of criteria pollutants, and comparison to the applicable regulatory threshold. **Table 24-2** shows that the estimated net emissions (Central Site minus Existing emissions) of all pollutants would not exceed the applicable BAAQMD significance thresholds during Phase 1 or Phase 2 operations. This would be a less than significant impact without mitigation.

TABLE 24-2
ESTIMATED MAXIMUM DAILY CENTRAL SITE ALTERNATIVE (ASP COMPOSTING) EMISSIONS

	Criteria Pollutant Emissions (lbs/day)[1]				
	ROG	**CO**	**NOx**	**PM10**	**PM2.5**
Existing Operations – Projected Year 2011					
Off-road Equipment Exhaust	4	16	38	1	1
On-road Vehicle Exhaust	1	21	5	0	0
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Windrow Emissions	712	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (3 acres)	0	0	0	39	7
Total Unmitigated Emissions (pounds/day)	**717**	**39**	**43**	**40**	**8**
Central Site Alternative Operations - Year 2011					
Off-road Equipment Exhaust	2	8	14	1	1
On-road Vehicle Exhaust	0	8	2	0	0
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Aerated Static Pile Emissions	14	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (1.5 acres)	0	0	0	34	7
Total Unmitigated Emissions (pounds/day)	**16**	**18**	**16**	**35**	**8**
Total Net Emissions (Unmitigated Central Site minus Existing) [2]	**(701)**	**(21)**	**(27)**	**(5)**	**0**
Thresholds (pounds/day)[3]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***
Central Site Alternative Operations - Year 2019					
Off-road Equipment Exhaust	1	13	3[4]	0	0
On-road Vehicle Exhaust	0	10	2	0	0
Area Sources - Natural Gas, Landscape Equipment, Architectural Coatings	0	2	0	0	0
Aerated Static Pile Emissions	39	0	0	0	0
Fugitive Dust - Re-entrained, Disturbed Area (4 acres)	0	0	0	91	18
Total Unmitigated Emissions (pounds/day)	**40**	**25**	**5**	**91**	**18**
Total Net Emissions (Unmitigated Central Site minus Existing) [2]	**(677)**	**(14)**	**(38)**	**51**	**10**
Thresholds (pounds/day)[3]	***54***	***NA***	***54***	***82***	***54***
Significant without Mitigation? (Yes or No)	***No***	***NA***	***No***	***No***	***No***

1. Emissions were modeled using several models and emission factors, including the URBEMIS2007 model (for off-road equipment, area sources, and fugitive dust from actively disturbed areas), EMFAC2007 for on-road vehicle exhaust, the CIWMB emission factor for VOC emissions (CIWMB, 2007) with a 95% reduction from ASP system (based on preliminary data), and U.S. EPA AP-42 (for paved roads (section 13.2.1 - Paved Roads)). Existing emissions of fugitive dust were assumed to be controlled by watering 2x per day and reducing speed on unpaved roads. These emission factors and modeling are described in more detail in Appendix AIR-5.
2. Values in (parentheses) represent a net reduction from the Existing scenario.
4. BAAQMD has established mass thresholds of significance for ROG, NOx, PM10, and PM2.5. The BAAQMD thresholds for CO are localized concentrations, which is described below under Impact 24.3.
5. Even though off-road equipment operations were assumed to increase over existing usage for the year 2019 operations, NOx is estimated to substantially drop during that time due to assumed new equipment purchases or rebuilding the equipment in the year 2016, which would meet more stringent regulatory requirements.

Mitigation: None required.

Impact 24.3: Central Site Alternative traffic would generate localized CO emissions on roadways and at intersections in the site vicinity. (Less than Significant)

According to the BAAQMD *CEQA Air Quality Guidelines*, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

1. Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The project would not conflict with the Sonoma County Comprehensive Transportation Plan established by the Sonoma County Transportation Authority. In regards to the second and third criteria, intersection traffic volumes would be substantially less than 44,000 and 24,000 vehicles per hour, respectively. The estimated increase in traffic volumes caused by project-related traffic would not be substantial relative to background traffic conditions, nor would project traffic significantly disrupt daily traffic flow on area roadways.

Based on the BAAQMD's criteria, project-related traffic would not lead to violations of the carbon monoxide standards and therefore, no further analysis was conducted for carbon monoxide impacts of the project at these intersections. This impact would be considered less than significant on a project-level and cumulative basis.

Mitigation: None required.

Impact 24.4: Operation of the Central Site Alternative could create objectionable odors affecting a substantial number of people. (Significant)

Potential generation of odors associated with operation of the Central Site Alternative would have the same impacts, regulations, and controls as those described under Chapter 5, Air Quality, Impact 5.5. These controls include the implementation of an Odor Impact Minimization Plan (see Appendix AIR-7) as required by law. The Odor Impact Minimization Plan includes two major components, a Complaint Response Protocol and an Odor Complaint Reporting Format. The Odor Complaint Response Protocol describes the procedures to follow upon receiving a complaint. The protocol includes measures to identify the odor and requires appropriate adjustments to storage, process control, and facility improvements to reduce odors.

Mitigation Measure

Mitigation Measure 24.4: Same as Mitigation Measure 5.5 (Odor Control).

Significance after Mitigation: Less than Significant.

Compliance with the Odor Impact Minimization Plan would assure that odor impacts from composting would be less than significant.

Impact 24.5: Implementation of the Central Site Alternative may lead to increases in chronic exposure of sensitive receptors in the vicinity to certain toxic air contaminants from various stationary and mobile sources. (Less than Significant)

Similar to the proposed project, TAC emissions sources at Central Site would include heavy duty equipment used on-site, haul trucks used to transport material to and from the site and fugitive emissions associated with composting activities. Since Central Site would process less amount of material as the proposed project, it was assumed that the emissions rates estimated for the Central Site would be less than the proposed project as a proportion of the material processed. Please see introductory information in Impact 5.6, which is the same for Impact 24.5. Additional information is included in the HRA as part of Appendix AIR-6.

The majority of land uses surrounding the Central Site are agricultural in nature with areas of open space. Single-family rural residences are scattered in the surrounding area and often present on sites with agricultural operations, such as dairy farming and grazing. The closest residence to the Central Site composting area is approximately 500 feet northeast. Other residences are approximately 1,000 feet to the south, 4,500 feet to the east and 5,000 feet to the southeast. Dunham Charter School is located approximately 4,000 feet north of the Central Site. Urban development associated with the City of Cotati is located approximately 2.5 miles northeast of the Central Site. The Petaluma Municipal Airport is located approximately 8.5 miles southeast of the Central Site.

Acute and Chronic Risk

The maximum exposed worker receptor was modeled at a dairy farm, approximately 1,000 feet to the south. For the maximum exposed worker, the acute HI would be 0.065. For the maximum exposed residence, the acute HI would be 0.065. For the Dunham Charter School, the acute HI would be 0.037. The acute risk for the maximum exposed receptors is well below the BAAQMD threshold of 1 and would be **less than significant**.

For chronic risk, unlike acute risk, the maximum exposed receptor with regard to chronic exposure would be located at the dairy farm. For the maximum exposed worker, the chronic HI would be 0.0080. For the maximum exposed residence, the chronic HI would be 0.0080. For the Dunham

Charter School, the chronic HI would be 0.00047. The chronic risks for the maximum exposed receptors are well below the BAAQMD threshold of 1 and would be **less than significant**.

Cancer Risk

The following five carcinogens would be emitted under the Central Site Alternative: (1) DPM; (2) methylene chloride; (3) benzyl chloride; (4) formaldehyde; and (5) acetaldehyde. Cancer risks at worker receptors were analyzed assuming an exposure frequency of 245 days per year (5 days per week/49 weeks per year) for 40 years with a worker breathing rate of 149 L/kg bodyweight – day. Cancer risks at residential receptors were analyzed based on the 80th percentile adult breathing rate of 302 L/kg-day. Exposure frequency for residents was assumed to be 350 days per year and exposure duration was assumed to be 70 years. Cancer risks for school children were analyzed assuming an exposure frequency of 180 days per year for 9 years with a breathing rate of 591 L/kg bodyweight – day.

For the Central Site, incremental cancer risks were determined while comparing the cancer risk for the existing operations (windrow composting) to the cancer risk for the proposed operations (ASP), while also accounting for the change in process rates. The maximum cancer risk under the Central Site Alternative for the worker, residential, and Dunham Charter School receptors would be less than zero (i.e., a reduction in cancer risk from the existing conditions), which would not exceed the BAAQMD threshold of 10 in one million and would be **less than significant**.

PM2.5 Concentration

The maximum annual PM2.5 concentration as a result of the Central Site Alternative construction would be 0.01 µg/m^3, which would not exceed the BAAQMD threshold of 0.3 µg/m^3 and would therefore constitute a **less than significant** impact. The maximum annual PM2.5 concentration as a result of the Central Site Alternative operations would be 0.08 µg/m^3, which would not exceed the BAAQMD threshold of 0.3 µg/m^3 and would therefore constitute a **less than significant** impact.

Mitigation: None required.

Impact 24.6: Construction and operation of the Central Site Alternative would not result in a cumulatively considerable increase in greenhouse gas emissions. (Less than Significant)

Please see introductory information in Chapter 5, Air Quality, Impact 5.8, which is the same for the Central Site Alternative.

Central Site Alternative Contribution to Cumulative Climate Change Effects from Greenhouse Gas (GHG) Emissions

The calculation presented below includes annual CO_2e GHG emissions from off-road equipment (CO_2), vehicular traffic (CO_2), energy consumption (CO_2, N_2O, CH_4), area sources (natural gas combustion and landscape equipment) (CO_2), and off-gas emissions (CH_4) from composting. The modeling methodology and emission factors would be the same for the Central Site Alternative as those described in Chapter 5, Air Quality, Impact 5.9. Appendix AIR-5 contains information regarding assumptions and emissions calculations used in this analysis.

GHG emissions associated with the construction phase of the Central Site Alternative would result in a maximum annual generation of 1,032 metric tons of CO_2e (during Phase 2 construction). In addition, in light of the considerations outlined above**, Table 24-3** presents an estimate of the Central Site Alternative's operational CO_2e emissions. Data in **Table 24-3** indicate that GHG emissions that would result from the Central Site Alternative would not exceed the 1,100 metric tons per year threshold established by BAAQMD for Phase 1 or Phase 2 operations. This would not represent a cumulatively significant impact.

TABLE 24-3
CENTRAL SITE ALTERNATIVE OPERATIONS GHG EMISSIONS

	Greenhouse Gas Emissions (metric tons/year)[1] CO_2e
Existing Operations – Projected Year 2011	
Off-road Equipment	786
On-road Vehicles	418
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	866
Indirect Emissions from Electricity Generation	7
Total Unmitigated Emissions	**2,123**
Central Site Alternative Operations – Phase 1, Year 2011	
Off-road Equipment	305
On-road Vehicles	171
Area Sources - Natural Gas, Landscape Equipment	46
Composting Emissions	346
Indirect Emissions from Electricity Generation	59
Total Unmitigated Emissions	**927**
Net Emissions (Central Site minus Existing)[2]	**(1,196)**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**No**
Central Site Alternative Operations – Phase 2, Year 2019	
Off-road Equipment	785
On-road Vehicles	464
Area Sources - Natural Gas, Landscape Equipment	51
Composting Emissions	952
Indirect Emissions from Electricity Generation	288
Total Unmitigated Emissions	**2,540**
Net Emissions (Central Site minus Existing)[2]	**417**
BAAQMD Threshold	**1,100**
Significant? (Yes or No)	**No**

1. Emissions were modeled using several models and emission factors, which is described in more detail in Appendix AIR-3. These models and emission factors include URBEMIS2007 model (for off-road equipment and area sources), EMFAC2007 for on-road vehicle exhaust, GHG emission factors from the California Climate Action Registry *General Reporting Protocol* (California Climate Action Registry, 2009) for indirect emissions from electricity generation, and a CH_4 emission factor from the South Coast Air Quality Management District (SCAQMD, 2001) from green waste composting.
2. The "Net Emissions" are estimates of the Central Site Alternative operational GHG emissions minus the Existing Sonoma Compost facility operational GHG emissions. These estimates represent the incremental increase in GHGs from the Central Site Alternative.

In addition, the methodology applied here does not account for the shift in emissions from diverting the organic waste from out-of-County landfills. The Central Site Alternative would process organic materials (that might otherwise be disposed of as waste) from Sonoma County sources and produce a renewable resource within the County. Compost could be used in the County as a replacement for alternative products, such as fertilizers, that also require energy for production as well as transport to the County from the manufacturing facilities or distribution centers. Thus, the Central Site Alternative would be inherently energy efficient by providing a local source of soil enrichment materials and reduce the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. In addition, because the effects of GHGs are global, if the Central Site Alternative merely shifts the location of the GHG-emitting activities (off-road equipment, trucks, waste degradation) from landfills to the Central Site site, there would not likely be a net new increase of emissions.

With regard to any potential conflict with applicable Sonoma County plans, policies, or regulations adopted to reduce GHGs, Sonoma County has established a *Sonoma County Community Climate Protection Action Plan* (Climate Protection Campaign, 2008), which incorporates the target reduction goal of 25 percent below the 1990 level by the year 2015. The Central Site Alternative would comply with the strategies presented in the Plan to reduce GHGs through increased recycling of organic materials via composting processes (described under the Agriculture and Forests, as well as Solid Waste subsections of the Plan). Therefore, the Central Site Alternative would not conflict with any local regulations pertaining to GHGs.

Mitigation: None required.

Impact 24.7: The Central Site Alternative, together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants. (Significant)

According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project’s individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region’s existing air quality conditions (BAAQMD, 2010). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As discussed in Impacts 24.1 through 24.3, the Central Site Alternative would result in less than significant project impact from criteria pollutant emissions (with implementation of mitigation for Impact 24.1). Therefore, the project would not have a considerable contribution to cumulative air quality (criteria air pollutants) during construction or operations, and the impact would be considered less than significant.

Mitigation Measure

Mitigation Measure 24.7: Implement Mitigation Measure 24.1 (Construction Emission Controls).

Significance after Mitigation: Less than Significant.

Impact 24.8: Cumulative risk from all past, present and reasonably foreseeable sources within 1,000 feet of the Central Site Alternative would expose sensitive receptors to PM2.5 and TACs which may lead to adverse health effects. (Less than Significant)

The BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD, 2010) provides estimated impacts from significant roadway within Sonoma County such as Routes 1, 12, 37, 101, 116, 121, and 128. Estimated impacts within a distance of 1,000 feet were developed for each of these roadways. The Central Site is not located within 1,000 feet of any of these roadways. Thus, the impact from these roadways is not expected to significantly contribute to the overall impact at the receptors of interest in the Central Site vicinity.

Mitigation: None required.

24.4 References

Bay Area Air Quality Management District (BAAQMD), 1999. BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans, December 1999.

Bay Area Air Quality Management District, 2010. *CEQA Air Quality Guidelines*, adopted June 2, 2010. Available at www.baaqmd.gov

California Climate Action Registry, 2009. General Reporting Protocol, January 2009.

California Integrated Waste Management Board (CIWMB), 2007. Emissions Testing of Volatile Organic Compounds from Greenwaste Composting at the Modesto Compost Facility in the San Joaquin Valley. October 31, 2007, revised May 2008.

Climate Protection Campaign. 2008. Sonoma County Community Climate Action Plan. October, 2008.

Sonoma County, 2006. Sonoma County General Plan 2020 Draft Environmental Impact Report, January 2006.

South Coast Air Quality Management District (SCAQMD), 2001. Ammonia and Volatile Organic Compound (VOC) Emissions from a Greenwaste Composting Operation.

U.S. Environmental Protection Agency (U.S. EPA). 2001. Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, January 2001.

CHAPTER 25

Biological Resources/Central Site Alternative

25.1 Introduction

This chapter provides background information on the biological resources and natural communities occurring within the Central Site, outlines potential impacts to biological resources that may result from development of the Central Site Alternative, and proposes mitigation measures to reduce those impacts to a less than significant level. These mitigation measures have been developed to focus on avoiding, reducing, or compensating for potentially significant impacts on biological resources. A discussion of federal, state, and local laws, policies, and regulations that influence biological resources at the Central Site is presented in Chapter 6, Biological Resources. The information presented in this chapter is unique to the Central Site and the reader is referred to Chapter 6, Biological Resources in cases where biological resource setting information and/or impact analysis is the same for the Central Site Alternative as the project site.

25.2 Setting

Regional Setting

The Central Site is located in the Northern California Coast ecological region and the Santa Rosa Plain subsection and is characterized by gently rolling hills, in between the Pacific Ocean and the Santa Rosa Plain (Miles and Goudey, 1997). Refer to Chapter 6, Biological Resources for ecological region descriptions.

The predominant natural plant communities in the Santa Rosa Plain subsection are needlegrass grasslands and valley oak series in inland valleys. Other dominant plant communities include Northern claypan vernal pools on the Santa Rosa Plain, Pacific reedgrass series and needlegrass grasslands on rolling hills westward to the coast, and Coast live oak series on leeward slopes in the rolling hills. The climate is temperate to hot and humid, moderated by marine air advancing over the hills most of the time. Average annual precipitation in the Santa Rosa Plain subsection is approximately 20 to 40 inches, with summer fog. Mean annual temperature is approximately 50° to 58° F (Miles and Goudey, 1997).

Project Area Setting

The Central Site is approximately 38 acres in size (including the area that will need to be graded to allow for development of the site) and is located southwest of the town of Cotati in an unincorporated area of Sonoma County. The site is bordered by Roblar Road to the north, Mecham Road to the east, and farmland to the south and west (**Figures 14-8 and 14-9**). This location corresponds to Township 6N, Range 8W, Section 32 of the Two Rock, CA U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (USGS, 1980). The site is accessible via Mecham Road.

The Central Site composting area is located in the northwestern corner of the Central Disposal Site, which consists of undulating grassland, eucalyptus trees, a small freshwater pond, and access roads associated with the existing compost facility and recycling center. Surrounding land uses include rural residences, grasslands used for cattle and sheep grazing, and open space.

Methodology

This evaluation of biological resources includes a review of potentially occurring special-status species,[1] wildlife habitats, vegetation communities, and potential jurisdictional waters of the U.S. and/or waters of the state. The results of this assessment are based upon field reconnaissance, literature searches and database queries. Site reconnaissance was conducted by ESA biologist LeChi Huynh on May 19, 2010. The primary sources of data referenced for this report included the following:

- Two Rock, California, 7.5-minute topographic quadrangle (USGS, 1980);
- "Federal Endangered and Threatened Species that may be Affected by Projects in the Cotati, California 7.5-Minute Topographic Quadrangles" (USFWS, 2010a);
- California Natural Diversity Database (CNDDB), Rarefind 3.1 computer program (CDFG, 2010);
- Threatened and Endangered Plants List (January, 2010) (CDFG, 2010b);
- Threatened and Endangered Animals List (January 2010) (CDFG, 2010c);
- California Native Plant Society: Inventory of Rare and Endangered Plants (CNPS, 2010a)
- Ecological Subregions of California (Miles and Goudey, 1997);
- Review of color aerial photography for vegetative, topographic, and hydrologic signatures;
- Review of Natural Resources Conservation Service (NRCS) web soil survey data (NRCS, 2010) for information about soils and geomorphology;
- Review of the National Wetlands Inventory (NWI) map (U.S. Fish and Wildlife Service [USFWS], 2010b) for information on wetlands and natural water features previously delineated in the project area;
- Sonoma County General Plan (Sonoma County, 2008)

[1] Species that are protected pursuant to Federal or State endangered species laws, or have been designated as Species of Special Concern by the CDFG, or species that are not included on any agency listing but meet the definition of rare, endangered or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species."

Vegetation Communities and Wildlife Habitats

Vegetation communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. Upland plant communities and habitats within the Central Site include non-native annual grassland, disturbed/ruderal, and barren. The aquatic plant community includes the freshwater detention pond in the center of the site; this feature would not be considered a water of the state or a water of the U.S. as it is manmade and isolated. The vegetation community descriptions and nomenclature used in this section generally correlate to wildlife habitat types described in *A Guide to Wildlife Habitats of California* or California Wildlife Habitats Relationships (CWHR) (Mayer and Laudenslayer, 1988) and the classification provided in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). The types of wildlife habitat (in accordance with the CWHR classification system) present in the Central Site can be found in **Table 25-1** and **Figure 25-1**.

TABLE 25-1
VEGETATION COMMUNITIES WITHIN THE
CENTRAL SITE ALTERNATIVE COMPOSTING AREA

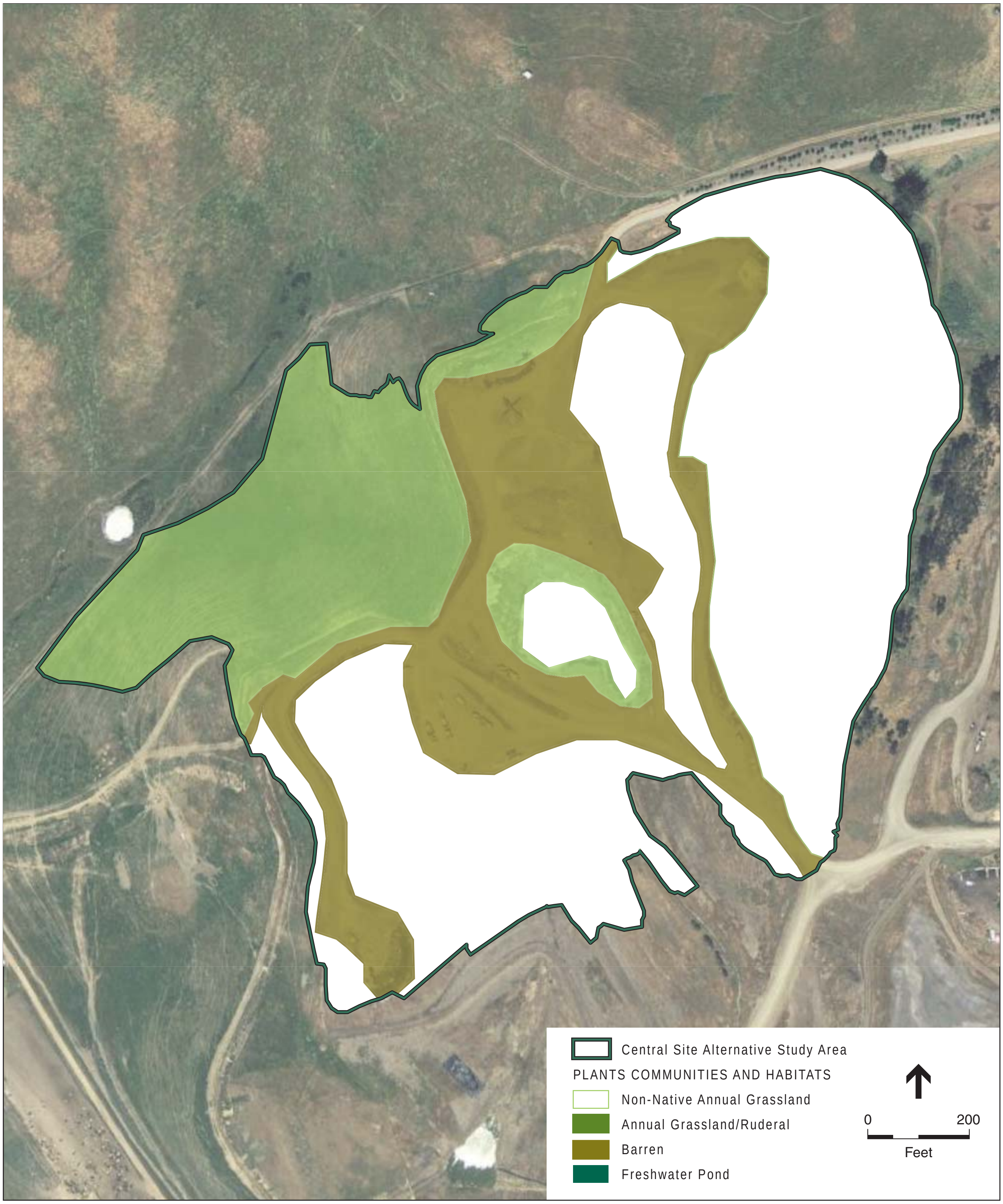
Vegetation Community	Acres / Percent of Central Site Composting Area
Annual Grassland	18.97 / 51%
Disturbed/Ruderal	9.18 / 24%
Barren	8.81 / 23%
Freshwater Pond	0.65 / 2%
Total	**37.61/ 100%**

SOURCE: ESA, 2010.

Upland Plant Communities

Annual Grassland

The non-native annual grassland vegetation community occupies 18.97 acres of the Central Site and is the dominant plant community throughout the site (**Figure 25-1**). Annual grassland on the Central Site often intergrades with ruderal vegetation when adjacent to access roads or barren land. Wildflower seed mixtures have been sown in selected areas in the past. This community is dominated by nonnative Mediterranean annual grasses and ruderal plant species. An assemblage of native and nonnative forbs was noted in the grassland areas, including Italian ryegrass (*Lolium multiflorum*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum ssp. leporinum*), purple vetch (*Vicia atropurpurea*), Italian thistle (*Carduus pycnocephalus*), and field clover (*Trifolium campestre*), among others. Species that seem to have been sown in selected areas include rose clover (*Trifolium hirtum*), owl's clover (*Castilleja* sp.), and sky lupine (*Lupinus nanus*). Vegetative cover is moderate to dense with vegetation height ranging from a few inches to three feet tall. No animal burrows are present within this habitat type. A grove of large blue gum trees (*Eucalyptus globulus*) occur within this habitat at the eastern edge of the site.



SCWMA Compost Facility EIR . 207312

SOURCE: USGS, 1980 and 1971; County of Sonoma, 2007; and ESA, 2011

Figure 25-1
Plant Communities and Habitats within the Central Site Composting Area

Annual grassland provides habitat for a variety of wildlife species as described in **Chapter 6**. Wildlife species observed within this habitat type include turkey vulture, red-winged blackbirds, and American crow. Signs of deer and rabbit were also observed.

Disturbed/Ruderal

Disturbed areas such as dirt/gravel roads and ruderal vegetation comprise 9.18 acres of the site (**Figure 25-1**). This vegetation type is subjected to ongoing or past disturbances (e.g., vehicle use, mowing, and potential herbicide application). Due to the disturbance regime, assemblages of native and introduced weedy species have established which the majority consists of various annual grasses and forbs of Eurasian origin; many of which also occur in the grasslands (See **Chapter 6** for full description). Because ruderal habitat within the Central Site Alternative area generally intergrades with annual grassland habitats, wildlife species that are found in annual grassland habitats will also occur in ruderal habitats. No mammal burrows were found in this habitat type.

Aquatic Plant Communities and Habitats

Freshwater Pond and Freshwater Emergent Wetland

The Central Site Alternative area supports a freshwater detention pond, approximately 0.65 acres, near the center of the site (Figure 25-1). Because the pond was constructed in uplands and does not connect to any navigable waterways, it would not be considered a waters of the U.S. or a waters of the State. This pond contains up to two feet of water and supports freshwater emergent wetland plant species at the margin and in shallow areas. Vegetation cover is generally sparse to moderate, consisting of cattails (*Typha angustifolia*) and smartweed (*Polygonum* sp.) as the dominant hydrophytic species.

Freshwater ponds are lacustrine habitats, which are inland depressions that contain standing water (Mayer and Laudenslayer, 1988) and support fish and emergent vegetation. The freshwater pond within the Central Site Alternative area supports bass (Morelli, 2010), which may have some negative effects on amphibians, but would not necessarily exclude the presence of amphibians. The presence of bass may attract wildlife predators that feed on fish, such as wading birds. Bullfrogs are known to have a deleterious effect on other amphibian species when occurring within the same habitat; however, ESA biologists did not observe any bullfrogs within the freshwater pond at the Central Site Alternative area.

Refer to **Chapter 6** for a full description of habitat features and wildlife use of freshwater emergent wetlands. Wildlife species observed within the vicinity of the freshwater detention pond and freshwater emergent wetland include red-winged blackbirds and American crows.

Special Status Species

Definitions of Special-Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Refer to **Chapter 6** for a full description of the term "special-status."

Potentially Affected Listed and Proposed Species

A list of special-status plant and animal species that have the potential to occur within the vicinity of the project area was compiled based on data in the CNDDB (CDFG, 2010), CNPS) literature (CNPS, 2010a), and the USFWS List of Federal Endangered and Threatened Species that may be affected by Projects in the Cotati (501C) Quadrangle and eight surrounding quadrangles (USFWS, 2010a) (**Appendix Bio-1**). Conclusions regarding habitat suitability and species occurrence are based on a reconnaissance-level area assessment conducted by an ESA biologist, as well as existing literature and databases described previously.

A list of special-status plants and animals with the potential to occur within the Central Site Alternative area and the potential for the Central Site Alternative to impact each species listed is in **Table 25-2**. ESA identified 28 species with a low potential, 5 species with a medium potential, and no species with a high potential to occur in the vicinity of the Central Site Alternative area. The "Potential for Occurrence" category is defined in **Chapter 6**.

Life history and distribution of species with medium to high potential to occur within the vicinity of the project area are described in detail below. A complete Special-Status Species table is included as **Table BIO-4** located in **Appendix Bio-4**.

Amphibians

California Red-Legged Frog

The California red-legged frog (CRLF) is a largely aquatic frog found at ponds and slow moving streams with permanent or semi-permanent water. This species opportunistically migrates into upland habitats, due to normal dispersal behavior. This species may aestivate in upland environments when aquatic sties are unavailable or environmental conditions are inhospitable. If water is unavailable, they shelter from dehydration in a variety of refuges, including boulders, downed wood, moist leaf litter and small mammal burrows.

Historically, the CRLF occurred along the coast from the vicinity of Point Reyes National Seashore, Marin County, and inland from Redding, Shasta County, southward to northwestern Baja California, Mexico (Jennings and Hayes, 1994).

The nearest critical habitat for the CRLF is approximately ten miles from the study area. Potential suitable habitat for CRLFs exists within the freshwater detention pond located in the center of the

Central Site Alternative. The nearest CNDDB occurrence for this species is one to two miles south of the Central Site (CDFG, 2010), though they have been observed in the ponds in the southern portion of the Central Disposal Site.

California Tiger Salamander

California tiger salamanders (CTS) are listed as a state and federally threatened species. They are commonly found in annual grassland habitat and require vernal pools and other temporary ponds (sometimes permanent cattle ponds without fish) for reproduction and small mammal burrows for subterranean refuge sites. CTS rarely use streams to reproduce; however, they have been known to travel more than 1,000 m (3,300 ft) or more to and from breeding ponds. Dry-season refuge sites within a reasonable distance of breeding sites are likely a necessary habitat requirement since this species is absent form sites with seemingly suitable breeding habitat where surrounding hardpan soils are lacking small mammal burrows.

The Central Site is located within the General Plan’s CTS range designation, which is consistent with the Santa Rosa Plains Conservation Strategy map. Additionally, the Central Site is located within 1.3 miles of two extant breeding pools and one adult occurrence (CDFG, 2010a). The freshwater pond on the Central Site would not provide breeding habitat as the pond holds water throughout the year and supports fish species that would like prevent any successful breeding activities. Additionally, the annual grassland habitat does not support burrows that could provide subterranean refuge sites. Because the Central Site does not support aquatic or upland habitat for this species, it will not be discussed further.

Reptiles

Northwestern Pond Turtle

The northwestern pond turtle is a relatively large, mostly aquatic turtle that inhabits fresh to brackish, quiet water. Its carapace is broad and low and brown to olive in color. Pond turtles inhabit ponds, marshes, lakes, streams, irrigation ditches and vernal pools that contain adequate cover and basking sites. Despite its name the pond turtle regularly inhabits terrestrial habitats usually during summer and winter months during overland dispersal, oviposition (females) and mate seeking (males). Habitats that contain adequate refugia such as undercut banks, logs, submerged vegetation and mud banks are preferred. Basking sites such as emergent logs, open banks, rocks and root wads are utilized by turtles to thermoregulate their body temperature. They are omnivorous generalists and opportunistic predators eating insects, snakes, small mammals, birds, frogs, fish, and aquatic invertebrates. Pond turtles must ingest their food under water because they cannot swallow in the air.

The northwestern pond turtle exists in California north of the American River and integrates with the southwestern pond turtle from the San Joaquin Valley to south and East of San Francisco Bay. Throughout their range adult pond turtles are active year round, although farther north their activity can be limited. At aquatic sites turtles hibernate in muddy stream bottoms. On land, they move upland in search of hibernation spots. Mating occurs in April and May and oviposition occurs in July and August in adjacent wetland margins or uplands that will not flood.

TABLE 25-2
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	State Status (CDFG/CNPS)	Listing Status (USFWS)	Habitat Association	Potential for Project to Impact
Amphibians				
Ambystoma californiense California tiger salamander (Sonoma County population)	ST	FE	Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Needs underground refuges and vernal pools or other seasonal water sources.	Low. Although annual grassland habitat under the eucalyptus grove may provide suitable upland habitat, the freshwater pond is probably not suitable breeding habitat due to the presence of bass, a potential predator for the species and its eggs. However, numerous CNDDB occurrences were recorded within 5 miles north and east of the study site.
Rana aurora draytonii | California red-legged frog	CSC	FT	Breeds in slow moving streams, ponds, and marshes with emergent riparian vegetation; forages in nearby uplands within about 200 feet.	Medium. A freshwater pond with sparse to moderate emergent plants within the area provides potential aquatic habitat. The nearest CNDDB occurrence is approximately 2 miles from the project area.
Reptiles				
Actinemys (=Emys) marmorata Northwestern pond turtle	CSC	None	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks.	Medium. Suitable habitat in the form of a freshwater pond is present within the Central Site; basking habitat is present in shallow rocky areas surrounding the pond, and egg-laying habitat is present in grassy areas adjacent to the. The nearest CNDDB occurrence is 1 mile southwest of the Central Site.
Birds				
Elanus leucurus White-tailed kite	CFP	None	Forages in open plains, grasslands, and prairies; typically nests in trees.	Medium. The Central Site supports a dense grove of eucalyptus trees, which may provide suitable nesting habitat for this species. Surrounding grasslands provide suitable foraging habitat. However, there are no CNDDB occurrences within 5 miles of the Central Site.
Mammals				
Lasiurus cinereus Hoary bat	SA	None	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths; requires water.	Medium. Eucalyptus trees within the Central Site may provide suitable roosting habitat. The Central Site is part of an open habitat which may provide suitable foraging grounds. However, no CNDDB occurrences are recorded within 5 miles of the Central Site.
Plants				
Trifolium amoenum Showy Rancheria clover	None/1B.1	FE	Annual herb occurring in coastal bluff scrub and valley and foothill grassland, sometimes on serpentinite. 5-415 m elevation. Blooms Apr-Jun.	Medium. Annual grasslands within the Central Site provide suitable habitat for this species. The nearest CNDDB occurrence is within 0.5 miles east of the Central Site. However, the species was not encountered during the reconnaissance survey.

STATUS CODES:

STATE
California Department of Fish and Game:
ST = Listed as threatened by the State of California
CSC = California species of special concern
CFP = California fully protected bird species
SA = Listed on CDFG's Special Animal List

California Native Plant Society (CNPS):
List 1B = Plants rare, threatened, or endangered in California and elsewhere
CNPS Code Extensions
.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

FEDERAL
U.S. Fish and Wildlife Service:
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government

SOURCE: CNPS, 2010a; CDFG, 2010; USFWS, 2010a

Suitable habitat for the northwestern pond turtle exists within the freshwater detention pond located in the center of the Central Site Alternative. The nearest CNDDB occurrence for this species is one mile southwest of the Central Site (CDFG, 2010).

Birds

White-Tailed Kite

The white-tailed kite is a medium-sized raptor that inhabits open grassland and woodlands, marshes, desert grassland, partially cleared lands, and cultivated fields.

The white tailed kite is a year-round resident in central California. It typically nests in oak woodlands or trees, especially along marshes or river margins and may use any suitable tree or shrub that is of moderate height. Its nesting season may begin as early as February and extends into October, with peak from May to August. This raptor forages during the day for rodents—especially voles—in wet or dry grasslands and fields. White-tailed kites forage characteristically by hovering over the location of a potential prey item.

A grove of tall blue gum (eucalyptus) trees within the Central Site may provide suitable nesting habitat for white-tailed kite, and foraging habitat exists within the Central Site and in the surrounding open grasslands. However, there are no CNDDB occurrences within 5 miles of the Central Site (CDFG, 2010).

Mammals

Hoary Bat

The hoary bat is a mammal species that prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding.

The hoary bat is found throughout California. Maternity sites are found in inland woodland and forest areas that contain medium to large-sized trees and are densely foliated. Roosting sites are also found in densely foliated areas with medium to large trees, but this species prefers areas with habitat mosaics. The hoary bat is typically found in areas with access to trees for cover, but forages in open areas or habitat edges. Hoary bats feed primarily on moths, but will take any flying insect. This species require nearby sources of water.

Suitable habitat for the hoary bat exists in the Central Site; however, there are no CNDDB occurrences in the vicinity of the Central Site (CDFG, 2010).

Plants

Showy Rancheria Clover

The showy Rancheria clover (*Trifolium amoenum*) is a federally endangered annual herb occurring in coastal bluff scrub and valley and foothill grassland, sometimes on serpentinite substrate. This species occurs between 5 and 415 meters in elevation and blooms from April to June.

Suitable habitat for this species occurs within the Central Site composting area and the nearest CNDDB occurrence is within 0.5 miles east of the Central Site.

Sensitive Habitats

The Central Site does not support any known sensitive habitats. The freshwater pond would not be considered jurisdictional as it is manmade.

Critical Habitats

The Central Site is not located within any known critical habitats. The nearest critical habitat is within the Petaluma River and its tributaries for the threatened steelhead (*Oncorhynchus mykiss*) (USFWS, 2010).

Movement Corridors

The CDFG has not identified any areas within the vicinity of the project area as important wildlife movement corridors. The Central Site Alternative is not within an important wildlife movement corridor identified by the Sonoma County General Plan 2020, Open Space and Resource Conservation Element (Sonoma County, 2008). The identified wildlife movement corridor located south of Glen Ellen connecting Sonoma Mountain and the Mayacamas Range is more than 5 miles east of the Central Site.

25.3 Impacts and Mitigation Measures

Significance Criteria

This impact analysis focuses on foreseeable changes to the baseline condition in the context of the significance criteria presented in **Chapter 6**.

Impact Discussion

The Central Site Alternative could have an impact on special status species, as described below. Through implementation of mitigation measures, the project would not conflict with any local policies or ordinances protecting biological resources. The project would not substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

Impact 25.1: Implementation of the Central Site Alternative could result in direct and indirect impacts to the California red-legged frog, northwestern pond turtle, white-tailed kite, hoary bat, and showy Rancheria clover. (Significant)

Implementation of the Central Site Alternative would result in the removal of freshwater pond habitat, which could result in adverse permanent and temporary impacts to the red-legged frog and northwestern pond turtle. Removal of blue gum (eucalyptus) trees may result in the removal of nesting and roosting habitat for white-tailed kite and hoary bat; this would be considered a potential adverse permanent impact. Grading activities and the removal of annual grassland habitat may result in adverse permanent impacts to showy Rancheria clover. The aforementioned impacts are considered **significant.**

Mitigation Measure

Mitigation Measure 25.1: To reduce potential impacts to California red-legged frog, northwestern pond turtle, white-tailed kite, hoary bat, and showy Rancheria clover, SCWMA shall implement the following mitigation measures:

California red-legged frog

A qualified biologist shall conduct a protocol-level habitat assessment in accordance with the USFWS' 2005 "Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog" or the most current guidance. If it is determined, based on the results of the habitat assessment and the USFWS, that the pond does not support CRLF habitat, no additional measures would be required.

Based on the results of the protocol-level habitat assessment, the USFWS may require protocol-level field surveys, which shall be conducted in accordance with the most current guidelines. The results of these surveys will document use by CRLFs in the freshwater pond habitat. If it is determined, based on the results of the field surveys that the pond does not support CRLFs, no additional mitigation would be required.

If the freshwater pond does support CRLFs, SCWMA shall be responsible for obtaining an incidental take permit from the USFWS pursuant to Section 10 of the Federal Endangered Species Act. The incidental take permit shall be acquired prior to the commencement of any construction activities that could affect CRLF habitat. A habitat conservation plan (HCP) shall also be prepared that documents how effects of the authorized incidental take would be adequately minimized and mitigated. The HCP shall detail approved mitigation measures and is likely to include but not be limited to the following:

1. A preconstruction clearance survey shall be conducted by a qualified biologist prior to any vegetation clearing, excavation or construction that occurs within 300 feet of the freshwater pond to determine if any individual CRLF are present and could potentially be harmed by construction activities. Clearance survey should be conducted within 48 hours prior to the commencement of construction.

If any frogs are found, they shall be removed from the construction zone and placed in an approved location offsite.

2. Once the active construction zone has been cleared, a qualified biologist shall encircle the construction zone with an exclusionary fence in order to prevent CRLF from returning. Exclusionary fence shall be 36 inches high with 6 inches buried in the soil and shall be constructed of suitable materials as detailed in the project's incidental take permit and HCP. Fencing shall be maintained in good working order and shall remain in place until construction in that particular area is completed.
3. Mitigation for the loss of CRLF habitat shall be developed in consultation with USFWS. However, a typical mitigation ratio for loss of CRLF habitat is 3:1. Replacement can be conducted offsite through purchase of mitigation credits at an approved mitigation bank.
4. All onsite workers shall attend a CRLF information session conducted by the designated monitor prior to beginning work onsite. This session would cover identification of the species and procedures to be followed if an individual is found onsite, as well as basic site rules meant to protect biological resources, such as speed limits, no littering, and no smoking.

Northwestern pond turtle

A survey shall be performed 24 hours prior to the start of construction activities near the freshwater pond located on the Central Site. If a turtle is found in the freshwater pond, the DFG-approved biologist shall try to passively move the turtle out of the area. If a turtle becomes trapped during construction activities in the freshwater pond, a biologist shall remove the turtle from the work area and place it in a suitable habitat in the vicinity of the project. If a turtle is discovered in the construction area during active operations the equipment operator or equivalent will temporarily cease operations per the biologist's direction until the biologist has moved the turtle away from the construction area and/or out of harm's way.

White-tailed kite and other raptors

A survey shall be conducted two weeks prior to the start of construction activities in suitable nesting habitats such as trees and tall shrubs. If an active nest is found in the construction area, the SCWMA shall consult with the Department of Fish and Game (DFG) to implement appropriate measures to reduce impacts to the nesting effort. The SCWMA shall ensure the following measures are implemented to reduce impacts to white-tailed kites and other raptor species:

1. Maintain a 500-foot buffer or a buffer distance agreed to with DFG around each active raptor nest; no construction activities shall be permitted within this buffer except as a result of consultation with DFG.
2. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined in consultation with DFG), the nest(s) shall be monitored by a qualified biologist during construction within the buffer. If, in the professional opinion of the monitor, the project would impact the nest, the biologist shall immediately inform the construction manager and DFG. The construction manager shall stop construction activities within the buffer until either the nest is no longer active or the project receives approval to continue from DFG.

3. If tree removal is necessary, it shall be conducted outside of the breeding season (between February and October). Loss of a nest tree shall be compensated according to CDFG guidance.

<u>Hoary Bat and other sensitive bat species</u>

1. A survey shall be conducted two calendar weeks prior to initiation of construction activity in suitable bat roosting habitat (e.g. abandoned buildings, rock crevices, under tree bark, hollow trees, culverts, under bridges, or other dark crevices). The pre-construction bat survey shall be performed by a DFG-approved wildlife biologist or other qualified professional.
2. If a female or maternity colony of bats are found on the project site and the project can be constructed without the elimination or disturbance of the roosting colony (e.g., if the colony roosts in an area not planned for removal), a qualified wildlife biologist shall determine what physical and timed buffer zones shall be employed to ensure the continued success of the colony. Such buffer zones may include a construction-free barrier of 250 feet from the roost and/or the timing of the construction activities outside of the maternity roost season (typically May to August).
3. If an active nursery roost is known to occur on site and the project cannot be conducted outside of the maternity roosting season, bats shall be excluded from the site after August and before May to prevent the formation of maternity colonies. If a non-breeding pallid bat is found in a tree scheduled to be removed, the applicant will apply for a memorandum of understanding (MOU) with DFG. The bats shall be safely evicted within the guidelines of the MOU under the direction of a qualified bat biologist by opening the roosting area at dusk to allow air flow through the cavity, or by an alternative measure that does not result in adverse impacts. Tree removal shall then follow no later than the following day (i.e. there would be not less than one night between the initial disturbance for airflow and the removal). This action should allow bats to leave during the dark hours, thus increasing their chance of finding roots with a minimum of potential predation during daylight.

Showy Rancheria clover

Implement Mitigation Measure 6.3b.

Significance after Mitigation: Less than significant.

25.4 References

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CHAPTER 26
Cultural Resources/Central Site Alternative

26.1 Introduction

The information presented in this chapter is unique to the Central Site and the reader is referred to Chapter 7, Cultural Resources in cases where cultural resources setting information and/or impact analysis are the same for the Central Site as the project site.

26.2 Setting

Environmental Setting and Historical Background

The Central Site is located in the Northern California Coast ecological region and the Santa Rosa Plain subsection. The Central Site is located in an area that is characterized by gently rolling hills in between the Pacific Ocean and the Santa Rosa Plain (Miles and Goudey, 1997).

The predominant natural plant communities in the Santa Rosa Plain subsection are needlegrass grasslands and valley oak series in inland valleys. The climate is temperate to hot and humid, moderated by marine air advancing over the hills most of the time. Average annual precipitation in the Santa Rosa Plain subsection is approximately 20 to 40 inches, with summer fog. Mean annual temperature is approximately 50° to 58° F (Miles and Goudey, 1997). The Central Site is on an approximately 400-acre parcel that is currently used for the existing compost facility and recycling, as well as a transfer station for waste disposal; historically the site was used as a landfill. Surrounding land use includes rural residences, grazing lands, and open space. The project operational area would occupy 25 acres within the existing Central Disposal Site property.

The area identified for composting is located on the western side of the Central Site and would be accessed from Mecham Road. Elevations at the Central Site range from 250 to 650 feet above mean sea level, with the existing elevation in the area identified for composting generally being 550 to 625 feet above mean sea level. Due to the presence of rolling hills and lack of soil erosion control through natural or artificial means, erosional gullies (seasonal drainages) exist throughout the site.

The Central Site is mapped as Franciscan complex. This geological formation does not have the potential to contain deeply-buried archaeological resources (Meyer and Rosenthal, 2007).

Paleontological Setting

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Fossils are considered nonrenewable resources because the organisms they represent no longer exist.

The geologic unit underlying the project site consists of Late Jurassic to Cretaceous-age (65 to 159 million years old) Franciscan Complex mélange (CGS, 2003). This rock unit represents a tectonic mixture of masses of resistant rock including sandstone, altered mafic volcanics (greenstone), chert, gabbro, and exotic metamorphic rocks imbedded in a sheared shaley matrix. Fossils are rarely found in Franciscan bedrock due to its long history of shearing and deformation from tectonic processes. Any fossils originally present in rock units of the Franciscan Complex have generally been destroyed because they have been altered under high heat and pressures, chaotically mixed or severely fractured. Further, a search of the University of California Museum of Paleontology Database reveals no vertebrate fossil localities within rocks of similar age and origin within Sonoma County (UCMP, 2010). Thus, proposed project underlies an area considered as having a low paleontological potential, per **Table 7-1**.

Prehistoric Background

The prehistoric background is the same as discussed in Chapter 7, Cultural Resources, Section 7.2.

Ethnographic Background

The ethnographic background is the same as discussed in Chapter 7, Cultural Resources, Section 7.2.

Historical Background

The Central Site is located in a portion of the county that has historically been used predominantly for cattle and sheep ranching and is a part of the *Roblar de la Miseria* Mexican land grant established in the 1830s. While there are several historic-period rail and stage stops in the area (Roblar, Two Rock, Stony Point), the area was never densely settled until the modern period with the influx of population from the Bay Area (Hoover, 2002). The Central Disposal Site was established in 1972 and has served the surrounding community since that time.

Archaeological Records Search and Results

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on May 14, 2010 (File No. 09-1444). The same records search methods were employed as discussed in Chapter 7, Cultural Resources, Section 7.2.

The records search at the NWIC indicated that a portion of the Central Site was previously surveyed for cultural resources in 1996 (Woodward-Clyde, 1996). Two additional cultural resources studies have been conducted within ½ mile of the Central Site (Anthropological Studies Center, 1996; Origer & Associates, 2002). No cultural resources have been recorded within the Central Site. Five cultural resources, including three prehistoric lithic scatters (CA-SON-2191, CA-SON-2192, CA-

SON-2193) and two historic-period structures (CA-SON-2178H, CA-SON-2189H), have been recorded within ½ mile of the Central Site.

The 1996 Woodward-Clyde survey covered the southeast portion of the Central Site and was completed using an intensive survey strategy that consisted of a two-person crew walking in 5- to 20-meter-wide transects. Surface visibility was mixed, with some limiting vegetation. No prehistoric cultural resources were located during the survey. A historic-period water control feature was recorded within the survey area, outside of the Central Site, that was likely associated with a nearby farm complex.

Native American Consultation

On May 19, 2010, a letter was sent to Dr. Greg Sarris c/o Nick Tipon of the Federated Indians of the Graton Rancheria (FIGR). The FIGR is the federally-recognized Native American tribe with ethnographic boundaries that include the Central Site. Mr. Tipon responded by letter on May 28, 2010 stating that the Tribe does not have concerns regarding the Central Site project area.

Field Survey and Results

On May 18, 2010, an ESA Registered Professional Archaeologist surveyed the Central Site. The area is highly disturbed from construction of the detention pond, previous grading, and maintenance storage. A dirt maintenance road that leads to the top of the hillslope was walked to the summit. The grassy hillslope was periodically scraped to reveal natural ground surface. No cultural resources were observed.

26.3 Impacts and Mitigation Measures

Significance Criteria

The significance criteria are the same as those discussed in Chapter 7, Cultural Resources, Section 7.3.

Impact Discussion

Impact 26.1: The Central Alternative could inadvertently discover archaeological resources. (Significant)

It does not appear that the Central Site contains archaeological resources; however this possibility cannot be entirely discounted. Project personnel should be alerted to the possibility of encountering archaeological materials during construction, and apprised of the proper procedures to follow in the event that such materials are found. Without mitigation, this could be a **significant** impact.

Mitigation Measure

> **Mitigation Measure 26.1:** Halt work if cultural resources are discovered during ground-disturbing activities. Implement Mitigation Measure 7.2.

Significance after Mitigation: Less than significant.

Impact 26.2: The Central Site Alternative could inadvertently discover human remains. (Significant)

Archival review and the field survey completed in support of the proposed project did not indicate that the Central Site contains human remains; however this possibility cannot be entirely discounted. Project personnel should be alerted to the possibility of encountering human remains during construction, and apprised of the proper procedures to follow in the event that they are found. Without mitigation, this could be a **significant** impact.

Mitigation Measure

Mitigation Measure 26.2: Implement Mitigation Measure 7.3.

Significance after Mitigation: Less than significant.

Impact 26.3: The Central Site Alternative could inadvertently discover paleontological resources. (Significant)

Excavations required for the Central Site cut into previous fills and bedrock, which is composed of the Franciscan Complex. As discussed in the setting, no known fossil sites are present in the project area, and the Franciscan Complex is not a fossil-bearing geologic unit. Thus, earthmoving activities for the project are unlikely to disturb or destroy paleontological resources because no resources are known to exist and the potential for the occurrence of undiscovered resources is low. Nevertheless, cuts into bedrock in the course of grading and site preparation would involve substantial volumes of soil, and even though the Franciscan Complex is not generally fossil-yielding, there is still a slight possibility fossils could be uncovered. Accidental damage to or destruction of significant paleontological resources during project construction would be a **significant** impact.

Mitigation Measure

Mitigation Measure 26.3: Implement Mitigation Measure 7.4.

Significance after Mitigation: Less than significant.

26.4 References

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CHAPTER 27
Hydrology and Water Quality/Central Site Alternative

27.1 Introduction

The information presented in this chapter is unique to the Central Site, and the reader is referred to Chapter 8, Hydrology and Water Quality**,** in cases where hydrologic resources setting information and/or impact analysis is the same for the Central Site Alternative as the project site.

27.2 Setting

Surface Water Hydrology and Drainage

Topography at the Central Site is hilly, with existing elevations on site grading from about 510 feet mean sea level (msl) at the southwestern tip of the site, to approximately 660 feet at the peak of a hill near the easternmost edge of the site. Water features on site include an existing sediment pond, located on a flat plateau near the center of the site which serves existing operations on site, as well as various minor drainages that provide storm drainage. Drainages along most of the site generally trend towards the south and west, along depressions in the hilly terrain. Drainage along the northwestern flank of the site is via overland flow and minor channels, with stormwater flowing towards the northeast. Nearby water features include Gossage Creek, which flows in a southwesterly direction along the northwestern edge of the property, and Washoe Creek, which flows in a northeasterly direction starting about 0.25 mile east of the site. Gossage Creek drains into Stemple Creek and eventually into the Estero de San Antonio, which flows to the Pacific Ocean, while Washoe Creek eventually drains into the Laguna de Santa Rosa.

Groundwater

The Central Site is located outside of the California Department of Water Resources (DWR's) groundwater basin delineation system (DWR, 2003); the site is, however, in very close proximity to both the Santa Rosa Valley Groundwater Basin/Santa Rosa Plain Subbasin, which is located just east of the site, and the Wilson Grove Formation Highlands Groundwater Basin, which is located just west of the site. Detailed groundwater level data for the Central Site were not found to be available. A search of available data maintained by DWR indicated several wells that are routinely monitored, starting approximately 2 miles west of the site, near Penngrove and Cotati.

However, these sites are located along lower lying terrain, and are not expected to be similar to the Central Site in terms of water levels.

One groundwater well is presently located on site, and is currently used to supply on-site operations. A records search of DWR well log data for the site indicated that at least 30 well bores have been completed within 1.5 miles of the project site. In close proximity to the site, water levels were variable and ranged from about 30 to 120 feet below ground surface (bgs). Yields were similarly variable, and ranged from less than 10 gpm for most test wells drilled near the site, to 100 gpm approximately 0.9 mile west of the site. Many test wells within 1.5 miles of the site indicated no groundwater, to depths of up to approximately 250 feet. Producing wells are screened from 25 to 260 feet.

Flooding

No areas within or adjacent to the Central Site have been delineated as being within a Federal Emergency Management Agency (FEMA)-defined 100-year flood zone. The nearest delineated flood zone is located approximately 3 miles north of the site, along a waterway that is not hydrologically connected to the site. Peak drainage flows have not been quantified in support of this site.

Water Supply

Water supply requirements for the Central Site Alternative would be the same as those indicated in Chapter 8, Hydrology and Water Quality. Water would be supplied from the existing groundwater well that is located near the intersection of Mecham and Stony Point Road. The well was completed in 1996, and tests at that time indicated an available production rate of 300 gallons per minute (gpm). However, under current usage, the well is supplied with a pump that is rated at 120 gpm, at a depth of 302 feet. The well is presently being used in support of existing operations at the Central Disposal Site. It is anticipated that the water supply required for the proposed compost facility at the Central Site would be met by this existing well, and that the volume of water needed for the Central Site could be supplied by this well. In order to minimize the volume of groundwater pumping required, the project may also include re-use of water collected in the on-site stormwater ponds, for composting operations. As the Central Site Alternative would occupy approximately 25 acres, it would not meet the requirements (i.e., 40 acres or greater, etc.) of the California Water Code for a water supply assessment.

Wastewater

Wastewater treatment would be provided on site, according to one of the wastewater treatment options discussed in Chapter 8. However, note that for the Central Site Alternative, shallow groundwater is not anticipated on site, which may enable the implementation/use of an industrial septic system for wastewater treatment, and would result in fewer restrictions placed on potential applicable wastewater treatment options.

27.3 Impacts and Mitigation Measures

Significance Criteria

Significance criteria relevant to the Central Site are provided in Chapter 8, Hydrology and Water Quality. The following discussion of environmental impacts is limited to those potential impacts that could result in some level of potentially significant environmental change, as defined by the California Environmental Quality Act (CEQA). Implementation of the Central Site Alternative would not result in the installation or construction of housing facilities or other residences, and would not result in the installation of any facilities within a 100-year flood zone. Also, the Central Site Alternative would not disturb or otherwise increase the risk of failure of any levee or dam, and would not place facilities in an area that would be subject to inundation as a result of levee or dam failure. No large water bodies are located near the Central Site that would cause the area to be susceptible to seiche. Finally, the site is located well above sea level, such that it would not be affected in the event of a tsunami. No impact would occur under any of these categories, and therefore these impacts are not discussed further within this section.

Impact Discussion

Impact 27.1: The Central Site Alternative could violate a water quality standard or waste discharge requirement, or otherwise substantially degrade water quality. (Significant)

As discussed in Chapter 8, Hydrology and Water Quality, during construction for the Central Site, the operation of heavy equipment, and other construction related activities could result in the release of water quality pollutants, including sediment, into natural waters. Potential impacts to water quality could occur during both Phase 1 and Phase 2 construction, which would involve substantial grading and earth moving activities, including disturbance to soils and surface sediments.

During the operation phase at the Central Site Alternative, routine composting operations could also result in the accumulation and release of pollutants to natural waters, as discussed in Chapter 8. Water applied to compost piles would be managed such that no runoff would occur, with on-site runoff being directed into a proposed, 3.2 acre detention basin under Phase 1. Under Phase 2, the detention basin would be expanded to 4.1 acres, sufficient to contain stormwater flows on site under expanded operations. Releases of these pollutants could result in a **significant** impact associated with degradation of water quality.

As discussed previously, sanitary wastewater would be treated via one of the wastewater treatment options discussed for Chapter 8. The selected wastewater treatment and disposal system would comply with all County, State, and Federal permit conditions and requirements, including graywater standards as relevant, and would not discharge to surface waters. Therefore, disposal of graywater and/or treated wastewater on site would not result in a significant impact to water quality.

Mitigation Measure

Mitigation Measure 27.1: Implement Mitigation Measures 8.1a and 8.1b.

Significance After Mitigation: Less than Significant.

Implementation of the proposed mitigation would prevent or reduce potential for the emission of water quality pollutants, and thereby reduce potential impacts associated with water quality degradation**.**

Impact 27.2: The Central Site Alternative could 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 or conflict with Sonoma County General Plan policies regarding groundwater. (Significant)

As discussed previously, the Central Site Alternative would use groundwater on site, in order to provide water for operations, including potable water and water required for composting operations. The project may also include provisions for the re-use of water from the on-site detention basin, to provide supplemental water for composting operations, and reduce the amount of groundwater that would be withdrawn in support of the project.

The amount of groundwater that would be withdrawn under the Central Site Alternative would likely be smaller than that discussed for Chapter 8, because the Central Site Alternative would have a lower compost throughput as compared to the proposed project. However, in order to provide a conservative (overestimate) estimate of potential groundwater impacts, this analysis assumes that the Central Site would require the same volume of water as compared to the proposed project, equivalent to approximately 130 acre-feet per year (AF/yr). Withdrawal of groundwater at this rate could result in a net increase in groundwater withdrawals on site. However, even if the full 130 AF/yr of groundwater were drawn under the Central Site Alternative, this volume of annual water withdrawal would be relatively small, and would not be substantially greater than the water use required consistent with existing usage, which supports operations at the existing landfill. Therefore, project-related groundwater usage is not anticipated to significantly draw down the local or regional aquifer, and is not anticipated to result in significant reduction in the level of water in other nearby wells.

Installation of the project would result in the construction of impervious surfaces to support composting operations. However, most of the project site would remain as pervious surfaces, and adjacent areas would also remain pervious. Additionally, stormwater emanating from constructed impervious surfaces would be contained in the on-site detention basin, which could be lined to prevent percolation, depending on final site design and permitting. Therefore, the project is not anticipated to significantly alter groundwater levels on site or in adjacent areas.

Although the Central Site Alternative is not anticipated to result in reduced groundwater levels, implementation of Mitigation Measure 8.2a would be required in order to remain consistent with Sonoma County General Plan Policy WR-2d, as described previously in the discussion of the Sonoma County General Plan in Chapter 8, Hydrology and Water Quality. Also, in order to maintain compliance with Sonoma County General Plan Policies WR-4b, WR-4g, and WR-4k, implementation of Mitigation Measure 8.2b would be required. Without mitigation this impact would be **significant**.

Mitigation Measure

Mitigation Measure 27.2: Implement Mitigation Measures 8.2a and 8.2b

Significance After Mitigation: Less than Significant.

Impact 27.3: The Central Site Alternative could 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 which would result in substantial erosion or siltation on- or off-site, or result in flooding on- or off-site. (Significant)

Installation of the Central Site Alternative would not alter the course of a river or stream. However, construction activities would result in substantial earth movement and grading activities that would change existing drainage patterns on site. Much of the existing topography would be leveled, or partially leveled, to support composting operations. Similar to the discussion provided in Chapter 8, Hydrology and Water Quality, the Central Site Alternative could result in changes in localized flow patterns or runoff such that localized flooding could result in or increase the erosion or sedimentation on site or downstream. Without mitigation this impact would be **significant**.

Mitigation Measures

Mitigation Measure 27.3. Implement Mitigation Measures 8.3b.

Significance After Mitigation: Less than Significant.

Impact 27.4: The Central Site Alternative could create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Significant)

Implementation of the Central Site Alternative would result in construction of impervious surfaces and stormwater drainage facilities as discussed in Chapter 8, Hydrology and Water Quality. Without mitigation this impact would be **significant**.

Mitigation Measures

Mitigation Measure 27.4. Implement Mitigation Measure 8.3b

Significance After Mitigation: Less than Significant.

27.4 References

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CHAPTER 28

Land Use and Agriculture/Central Site Alternative

28.1 Introduction

The information presented in this chapter is unique to the Central Site Alternative and the reader is referred to Chapter 9, Land Use and Agriculture, in cases where land use and agriculture setting information and/or impact analysis is the same as that previously discussed for the project site.

28.2 Setting

The regional land use and agricultural setting discussion for Sonoma County is the same as the discussion in Chapter 9, Land Use and Agriculture.

Central Site and Vicinity

Central Site Description

A general description of the Central Site including location, natural features, structures and existing uses is included in Chapter 4, Alternatives. Additional information on biological resources is included in Chapter 25, Biological Resources.

Surrounding Uses

As with the project site, the Central Site is located within the Petaluma and Environs Planning Area of Sonoma County, where the majority of land is used for agricultural purposes. The immediate vicinity of the Central Site contains agricultural uses and open space. Single-family rural residences are scattered in the surrounding area and often present on sites with agricultural operations, such as dairy farming and grazing. The closest residence to the Central Site composting area is approximately 500 feet northeast. Other residences are approximately 1,000 feet to the south, 4,500 feet to the east and 5,000 feet to the southeast. Dunham Charter School is located approximately 4,000 feet north of the Central Site. Urban development associated with the City of Cotati is located approximately 2.5 miles northeast of the Central Site. The Petaluma Municipal Airport is located approximately 8.5 miles southeast of the Central Site.

Regulatory Framework

The regulatory settings for land use planning and agriculture are discussed below. The Countywide Integrated Waste Management Plan (CoIWMP) prepared pursuant to the California Integrated Waste Management Act, is discussed in Chapter 11, Public Services and Utilities.

Land Use Planning

Sonoma County General Plan 2020

The Central Site is located within the Petaluma and Environs Planning Area (Planning Area 8) of the General Plan (Sonoma County, 2008). Goals and policies specific to environmental issues areas discussed in this Draft EIR can be found in the regulatory section for each issue area. In addition, all General Plan policies were reviewed for potential inconsistencies after mitigation as discussed in Impact 28.2 below.

Figure 28-1 presents Sonoma County General Plan land use designations for the Central Site and immediate vicinity. The Central Site has a General Plan Land Use Designation of Public/Quasi Public (PQP). The purpose of the PQP General Plan land use category is applied to sites “that serve the community or public need and are owned or operated by government agencies, non-profit entities or public utilities.” Permitted uses in the PQP category generally include waste disposal sites, sewage treatment plants, schools, parks, airports, hospitals among other public uses. Adjacent parcels are designated Land Extensive Agriculture.

Sonoma County Zoning Ordinance

The Central Site is zoned Public Facilities (PF) with a B7 combining district. Details on the PF zoning are included in Chapter 9, Land Use and Agriculture. The B7 combining district specifies minimum parcel or lot size on the recorded final or parcel maps and specifies that lots shall not be further subdivided.

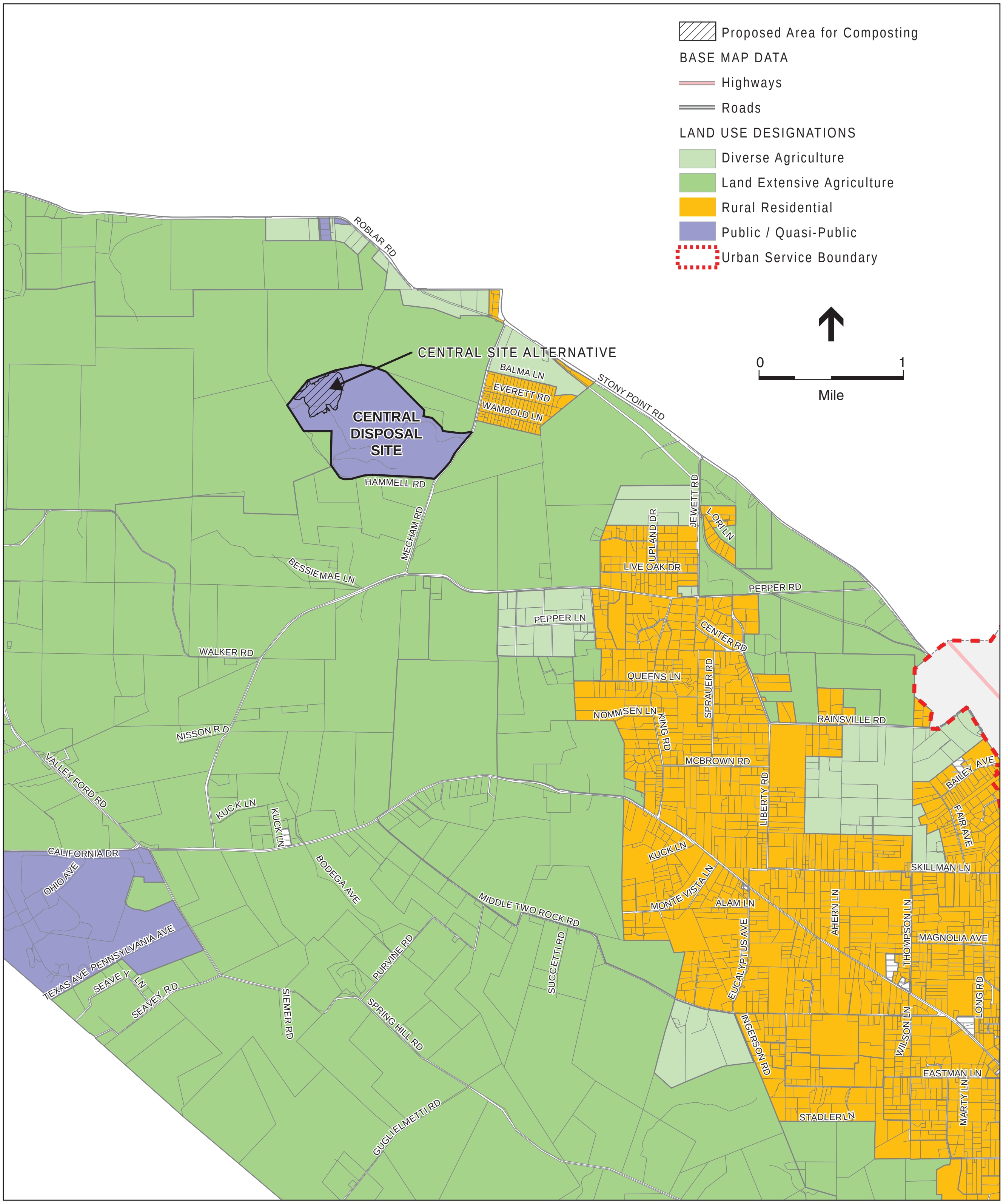
Federal Aviation Administration Advisory Circular for Hazardous Wildlife Attractants on or near Airports

Federal Aviation Administration (FAA) Advisory Circular 150/5200-33B is discussed in Chapter 9 including recommended distances of airports from composting operations. The Central Site is located outside of the 5-mile recommended separation for protection of approach, departure and circling airspace of nearby airports. The nearest airport is the Petaluma Municipal Airport, located approximately 8.5 miles southeast of the Central Site.

Agriculture

California Land Conservation Act (Williamson Act)

Chapter 9, Land Use and Agriculture, provides background information on the Williamson Act. The Central Site is not currently under a Williamson Act contract.



SOURCE: Sonoma County, 2008; and ESA, 2010

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Figure 28-1
Central Site Land Use Map

California Department of Conservation Farmland Mapping and Monitoring Program

A summary of the Important Farmland Mapping and Monitoring Program (FMMP) is included in Chapter 9, Land Use and Agriculture. **Figure 28-2** provides a map of the FMMP classifications for the Central Site and surrounding vicinity. The proposed composting area within the Central Site contains land classified as Grazing Land, though the majority of the proposed composting area is classified as Urban and Built-Up Land. Areas surrounding the Central Site include Grazing Land and Farmland of Local Importance.

28.3 Impacts and Mitigation Measures

Significance Criteria

Refer to Chapter 9, Land Use and Agriculture, Section 9.3 for significance criteria that are used in the impact analysis for the Central Site Alternative.

As with the project site, the Central Site is not located within the area of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan. Consequently, there would be no impact in regard to this criterion and accordingly, this issue is not discussed further.

Impact Discussion

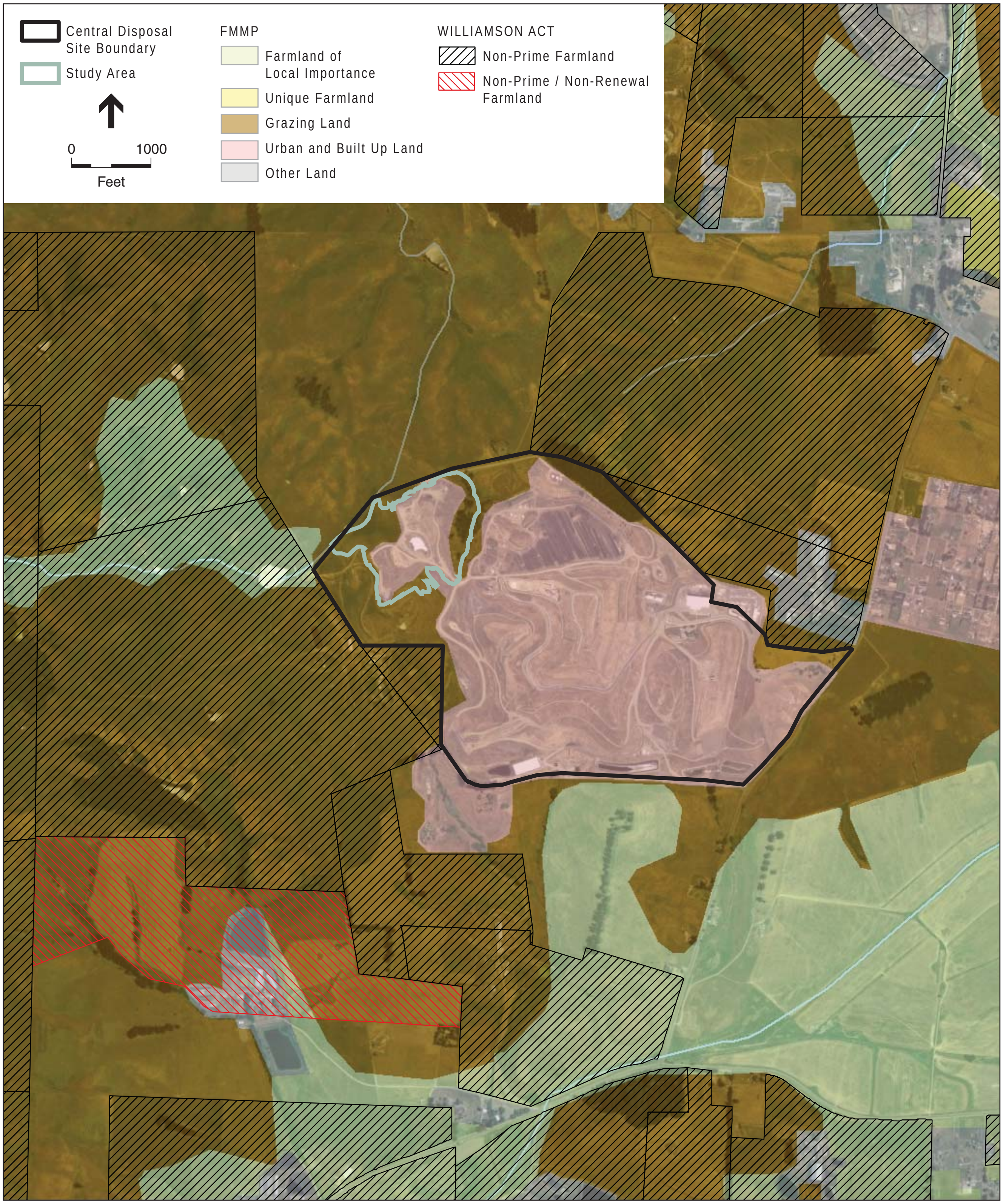
Impact 28.1: The Central Site Alternative has the potential to physically divide an established community. (Less than Significant)

The Central Site Alternative would be located on a portion of the Central Disposal Site. The Central Site has a history of and currently supports similar uses to this alternative. The Central Site is surrounded by undeveloped parcels. Residential development increases to the northeast in proximity to the City of Cotati. The landfill does not create a physical barrier between residential areas or otherwise divide an established community; thus, impacts would be **less than significant**.

Mitigation: None Required.

Impact 28.2: The Central Site Alternative could conflict with the Sonoma County General Plan or Zoning Ordinance. (Less than Significant)

The Central Site has a General Plan Land Use Designation of PQP and Zoning of PF which allows for the existing County compost operations and would allow for future similar uses. As this alternative does not propose a subdivision the alternative is consistent with the B7 zoning combining district.



SOURCE: Bing Maps, 2009; and ESA, 2010

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Figure 28-2
FMMP Land Classifications and Williamson Act Contracts in the Central Site Alternative Vicinity

The Sonoma County Permit and Resource Management Department conducted a General Plan consistency analysis (2011). The Central Site Alternative was found to be consistent with most policies of the General Plan. Water Resources Element Policy WR-2d states:

> Continue the existing program to require groundwater monitoring for new or expanded discretionary commercial and industrial uses using wells. Where justified by the monitoring program, establish additional monitoring requirements for other new wells.

Monitoring of the groundwater well supplying the project in compliance with PRMD Policy 8-3-1 would be required as a condition of approval of any use permit to comply with this policy. The consistency analysis also discusses Objective OSRC-13.1 of the Open Space and Resource Conservation Element which relates to aggregate production. This Draft EIR assumes that the project would not sell aggregate and would not constitute a mining operation. Thus, the project would be consistent with the policy and objective discussed.

In most cases, the alternative would not conflict with the General Plan or Zoning Ordinance, however, as identified in Impact 29.2, the Central Site Alternative could expose persons to or generate noise levels in excess of standards in the General Plan. Therefore this consistency impact would be **significant and Unavoidable** .

Mitigation: None Required.

Impact 28.3: The Central Site Alternative would result in the conversion of agricultural land, specifically Grazing Land. (Less than Significant)

The Central Site would not result in any temporary or permanent conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as they are not located on the site, and thus LESA analysis was not conducted for the Central Site Alternative. The Central Site Alternative would result in the conversion of less than 15 acres of land containing the FMMP category of Grazing Land. The Central Site is not currently used for grazing and there are approximately 420,022 acres designated as potential grazing land within the County (California Department of Conservation, 2008). Thus, the alternative represents a conversion of approximately 0.004% of County Grazing Land to non-agriculture use. Although the project would reduce Grazing Land within Sonoma County by approximately 0.004%, it would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. Therefore, this amount of conversion is considered **less than significant**.

Mitigation: None Required.

Impact 28.4: The Central Site Alternative would not conflict with an existing Williamson Act Contract. (No Impact)

The Central Site Alternative does not contain land under a Williamson Act contract and thus there would be **no impact** under this alternative.

Mitigation: None Required.

28.4 References

California Department of Conservation, 2008. California Farmland Conversion Report 2004-2006. Retrieved from: http://www.consrv.ca.gov/dlrp/fmmp/pubs/2004-2006/Documents/2004-06%20Farmland%20Conversion%20Report.pdf

Sonoma County, 2008. *Sonoma County General Plan 2020.* Sonoma County Permits and Resource Management Department, Sonoma, CA. Adopted by Resolution No. 08-0808 of the Sonoma County Board of Supervisors on September 23, 2008. Available at: http://www.sonoma-county.org/prmd/gp2020/adopted/index.htm .

Sonoma County Permit and Resource Management Department, 2011. General Plan Consistency Analysis – Central Site Alternative. April 18, 2011.

CHAPTER 29
Noise/Central Site Alternative

29.1 Introduction

The information presented in this chapter is unique to the Central Site Alternative and the reader is referred to Chapter 10, Noise in cases where noise setting information and/or impact analysis is the same for the Central Site Alternative.

29.2 Setting

The setting section in Chapter 10, Noise provides general setting information regarding noise and noise regulations in Sonoma County, the following sections provide noise setting information unique to the Central Site.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others because of the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses.

The Central Site is adjacent to the existing composting facility location. Sensitive receptors would be similar to the current scenario. The nearest potential sensitive receptors to the proposed Central Site Alternative would be residences approximately 500 feet northeast (Gray Property resident) and a farmhouse approximately 1,000 feet southwest. Residences along haul routes are sensitive receptors that could be affected by project-related traffic from construction and operations of a compost facility at the Central Site Alternative.

Blasting Noise and Vibration Terms and Principals

The information below contains an overview of blasting terms and concepts that will help the reader to understand information presented in the Impacts section.

When explosive charges detonate in rock, they are designed so that most of the energy is used in breaking and displacing the rock mass. However, some of the energy can also be released in the form of transient stress waves, which in turn cause temporary ground vibration. Detonating charges also create rock movement and release of high-pressure gas, which in turn induce air-overpressure (blast noise), airborne dust and audible blast noise.

Vibration Perception and Damage Criteria

The average person is quite sensitive to ground motion, and levels as low as 0.50 millimeters per second (mm/s) (equivalent to 0.02 inches per second [in/s]) can be detected by the human body when background noise and vibration levels are low. Vibration intensity is expressed as Peak Particle Velocity (PPV), which is simply the maximum speed that the ground moves while it temporarily shakes. Since ground-shaking speeds are very small, it is measured in inches per second (in/s). Frequency of motion or cycles per second is a measure of how many times a particle of ground moves back and forth (or up and down) in one second of time. Frequency is expressed in units of Hertz (Hz).

Blast Noise (Air-Overpressure)

The term “blast noise” is a misleading because the largest component of blast-induced noise occurs at frequencies below the threshold-of-hearing for humans (16 to 20 Hz). Hence, the common industry term for blast-induced noise is “air-overpressure.” As its name implies, air-overpressure is a measure of the transient pressure changes. These low-intensity pulsating pressure changes, above and below ambient atmospheric pressure, are manifested in the form of acoustical waves traveling through the air.

When calculating maximum overpressure values, the absolute value of the greatest pressure change is used — regardless of whether it is a positive or negative change. The frequency of the overpressure (noise) is determined by measuring how many up-and-down pressure changes occur in one second of time. Blast noise occurs at a broad range of frequencies and the highest-energy blast noise usually occurs at frequencies below that of human hearing (<20 Hz).

When measurements include low frequency noise (2 Hz and higher) with a flat response, they are called “linear scale” measurements. Air-overpressure measurements are typically expressed in dB units and when the scale is linear, the unit designation is “dBL.” Regular acoustical noise measurements taken for the purpose of monitoring compliance with local noise ordinances almost always use weighted scales that discriminate against low frequency noise. Thus for a similar noise source, A-weighted and C-weighted scales will usually record significantly lower levels of noise. Differences between decibel scale measurements for individual blasts will vary depending on their unique frequency-intensity spectrums. Since full-range recording of blast-induced noise can only be done with linear (2-Hz response) instruments, it is imperative that all compliance specifications for blast-induced noise be expressed in dBL.

The regulatory limit defined by USBM, in State of California regulations, for air-overpressure measured with 2-Hz response seismographs is 133-dBL (0.014 psi). Damage to old or poorly glazed windows does not occur until air-overpressure reaches about 150 dBL. More importantly, since the decibel scale is a logarithmic ratio, the actual overpressure at 150 dBL is 0.092 psi, versus 0.013 psi at 133 dBL. Therefore, the actual pressure at the 133 dBL limit, is over seven times (0.0917/0.0129) lower than the threshold damage level at 150 dBL.

Existing Noise Environment

The Central Site would be adjacent to the northwestern border of the existing composting site. The noise environment surrounding the Central Site would be similar to the existing operations site.

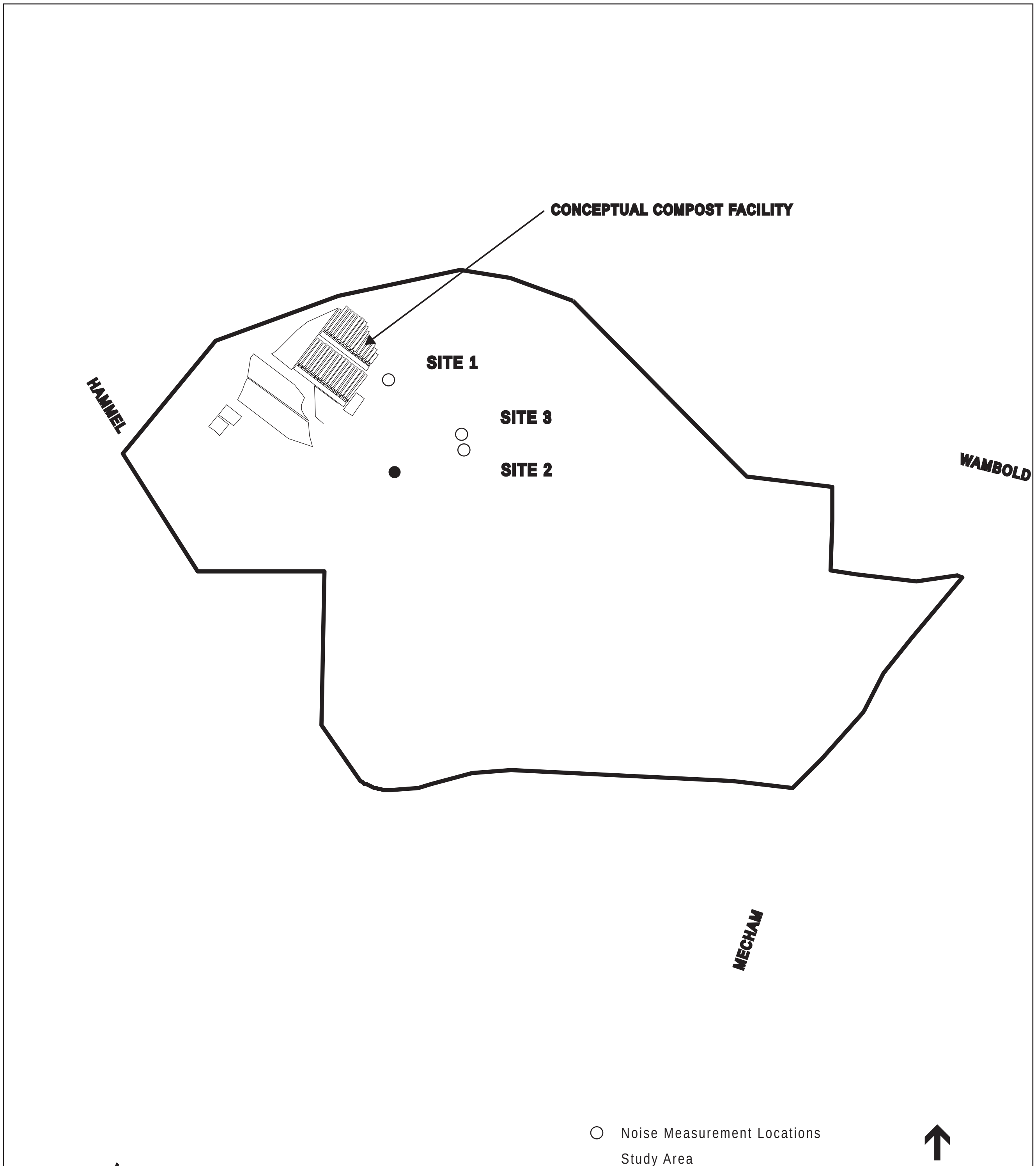
In order to characterize the existing operations environment at Sonoma Compost, Inc., short term and 24-hour noise measurements were conducted April 14th thru April 17,th 2009. These measurements were taken during the initial draft evaluation for Site 5A at the existing countywide compost site (Sonoma Compost, Inc). **Table 29-1** was extracted from **Table 10-2** and presents noise data for the exiting compost site. The locations of the noise measurements are shown in **Figure 29-1**. Noise plots of the Central Site long-term measurements are shown in **Figure 29-2** and **Figure 29-3**.

TABLE 29-1
SOUND-LEVEL MEASUREMENTS AT EXISTING FACILITY

Location	Time Period	Leq(dBA)	Noise Sources
Site 1. Sonoma Compost, Inc. 340 Feet NW of Greenwaste Storage and Grinding Area	24– hour CNEL measurements were: Wed. Apr. 15: 67 dBA Thurs. Apr. 16: 57 dBA	Hourly Average Leq range: Apr 15: 44 – 73 Apr. 16: 44 - 61	Unattended noise measurements do not specifically identify noise sources.
Site 1. Sonoma Compost, Inc. 340 Feet NW of Greenwaste Storage and Grinding Area	Tues. April 14 11:38 – 11:48 a.m.	5-minute results: Leq's = 73, 73	Grinder 73 – 74 dBA Loader, Water truck
Site 1. Sonoma Compost, Inc. 340 Feet NW of Greenwaste Storage and Grinding Area	Fri. April 17 9:58 – 10:08 a.m.	5-minute results: Leq's = 72, 70	Grinding and loading equipment 70 dBA, Truck leaving site
Site 2. Sonoma Compost, Inc. 17 Meters from screen exhaust	Fri. April 17 11:07 – 11:12 a.m.	5-minute result: Leq = 75	Screen operation 73 – 75 dBA, Loader dumping material 75.5 dBA
Site 3. Sonoma Compost, Inc. Near Existing site on top of windrow parallel to scarab	Fri. April 17 11:16 – 11:18 a.m.	2-minute result: Leq = 77	Scarab at approximately 25 feet, 76 dBA

a All noise levels measured in decibels (dBA). Noise measurement data presented here using a Metrosonics dB-308 sound level meter, calibrated prior to use.

As shown in **Table 29-1**, the measured noise levels at Sonoma Compost, Inc. had hourly averages that range from 44 to 73 decibels (dBA). Noise levels at Sonoma Compost, Inc. are primarily a function of the distance from the existing equipment and trucks, with the higher noise averages occurring during operation hours, and the lowest noise levels occurring during the nighttime hours. There are few other noise sources in the vicinity of Sonoma Compost, Inc.



SOURCE: Bing Maps, 2009; and ESA, 2010

Figure 29-1
Long and Short Term
Noise Measurement Locations

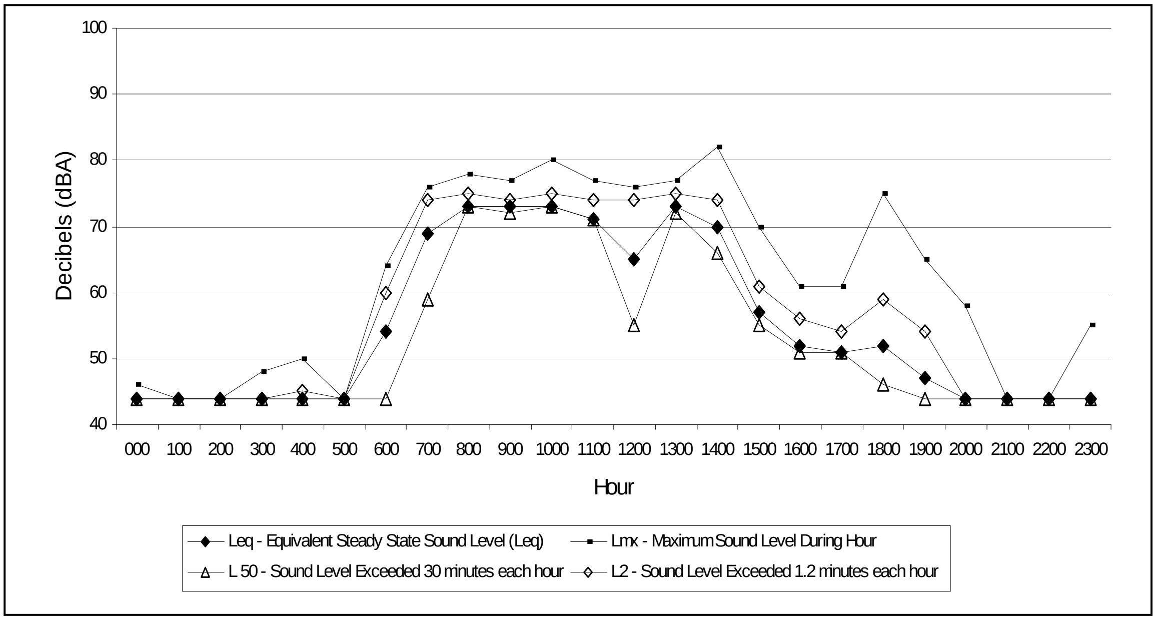


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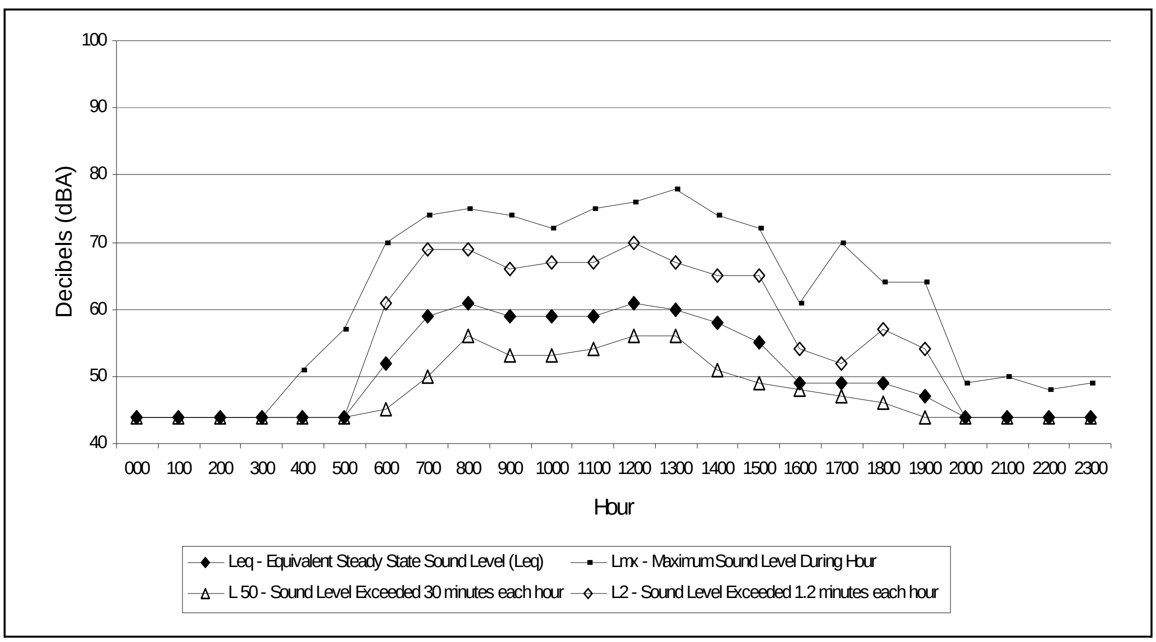
Figure 29-2

Site 1: 340 Feet NW of Existing Compost Site
Wednesday April 15, 2009



SCWMA Compost Facility. 207312

Figure 29-3

Site 1: 340 Feet NW of Existing Compost Site
Thursday April 16, 2009

29.3 Impacts and Mitigation Measures

Significance Criteria

Refer to Chapter 10, Noise, Section 10.3 for significance criteria that are used in the analysis of noise impacts for the Central Site Alternative.

Impact Discussion

Impact 29.1: Construction at the Central Site Alternative could expose persons to or generate excessive noise levels. (Significant)

Construction activity noise levels at and near the construction areas would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. **Table 29-2** shows typical noise levels during different construction stages. **Table 29-3** shows typical noise levels produced by various types of construction equipment.

Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling distance. Based on the proposed Central Site layout and terrain, an attenuation of 7.5 dBA will be assumed because the site is consistent with the characteristics of a “soft site.” The closest sensitive receptor would be the Gray residence approximately 500 feet from construction areas. However, the topography of the land would provide additional noise attenuation to this receptor. Residences along haul routes would also be exposed to increased traffic levels due to trucks around the Central Site Alternative. Construction traffic would not double the existing traffic in the area of the Central Site Alternative.

Build out of the Central Site Alternative would occur in two phases. Both phases would result in extensive grading and substantial truck trips (approximately 32 trucks per day for Phase I and 92 trucks per day for Phase II). The doubling of a moving noise source produces only a 3 dBA increase in sound pressure level which is barely detectable by the human ear (Caltrans, 2009). Construction would be temporary; approximately one year. The Central Site Alternative would only include the ASP processing option due to limited space.

Table 29-2 shows that excavation and finishing are the loudest phases of construction; the noise from these phases of construction would be up to 89 dBA at a reference distance of 50 feet. If attenuated out to 500 feet, this receptor would experience noise levels of approximately 64 dBA during finishing and excavation, the loudest of construction activities that would occur.

TABLE 29-2
TYPICAL CONSTRUCTION NOISE LEVELS[a]

Construction Phase	Noise Level[a] (dBA, Leq)
Ground clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

a. Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

TABLE 29-3
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level[a] (dBA, Leq at 50 Feet)
Dump truck	88
Portable air compressor	81
Concrete mixer (truck)	85
Scraper	88
Jackhammer	88
Dozer	87
Paver	89
Generator	76
Backhoe	85
Rock Drilling	98

a. Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: Bolt, Baranek, and Newman, 1971; Cunniff, 1977.

Sonoma County generally decides upon daytime construction hours on a case-by-case basis. No construction noise thresholds exist as long as the construction is temporary. Without hourly restrictions on construction activities, noise from construction activities would be considered **significant**.

Mitigation Measure

Mitigation Measure 29.1: Implement Mitigation Measure 10.1.

Significance after Mitigation: Less than significant.

Impact 29.2: Operation of the Central Site Alternative composting facility could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies. (Significant)

The loudest equipment that would be in operation at the project site would be the grinder and bulldozer. The noise levels generated by the loudest expected operations equipment are shown in **Table 29-4**.

TABLE 29-4
DAYTIME NOISE LEVELS ASSOCIATED WITH PROJECT OPERATIONS AT THE NEAREST RECEPTORS

Equipment	Reference Noise Level	Distance to Nearest Receptor	Maximum Noise Level of Equipment at Nearest Receptor (dBA)	Does equipment violate County daytime 30-Minute Standard (dBA)?	Attenuation needed to meet Standard
Grinder[a]	77 dBA at 200 feet	500	67	Yes	17 dBA
Grinder[a]	77 dBA at 200 feet	1000	60	Yes[c]	10 dBA
Bulldozer[b]	87 dBA at 50 feet	500	62	Yes	12 dBA
Bulldozer[b]	87 dBA at 50 feet	1000	55	Yes[c]	5 dBA

a. This reference noise level derives from multiple measurements from separate projects with similar conditions and equipment. The highest noise levels produced were used as reference levels providing the most conservative level available.
b. Reference noise level provided by Cunniff, 1977.
c. Although the noise levels from the equipment at 1,000 feet would exceed the Sonoma County General Plan noise standards based on distance alone, a ridge would further attenuate noise levels up to 8-10 dBA.

As seen in **Table 29-4** above, the residence closest to the grinder would result in levels of approximately 67 dB, at a distance of 500 feet. At this level, equipment would exceed daytime standards and would be considered a **significant** impact.

In the case of aerated static piles (ASP), large blowers (fans) would push and/or pull the air through the piles. These blowers (fans) may operate 24 hours per day. A ducting system would be used to direct air flows. Accurate noise levels during operation are unknown as the ASP details are conceptual and several types of systems by different vendors could be selected. A study documenting an ASP system contends that generation of noise is not a major issue as small 3 horse-power aeration blowers, a shop-sized air compressor, and a 15 horse-power exhaust fan were components of the aeration system (Carter & Burgess, 2004). In the case of an ASP system, blowers are not expected to be as loud as the grinder or bulldozers, but they would operate 24 hours a day and would be subject to the lower nighttime standards, of 45 dBA. Depending on various factors the blowers could exceed 45 dBA at night at the nearest receptor if not adequately attenuated. Without mitigation, operational noise at the Central Site would be considered a **significant** impact.

Mitigation Measures

Mitigation Measure 29.2a: Implement Mitigation Measure 10.2 (ASP equipment control).

Mitigation Measure 29.2b: The site design shall include sound walls or earthen berms that would block the line of sight to the nearest sensitive receptors to the northeast and the south.

Mitigation Measure 29.2c: Operational equipment noise shall be minimized by muffling and shielding intakes and exhaust on equipment (per the manufacturer's specifications).

Significance after Mitigation: Significant and Unavoidable.

Implementation of Mitigation Measure 29.2 a, b and c would provide increased noise attenuation but not necessarily to a less than significant level. Noise levels could still occasionally exceed the requirements in County Table NE-2.

Impact 29.3: Traffic associated with operation of the Central Site Alternative could result in an increase in ambient noise levels on nearby roadways used to access the project site. (Less than Significant)

The Central Site Alternative would generate new motor vehicle trips on the local road network associated with the potential for an approximate 20 percent increase in operations. It is foreseeable that this will correlate to a 20 percent increase in truck traffic. Truck trips could begin as early as 7:00 a.m. These trips would be distributed over the existing local road network and would affect roadside noise levels at sensitive receptor locations.

To assess the impact of project traffic on roadside noise levels, noise level projections were made using the Federal Highway Administration's (FHWA) TNM Lookup 2.5 model for those road segments that would be used by the haul trucks and other vehicles (as determined in the Chapter 31, Traffic and Transportation) that would pass by sensitive receptors. The results of the modeling effort are shown in **Table 29-5**, below. The traffic volumes used for the modeling effort are morning weekday peak-hour volumes and weekend peak periods during periods when the compost facility is operating at peak production. Estimated noise levels under various Central Site Alternative scenarios are shown in **Table 29-5**. In analyzing the effects of traffic noise, the general rule is applied that in areas where traffic dominates the noise environment, the Leq during the peak-hour is roughly equivalent (within about 2 dBA) to the CNEL at that location (Caltrans, 1998).

As shown in **Table 29-5**, the Central Site Alternative traffic would cause a minimal permanent increase in noise levels (all less than 3 dBA) at locations near the Central Site Alternative vicinity. See the two columns in that table identified as "Incremental Increases from the Alternative". This impact would be considered **less than significant.**

Mitigation: None required.

TABLE 29-5
AM PEAK-HOUR TRAFFIC NOISE LEVELS ALONG ROADWAYS IN THE CENTRAL SITE ALTERNATIVE VICINITY

	AM and Saturday Peak-Hour Noise Level, dBA, Leq									
Roadway Segment[1, 2]	**Existing (A)**	**Existing plus Alternative (B)**	**Incremental Increase from Alternative (B - A)**	**Significant? (Yes or No)[3]**	**Cumulative 2030 No Alternative (C)**	**Cumulative 2030 plus Alternative (D)**	**Incremental Increase (D-A)**	**Significant? (Yes or No)[3]**	**Incremental Increase from Alternative (D-C)**	**Cumulatively Considerable? (Yes or No)[3]**
Stony Point north of SR 116	65.6	65.6	0.0	No	69.7	69.7	4.1	**Yes**	0.0	No
Stony Point north of SR 116 (Saturday)	66.5	66.5	0.0	No	67.9	67.9	1.4	No	0.0	No
Stony Point south of SR 116	67.3	67.4	0.1	No	70.5	70.6	3.3	**Yes**	0.1	No
SR 116 east of Stony Point	67.4	67.4	0.0	No	70.0	70.0	2.6	No	0.0	No
SR 116 west of Stony Point	68.2	68.2	0.0	No	70.7	70.7	2.5	No	0.0	No
Stony Point north of Mecham Rd.	66.9	67.0	0.1	No	69.9	69.9	3.0	**Yes**	0.0	No
Stony Point south of Mecham Rd.	65.8	65.8	0.0	No	68.8	68.9	3.1	**Yes**	0.1	No
Mecham Rd. west of Stony Point	62.3	62.6	0.3	No	64.9	65.1	2.8	No	0.2	No
Mecham Rd north of Site Access	61.8	62.1	0.3	No	63.0	63.2	1.4	No	0.2	No
Mecham Rd. north of Site Access (Saturday)	62.5	63.1	0.6	No	63.9	64.4	1.9	No	0.5	No
Mecham Rd south of Site Access	60.0	60	0.0	No	65.9	65.9	5.9	**Yes**	0.0	No
Site Access west of Mecham Rd.	55.1	57	1.9	No	55.1	57	1.9	No	1.9	No

1. Road center to receptor distance is 15 meters (approximately 50 feet) for values shown in this table. Noise levels were calculated using the FHWA Traffic Noise Prediction Model (FHWA TNM) LookUp Program Software Version 2.1, 2007. Look-Up data generated by TNM Version 2.5. Prepared by US Department of Transportation, Research and Innovative Technology Administration, Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division.
2. Vehicle mix based on existing truck percentages from the Transportation Section with the addition of project vehicle trips. The speed limit for these segments was assumed to be **55 for Stony Point and SR 116, 45 for Mecham Rd., and 20 miles per hour for the Site Access Road**.
3. Considered significant if the incremental increase in noise is greater than 3 dBA. *and* results in noise levels above those considered compatible with County Noise Goals (NE-1b).

SOURCE: ESA, 2010

Impact 29.4: Blasting that would occur under the project would generate temporary airborne and groundborne noise and vibration. (Significant).

Blasting would be required during construction for development of the Central Site Alternative. All blasting would be conducted in compliance with applicable federal and State blasting regulations. Blasting would be conducted by a qualified blasting expert pursuant to a blasting plan. The nearest permanent structure would be the residence approximately 400 feet to the northwest of potential blasting areas. Other structures at the existing Sonoma Compost facility could be at risk from blast impact at times prior the closure of the existing Sonoma Compost facilities. There is also concern for any landfill infrastructure that could be affected by blast vibrations. Without mitigation this impact would be potentially significant.

Mitigation Measures

Mitigation Measure 29.4a: A site specific blasting plan shall be prepared. The blasting plan shall ensure that ground motions do not exceed 0.5 in/s at the nearest residence and determine the appropriate vibration threshold for nearby structures at the time of the blasting.

Mitigation Measure 29.4b: The blasting plan shall require monitoring of ground vibration and air-overpressure at a minimum of two locations to ensure these effects remain under threshold levels. One location should be close to the nearest residential property. The second monitoring point should be the adjacent landfill property.

Mitigation Measure 29.4c: Blasting shall be limited to daytime hours between 10:00 a.m. and 4:00 p.m.

Mitigation Measure 29.4d: A blasting permit shall be obtained from the Sonoma County Sheriff's Department prior to any blasting.

Mitigation Measure 29.4e: Discuss the blast monitoring program with the stakeholders in the project area that could be affected by blasting vibration. Educate property owners as to what is being done and why. Obtain information on time periods that are sensitive to blast activity.

Mitigation Measure 29.4f: Conduct a pre-blast survey to determine the condition of existing structures, and to alert homeowners that some rattling may be expected but damage is not expected. Contacts should be provided so that damage claims and complaints can be monitored and responded to quickly.

Mitigation Measure 29.4g: Schedule blasts to occur at approximately the same time on each blast day. Include this information in public announcements.

Significance after Mitigation: Less than Significant.

Impact 29.5: Increases in traffic from the Central Site Alternative in combination with other development would result in cumulative noise increases. (Less than Significant)

A cumulative impact arises when two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current, and probable future projects.

To assess the cumulative impact of the Central Site Alternative traffic on roadside noise levels, noise level projections were made using the FHWA TNM Version 2.5 (2007). The cumulative traffic alone (without the Central Site Alternative traffic) will produce a significant increase in traffic noise levels without the implementation of the Central Site Alternative. Five roadway segments in **Table 29-5** indicate an increase of greater than 3 dBA for the cumulative plus Alternative condition. However the contribution from the traffic from the Central Site Alternative would have minimal effect on the future conditions. Thus, the incremental noise increases from the Central Site Alternative would not be cumulatively considerable and would have a **less than significant** cumulative impact on noise.

Mitigation: None required.

29.4 References

Acker, Crystal, Environmental Specialist, Sonoma County Permit and Resource Management Department, telephone conversation, April 15, 2010.

Caltrans, Technical Noise Supplement, 1998.

Caltrans, Technical Noise Supplement, 2009.

Carter & Burgess, Composting Design Narrative, November 2004. Accessed online April 7th, 2010: http://www.cityhs.net/pdfs/pw/utilities/compost_design_narrative.pdf

Cunniff, Patrick, *Environmental Noise Pollution*, 1977.

FHWA Traffic Noise Prediction Model (FHWA TNM) LookUp Program Software Version 2.1, 2007. Look-Up data generated by TNM Version 2.5. Prepared by US Department of Transportation, Research and Innovative Technology Administration, Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division.

Sonoma County, *General Plan 2020 Noise Element*, September, 2008.

U.S. Environmental Protection Agency, Bolt, Beranek, and Newman, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, 1971

CHAPTER 30
Public Services and Utilities/Central Site Alternative

30.1 Introduction

The information presented in this chapter is unique to the Central Site Alternative and the reader is referred to Chapter 11, Public Services and Utilities, in cases where public services and utilities setting information and/or impact analysis is the same for the Central Site as the project site.

30.2 Setting

Water

The Central Site is located at the Central Disposal Site which obtains water from an on-site well. The nearest public water supplier is Sonoma County Water Agency, which provides water to several areas of Sonoma County including the City of Cotati, northeast of the Central Site.

Wastewater

Residences and businesses in the vicinity of the Central Site utilize private wastewater treatment such as septic systems. The nearest municipal wastewater service is provided by the City of Cotati.

Solid Waste

The solid waste setting discussion is the same as that discussed in Chapter 11, Public Services and Utilities, for the project site.

Electricity, Natural Gas, and Propane

As with the project site, electrical service is provided to the area by Pacific Gas and Electric Company (PG&E). No natural gas service is provided to the Central Site. Propane gas delivery service is provided by several private companies in the area.

Police

Law enforcement services to Central Site are provided by the Sonoma County Sheriff's Office with law enforcement along state routes provided by the California Highway Patrol. As with the project site, the Central Site is located within Sheriff's Office Zone 5. Chapter 11 provides additional background on these law enforcement agencies.

Fire Protection

Central Site fire protection and emergency medical services are provided by Rancho Adobe Fire Protection District (FPD). The FPD provides service to approximately 86 square miles of Sonoma County including the Town of Penngrove, City of Cotati and unincorporated areas of Petaluma.

The FPD is a combination fire district which includes full-time paid staff, part-time firefighters, volunteer firefighters and volunteer support. There are 15 full-time staff, 15 part-time firefighters, 6 volunteer firefighters, 1 part-time fire chief and an administrative assistant (Rancho Adobe FPD, 2010).

The FPD has three fire stations at the following locations:

- #1 East Cotati Avenue in Cotati
- 11000 Main Street in Penngrove
- 99 Liberty School Road in the unincorporated Petaluma area

The station on Liberty School Road is the closest station, approximately 3 miles southeast of the Central Site. The Central Site has a moderate risk associated with wildfire hazards (California Department of Forestry and Fire Protection, 2007). The nearest hospital that to the Central Site is Petaluma Valley Hospital, located approximately 7.5 miles southeast of the Central Site.

Schools, Parks, Libraries

Schools in the vicinity of the Central Site include Dunham Elementary school, located approximately one mile north of the Central Site. There are no parks, recreation facilities or libraries within two miles of the Central Site.

30.3 Impacts and Mitigation Measures

Significance Criteria

The significance criteria used for the Central Site analysis are the same as those used for the project site and discussed in Chapter 11, Public Services and Utilities.

The Central Site would not be served by municipal providers for potable water or wastewater service or affect existing providers of these services, thus there would be no impact to potable water or wastewater service providers related to the construction of new water or wastewater infrastructure. For impacts related to groundwater supply and wastewater discharge, see Chapter 27 (Hydrology and Water Quality). Since the project does not propose to add schools, parks or libraries and the project would not increase demands on these kinds of facilities, there would be no impacts to public schools, parks or libraries. The compost facility would be required to comply with

CalRecycle regulations regarding composting operations found at Title 14, Chapter 3.1. Thus, the project would comply with regulations related to solid waste. As the project would have no effect on these issues, they are not discussed further in this document.

Impact Discussion

Impact 30.1: The Central Site Alternative would generate solid waste which would require disposal at a landfill. (Less than Significant)

The primary source of solid waste requiring disposal at the project would be residual waste within arriving feedstocks which could not be composted. These materials are currently sent to landfills and thus they do not represent a new waste stream. Employees and general administrative functions would generate a minor amount of trash which would require disposal. However, the project overall would result in a net reduction in the amount of solid waste sent to landfill due to the removal of compostable materials from the existing waste stream. This would result in additional capacity at landfills utilized by Sonoma County and thus would be **less than significant**.

Mitigation: None Required.

Impact 30.2: The Central Site Alternative and implementation of certain mitigations, would increase energy demands. (Less than Significant)

The Central Site Alternative would generate energy demands primarily in the form of electricity, propane, and petroleum based fuels (e.g., diesel and gasoline) from operation of buildings (e.g., lighting and heating/cooling), stationary processing equipment (e.g., grinders, blowers, etc.), and portable equipment (e.g., loaders, water trucks, forklifts, haul trucks, etc.). The specific electricity requirements of this alternative would be determined by PG&E after the operator submits a formal application for service. At that time, PG&E would review the application and identify what additional on- and/or off-site requirements would be needed to deliver electrical service to the site. This alternative would likely utilize electric appliances or propane gas for heating.

For the purposes of this CEQA review, it is estimated that by 2019 the project would require an increase in annual electrical demand of approximately 710 megawatt-hours (MW-hrs) compared to the current demand of the existing facility, and any use of propane would be negligible on a regional basis. For details related to the estimated electrical demand that would be associated with this alternative, refer to Appendix AIR-5. The precise amount of petroleum fuel demand that would be required under this alternative is uncertain; however, based on estimated greenhouse gas emission estimates (see Chapter 24, Air Quality) for the Central Site Alternative and U.S. Energy Information Administration fuel coefficient data (USEIA, 2011), by year 2019, it is expected that this alternative could require the use of approximately 4,000 combined gallons of diesel and gasoline each year.

The Central Site Alternative would not include activities that would be considered to result in inefficient, wasteful, or unnecessary consumption of energy. In addition, the Central Site Alternative would not reduce or interrupt existing electrical or natural gas services due to insufficient supply. It should also be noted as discussed in Chapter 24, Air Quality, the Central Site Alternative would be inherently energy efficient by providing a local source of soil enrichment materials and reducing the export of waste out of the County and import of conventional fertilizer and soil conditioning products into the County. Also, because the Central Site Alternative would merely shift the location of the fuel consumption associated with off-road equipment and trucks from landfills to the project site, there would not likely be a net increase of fuel consumption in the region. Because the Central Site Alternative would be inherently energy efficient, would not substantially increase fuel consumption in the region, and the operator of the facility would pay improvement and operating costs for available electricity and/or natural gas, this impact would be **less than significant**.

Mitigation: None Required.

Impact 30.3: The Central Site Alternative would require law enforcement services from the Sonoma County Sheriff's Office. (Less than Significant)

Law enforcement services for this alternative would be provided by the Sonoma County Sheriff's Office. Calls for service to the Central Site would be typical of existing calls for service in the vicinity such as trespassing or vandalism. Calls for service from the existing composting facilities are rare. Typically criminal trespassing is associated with the adjacent landfill (Bakx, pers. comm., 2009). As with existing operations, the Central Site is not anticipated to create a volume of calls which would affect the ability of the Department to provide adequate law enforcement services to the general area, or require the construction or alteration of police facilities. Thus, effects to police protection services would be **less than significant**.

Increased traffic would result in additional responses for traffic enforcement and traffic control from local law enforcement. Traffic safety is addressed in Chapter 31, Traffic and Transportation, and would result in a **less-than-significant** impact with recommended mitigation.

Mitigation: None Required.

Impact 30.4: The Central Site Alternative would increase demand for fire protection and emergency medical services including response to wildland fires. (Less than Significant)

Fire protection services and emergency medical services would be provided by the Rancho Adobe FPD. Response by the FPD to the Central Site would be primarily associated with potential structural or compost fires, medical emergencies, on-or off-site vehicular accidents and off-site wildland fires.

The composting process creates heat which can cause fires. Other fire causes such as smoking, arson and lightning are rare but could occur. Composting facilities in California are required to comply with CCR Title 14 composting regulations (Title 14, Chapter 3.1. Article 6, §17867(8)) which requires operations to provide fire prevention, protection and control measures, including but not limited to:

- Temperature monitoring of windrows and aerated static piles
- Adequate water supply for fire suppression
- Isolation of potential ignition sources from combustible materials
- Fire-lanes shall be provided to allow fire control equipment access to all operation areas.

In addition to those mentioned specifically within the composting regulations, standard operational measures which would minimize the duration and intensity of fires, as well as the likelihood of fires spreading off-site, include limiting the size of piles, ensuring a minimum amount of space between piles and employee training for fire emergencies. Standard operational measures which aid in preventing fires include turning the windrows and watering the windrows. When excessive temperatures or fires are detected equipment including a water truck, front end loader, excavator, hose and fire extinguishers would be available. As with existing operations, this alternative is not anticipated to create a volume of calls which would affect the ability of the fire departments to provide adequate services to the general area, or require the construction or alteration of fire protection facilities. Thus, effects to fire protection and emergency medical services would be **less than significant**. Fire prevention controls incorporated into the project would also reduce risks from wildland fire to a **less-than-significant** level.

Mitigation: None Required.

Impact 30.5: The Central Site Alternative would include new stormwater drainage facilities, the construction of which could create impacts. (Less than Significant)

The Central Site Alternative would incorporate new on-site storm water drainage facilities which would route storm water to an on-site detention pond. The construction and operational impacts of the on-site drainage system are incorporated into the alternative's project description and thus analyzed throughout the document. However, impacts could occur as a result of construction and operation of the on-site drainage system. The construction of on-site detention ponds and stormwater drainage facilities would reduce any impact on off-site public stormwater drainage facilities. Thus, the impact of this alternative related to construction of new stormwater drainage facilities would be **less than significant**.

Mitigation: None Required.

30.4 References

In addition to those references listed in Chapter 11, Public Services and Utilities, the following references were used:

Bakx, William, 2009. Owner of Sonoma Compost Company, telephone conversation, June 16, 2009.

California Department of Forestry and Fire Protection, 2007. Sonoma County Fire Hazard Severity Zones in State Responsibility Area Map. Available online at: http://www.firescape.us/images/sonomafireseveritysra.pdf. Adopted by CAL FIRE on November 7, 2007.

Rancho Adobe Fire Protection District. Fire Protection District Information. Available online at: http://www.rancho-adobe-fire.org/ Last updated February 23, 2010.

CHAPTER 31

Traffic and Transportation/Central Site Alternative

31.1 Introduction

The analyses in this chapter provide information on the local roadway network, operating levels of service, potential impact of traffic associated with the Central Site Alternative, traffic and bicycle/pedestrian safety, road wear, and identification of mitigation measures necessary to mitigate potential significant impacts.

The transportation analysis is prepared for five scenarios, including:

- Existing (2009);
- Near-Term Cumulative Base (Year 2011);
- Near-Term Cumulative Base with Project (Year 2011);
- Long-Term Cumulative Base (Year 2030); and
- Long-Term Cumulative Base with Project (Year 2030)

Traffic count data and LOS calculations for this analysis are provided in Appendix TRAFFIC-3.

31.2 Setting

The transportation system in the Central Site Alternative region is composed of an interconnected network of State, County, local roadways, and bicycle facilities. Major roadways in the Central Site Alternative area are described below.

Roadway System and Site Access

The Central Site surrounding roadway network is shown on **Figure 14-8**. The Central Site Alternative area is served primarily by a network of rural two-lane roadways. These roadways typically lack curbs and sidewalks. Central Site is located in Sonoma County and is accessed via Mecham Road. Central Site is approximately 8 miles north of the City of Petaluma, and 5 miles southwest of the City of Rohnert Park. Regional access to the area is provided by U.S. Highway 101 (U.S. 101) and State Route 116 (SR 116).

U.S. Highway 101 is a principal north-south freeway in Sonoma County, extending northward to Mendocino County, and southward to Marin County and points beyond. U.S. 101 provides access to/from Central Site via interchanges at SR 116 and SR 37. U.S. 101 carries average daily traffic (ADT) volumes of 146,000 vehicles south of SR 37 and ADT volumes of 86,000 vehicles south of SR 116 (Caltrans, 2010).

State Route 116 is a major, generally north south route in Sonoma County, extending between SR 1 in the west and SR 121 in the east, and providing direct access to U.S. 101. In the Central Site Alternative vicinity SR 116 (Stage Gulch Road west of Adobe Road) is a two-lane rural arterial with 12-foot-wide travel lanes and no paved shoulders. The posted speed limit on SR 116 is 55 miles per hour (mph). SR 116 (Stage Gulch Road) carries an ADT of 3,200 vehicles in front of Central Site. SR 116 (Lakeville Highway) is a four-lane major arterial west of Frates Road (ADT of 25,000 vehicles) and a two-lane arterial with paved shoulders and an ADT of 16,000 vehicles to the north of Stage Gulch Road (Caltrans, 2010).

Stony Point Road is a two-lane rural principal arterial roadway, and extends in a north-south direction roughly parallel to U.S. 101. Stony Point Road contains approximate 12-foot wide travel lanes plus turn lanes at intersections. North of Pepper Road, Stony Point Road contains approximately four- to six-foot wide paved shoulders; and south of Pepper contains narrow or unpaved shoulders. There is gradual vertical and horizontal curvature in the road; as with U.S. 101, Stony Point Road rises in the vicinity of the Cotati grade. Stony Point Road contains a *prima facie* 55 mile per hour (mph) speed limit[1] along the proposed project haul route.

Pepper Road extends between Valley Ford Road and Stony Point Road. This roadway is classified as a rural major collector road west of Mecham Road, and a rural minor collector road east of Mecham Road. Pepper Road has approximate 12-foot travel lanes with approximate six-foot wide paved shoulders west of Mecham Road, with shoulders narrowing to two to three feet in width east Mecham Road. There is gradual horizontal and vertical curvature to the road. Pepper Road contains a *prima facie* 55 mph speed limit. East of Mecham Road, Pepper Road contains a signed advisory 50 mph curve west of King Road. There is a 25 mph school speed zone on Pepper Road in the vicinity of Jewett Road.

Mecham Road is a two-lane rural major collector roadway that runs roughly north-south between Stony Point Road and Pepper Road. Mecham Road contains 12-foot travel lanes plus approximate six-foot wide paved shoulders. There is gradual vertical and horizontal curvature to the road. Mecham Road has a posted speed limit of 45 mph east of Hammel Road, and a *prima facie* 55 mph speed limit west of Hammel Road. Mecham Road provides direct access to the Central Landfill, and therefore, contains notable heavy truck traffic.

Existing Traffic Operating Conditions

Study Intersections

Intersection analysis was conducted at the proposed Central Site Alternative access driveway and at two intersections on Stony Point Road:

1. Central Site Driveway at Mecham Road (side-street stop controlled)

1 Unposted speed limits are known as “prima facie” speed limits.

2. Stony Point Road at Mecham Road (signalized)
3. Stony Point Road at Gavenstein Highway (SR 116) (signalized)

Existing Peak Weekday and Weekend Traffic Volumes

Based on potential significant effects associated with the Central Site, it was determined that weekday a.m. and weekend peak hour conditions would be evaluated. Twenty-four hour volume counts were taken on Mecham Road at the site access driveway and on Stony Point Road north of Roblar Road for two weeks (14 consecutive days) in May 2010. The machine count volumes were used to determine the peak-hour through volumes on the main haul routes. Based on the daily machine counts, the weekday a.m. peak hour was identified as 8:00 to 9:00 a.m., and the weekend peak hour was found to be 12:00 p.m. to 1:00 p.m.[2] Intersection peak period turning movement volumes collected for the EIR are provided in Appendix TRAFFIC-3.

Intersection Level of Service Analysis Methodology

The operation of a local roadway network is commonly measured and described using a grading system called Level of Service (LOS). The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of vehicle traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay experienced by motorists) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in long delays). This LOS grading system applies to both roadway segments and intersections. The LOS calculation methodology for intersections is dependent on the type of traffic control device, traffic signals or stop signs. A detailed description of the LOS methodologies used for this analysis is provided in Chapter 12, Transportation and Traffic (*Intersection Level of Service Analysis Methodology*).

As shown in **Table 31-1,** the study intersections currently operate at acceptable levels of service (LOS C or better) during the weekday a.m. peak-hour, and weekend midday peak hour. LOS calculation sheets are provided in Appendix TRAFFIC-3.

Peak Hour Signal Warrants

To assess the need for signalization of stop-controlled intersections, the *California Manual on Uniform Traffic Control Devices* describes eight signal warrants (Caltrans, 2010). Meeting one of the signal warrants could justify signalization of an intersection; however, the full set of warrants should be considered as part of an evaluation and survey before the decision to install a signal is made. Peak hour volume warrant (Warrant 3) analysis for urban conditions was conducted for this study. The results of the traffic signal warrant analysis are provided for each analysis scenario and the signal warrant calculations are provided in Appendix TRAFFIC-3. The peak hour volume traffic signal warrant is not met at the intersection of Mecham Road / Project Site Access during the weekday a.m. or weekend peak hours under Existing Conditions.

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2 The p.m. peak hour condition was not analyzed for the following reasons: the current compost facility closes at 3:00 p.m., as would the project facility; and the p.m. peak hour of background traffic on area roadways occurs after 4:00 p.m.. Therefore, there would be no measurable p.m. peak-hour vehicle contribution of project traffic during the p.m. peak hour.

TABLE 31-1
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
EXISTING CONDITIONS[a]

Intersection	Traffic Control[b]	Weekday AM		Weekend Midday	
		Delay[c]	LOS	Delay[c]	LOS
Mecham Road at Central Site Access Driveway	SSSC	10.2	B	11.9	B
Mecham Road at Stony Point Road	Signal	11.8	B	17.0	B
Gravenstein Highway (SR 116) at Stony Point Road	Signal	22.8	C	23.6	C

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodologies, and weekday a.m. peak-hour volumes from Sonoma County Central Landfill Traffic Study (Crane Transportation Group, 2009).

Planned Roadway Improvements

The *2009 / 2014 Sonoma County Capital Project Plan* does not list any roadway improvement projects as funded or scheduled for Mecham Road in the vicinity of the Central Site Alternative. Improvements scheduled for Stony Point Road would not effect the study intersections.

Existing Vehicle Speed on Project Haul Roads

In order to evaluate existing travels speeds on Central Site Alternative haul routes, speed data was collected at two locations during the same time period (May 4-May 17, 2010) as the 24-hour traffic count data. The two locations are:

- Mecham Road west of the access driveway
- Stony Point Road north of Roblar Road

The posted speed limit on Mecham Road near the project driveway is 45 mph. Stony Point Road has a posted speed of 55 mph.

The 85th percentile speed collected on Mecham Road was 52 mph.[3] The mean, or 50th percentile average speed, was approximately 46 mph, with a 10 mph pace speed between 40 and 50 mph.[4] Overall, the speed survey indicates vehicles on Mecham Road are currently traveling at speeds higher than the posted speed limit.

Data collected on Stony Point Road found that the 85th percentile speed was 57 mph. The mean, or 50th percentile average speed, was approximately 51 mph, with a 10 mph pace speed between 45 and 55 mph. Overall, the speed survey indicates vehicles on Stony Point Road are currently traveling at speeds lower than the posted speed limit.

3 The 85th percentile speed is the speed at or below which 85 percent of the motorists drive on a given road unaffected by slower traffic or poor weather. This speed indicates the speed that most motorists on the road consider safe and reasonable under ideal conditions.

4 Pace speed is the 10 mph range in which the majority of vehicles are traveling.

Pedestrian and Bicycle Traffic

A description of pedestrian and bicycle facility categories is provided in Chapter 12, Transportation and Traffic, Section 12.2 (*Pedestrian and Bicycle Traffic*).

Within the vicinity of Central Site, there are currently no designated pedestrian or bike facilities. The 2010 Sonoma County Bicycle and Pedestrian Plan classifies Mecham Road as proposed Class II bicycle lanes (Priority 3) and Pepper Road as a Class III bicycle route (Priority 2 west of Mecham Road, and Priority 1 east of Mecham Road). [5]

Week-long traffic counts documented between 20 and 50 bicyclists on Mecham Road, and over 100 bicyclists on Stony Point Road, in May 2010 (see AppendixTRAFFIC-3).

Regulatory Framework

The development and regulation of the Central Site Alternative area transportation network primarily involves state and local jurisdictions. All roads within the Central Site Alternative area are under the jurisdiction of state and local agencies. State jurisdiction includes permitting and regulation of the use of state roads, while local jurisdiction includes implementation of state permitting, policies, and regulations, as well as management and regulation of local roads. Applicable state and local laws and regulations related to traffic and transportation issues are discussed below.

California Department of Transportation

The California Department of Transportation (Caltrans) manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. Heavy trucks accessing Central Site would use roadways that fall under Caltrans' jurisdiction, primarily U.S. 101 and SR 116. Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials, and for construction-related traffic disturbance.

Sonoma County

Mecham Road is under the jurisdiction of Sonoma County. County policies and regulations regarding the design, use, or obstruction of roadways are detailed in the Sonoma County General Plan 2020 *Circulation and Transit Element* (Sonoma County, 2008). The majority of these goals and policy guidelines in the Circulation and Transit Element pertain to the development and planning of roadways and transit systems.

The *Draft 2009 Countywide Transportation Plan* for Sonoma County provides further guidance for transportation planning and associated goals and policies (SCTA, 2009). This plan focuses on the design and implementation of improvements to the county circulation system, including roadways, bikeways, and rail service.

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5 The Sonoma County Bicycle and Pedestrian Advisory Committee has prioritized each individual project included in the 2010 Bicycle and Pedestrian Master Plan into one of three categories (Priority 1: High; Priority 2: Medium; and Priority 3: Low).

Sonoma County's General Plan 2020 Circulation and Transit Element Objectives related to level of service standards include:

Objective CT-3.1 Maintain LOS C or better on roadway segments unless a lower LOS has been adopted.

Objective CT-3.2 Maintain LOS D or better at roadway intersections.

Objective CT-3.3 Allow the above levels of service to be exceeded if it is determined to be acceptable due to environmental or community values, or if the project(s) has an overriding public benefit that outweighs lower levels of service and increased congestion.

31.3 Impacts and Mitigation Measure

Intersection Operating Conditions

Hours of Operation

The existing composting facility located at the Sonoma County Central Disposal Site (Sonoma Compost Company) currently accepts material during the hours of 7:00 a.m. to 3:00 p.m. Monday through Saturday, with general operation of the facility during the hours of 6:30 a.m. to 5:30 p.m.[6] Although the project may be open to the public on Sundays, the hours of operation would not change for the Central Site Alternative.

Project Trip Generation

The vehicle trip generation for the Central Site Alternative is estimated to be less than the currently operations at currently operating facility. The current facility currently accepts 100,000 tons of material. The Central Site Alternative would only include the ASP processing option due to limited space. Under Near-Term Cumulative Conditions, the facility would be able to process approximately 40,000 tons of material. At buildout, the facility would be able to process approximately 110,000 tons of material.

Project Vehicle Distribution Patterns

Project related traffic would be distributed primarily to the north and west of Central Site. Trucks traveling from the site would exit U.S. 101 at the SR 116 Lakeville Highway exit and continue south on Stony Point Road to Mecham Road. Haul trucks would proceed west to the site access road. This is the current traffic pattern for access to the site under existing operations at the site.

6 The facility is permitted to accept material on Sundays too, but due to budgetary considerations, the site is currently closed to the general public on Sundays.

Traffic Volume Growth Rate

Year 2011 (Near-Term Cumulative) and 2030 (Long-Term Cumulative) Central Site area growth in traffic volumes were developed using the recently updated Sonoma County Transportation Authority (SCTA) Transportation Demand Model (2005-2035).

The applied growth rates were developed based primarily on the link volume data (ADT and p.m. peak hour) from the SCTA model for Lakeville Road, Adobe Road and Stage Gulch Road in the vicinity of the Central Site access road. The model provided baseline 2005 and forecast 2035 for daily and p.m. peak hour directional volumes. Within the general area of Central Site an overall 49 percent increase in peak hour traffic was forecasted for the 30 year model growth projection. A 1.5 percent annual growth rate was developed and applied to the intersection volumes on Stage Gulch Road during the weekday a.m. and weekend peak hours based on the SCTA link volume data.[7]

Significance Criteria

According to Appendix G of the CEQA *Guidelines*, a project that would "cause an increase in traffic which is substantial in relation to existing traffic load and capacity of the street system" may be deemed to have a significant adverse impact on the environment.

Sonoma County Significance Criteria

The following applicable County significance criteria were used to judge the transportation impacts[8]:

- At County intersections, the project would have a significant impact if the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate worse than the County's LOS D standard (i.e., at LOS E or F). This criterion applies to all signalized, all-way stop-controlled, and side street stop-controlled intersections with project traffic volumes over 30 vehicles per hour per intersection approach or per exclusive left-turn movement.
- If a County intersection currently operates, or is projected to operate, worse than the County LOS standard (i.e., at LOS E or F), then the project's impact would be significant if it causes the average vehicle delay to increase by five seconds or more. The delay will be determined by comparing intersection operations with and without the project's traffic for both the existing baseline and project future conditions. This criterion applies to all signalized, all-way stop-controlled, and side street stop-controlled intersections with project traffic volumes over 30 vehicles per hour per intersection approach or per exclusive left-turn movement.
- The County traffic study guidelines indicate that a project would result in a significant impact if it failed to meet minimum standards for any of the following areas of analysis:
    - On-site and Frontage Improvements – Proposed on-site circulation and street frontage would not meet the County's minimum standards for roadway or driveway design, or potentially would result in safety hazards, as determined by the County in consultation with a registered traffic engineer.

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7 The SCTA model does not generate traffic volumes for the weekday a.m. and weekend peak hours, and the annual growth rate for those peak-hour periods was assumed to be the same as for the weekday p.m. peak hour.

8 These significance criteria are from the County traffic study guidelines, which are consistent with County General Plan guidelines, and are treated as an elaboration of the latter.

- Emergency Access – The project site would have inadequate emergency access.
- Alternative Transportation – The project would provide inadequate facilities for alternative transportation modes (e.g., bus turnouts, bicycle racks, pedestrian pathways) and/or the project would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation.
- Road Hazards – Hazards are increased due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment, heavy pedestrian or truck traffic).
- Vehicle Queues – The addition of project traffic would cause the 95th percentile queue length to exceed roadway turn lane storage capacity.
- Signal Warrants – The addition of the project's vehicle or pedestrian traffic would cause an intersection to meet or exceed Caltrans' signal warrant criteria.
- Turn Lanes – The addition of project traffic would cause an intersection to meet or exceed criteria for provision of a right- or left-turn lane on an intersection approach.
- Sight Lines – The project constructs an unsignalized intersection (including driveways) or adds traffic to an existing unsignalized intersection approach that does not have adequate sight lines based upon Caltrans criteria for state highway intersections and County criteria for County roadway intersections.

In addition, for purposes of this EIR, the following additional significance criterion was used to judge the transportation impacts:

- The project would have a significant impact to roadwear if it would increase heavy truck traffic volumes that would increase the Traffic Index (TI) by more than 1.5 on roadways built to accommodate heavy truck traffic, and by more than 0.5 on other roadways, or would add vehicles whose weight exceeds weight limit restrictions on the affected roadway.

Impact Discussion

Near-Term Cumulative Base (Year 2011)

The Central Site Alternative if approved would begin operations sometime in 2011. The results of the LOS analysis for Near-Term Cumulative Base Conditions are summarized in **Table 31-2**.

Near-term Cumulative Base traffic conditions at the study intersections are projected to operate at acceptable levels of service (LOS C or better) during both peak hours. The peak-hour traffic volume signal warrant is not met at the Mecham Road at Central Site Access Driveway intersection under any of the near-term peak hour conditions.

TABLE 31-2
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
NEAR-TERM CUMULATIVE BASE CONDITIONS[a]

			Weekday AM		Weekend Midday	
Intersection	**Traffic Control[b]**	**Scenario**	**Delay[c]**	**LOS**	**Delay[c]**	**LOS**
Mecham Road at Central Site Access Drwy	SSSC	Existing Near-Term Base	10.2 10.3	B B	11.9 12.1	B B
Mecham Road at Stony Point Road	Signal	Existing Near-Term Base	11.8 11.9	B B	17.0 17.2	B B
Gravenstein Hwy (SR 116) at Stony Point Rd	Signal	Existing Near-Term Base	22.8 23.4	B C	23.6 24.2	C C

a. Worst movement LOS at side-street stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, SSSC = Side-street stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Near-Term Cumulative Base Plus Project Traffic Impacts

Impact 31.1: The Central Site Alternative would contribute to Near-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour. (Less than Significant)

Near-Term Cumulative Base plus Project conditions are defined as Near-Term Cumulative Base plus traffic added by the Central Site Alternative. Estimated vehicle trip generation for the Central Site Alternative would be approximately 60 percent less than under current operating conditions at the facility, as site capacity for processing would substantially less than exists under current operations at the site. As such, the current traffic on the haul routes would be reduced and the addition of Central Site Alternative-generated traffic would not increase delays above Near-Term Cumulative Conditions. This impact would be **less than significant**.

Mitigation Measure: None Required.

Near-Term Cumulative Traffic Safety

Access Road Improvements

Impact 31.2: The Central Site Alternative could worsen traffic safety due to design features or incompatible uses. (Less than Significant)

The Central Site composting facility would be accessed via the existing site access road via Mecham Road. However, truck traffic under the proposed project would be less than under existing operating conditions at the project site. As sight distance and roadway geometrics are adequate to accommodate the projected traffic, this is a **less than significant** impact.

Mitigation Measure: None Required.

Alternative Transportation

Impact 31.3: The Central Site Alternative would create potential conflicts with adopted policies, plans, or programs supporting alternative transportation. (Significant)

As discussed in the Setting, the *2010 Sonoma County Bicycle and Pedestrian Master Plan* classifies Mecham Road as proposed for Class II bicycle lanes and Pepper Road as a proposed Class III bicycle route. Although no official bikeways exist on these facilities, week-long traffic counts documented between 20 and 50 bicyclists on Mecham Road, and over 100 bicyclists on Stony Point Road, in May 2010.

Although the project would not prevent the county from implementing bicycle improvements included in the Bicycle and Pedestrian Master Plan, project-generated increase in traffic volumes on Mecham Road and Pepper Road would create potential conflicts with the plan to provide Class II bike lanes and a Class III bike route. In addition, debris falling from project vehicles could cause safety issues for bicyclists along the haul route, and this impact is considered **significant**.

Mitigation Measures

> **Mitigation Measure 31.3a:** Implement Mitigation Measure 12.3a.
>
> **Mitigation Measure 31.3b:** The operator shall be required to conduct regular sweeping of the intersection of Mecham Road at the Central Site access road so that the intersection remains free of debris and dirt that may accumulate from exiting trucks.
>
> **Significance after Mitigation:** Less than Significant.

Road Hazards

Impact 31.4: The Central Site Alternative would generate turning movements by heavy vehicles to and from Mecham Road, and could increase the potential for conflicts between Central Site Alternative traffic and through traffic. (Less than Significant)

The Central Site Alternative access driveway would operate at an acceptable level of service during peak hours of background traffic under near-term cumulative conditions, and project-generated traffic would be less than under existing conditions. The project would have a **less than significant** impact.

Mitigation: None Required.

Long-Term Cumulative Base (Year 2030)

Year 2030 was selected as the subject year for buildout of the proposed compost facility, given the assumed first year of operation of the Central Site Alternative (2011) and the 20-year forecasts developed for the *Sonoma Countywide Composting Feasibility Study*. The results of the LOS analysis for Long-Term Cumulative Base conditions are summarized in **Table 31-3**.

TABLE 31-3
PEAK-HOUR INTERSECTION LEVELS OF SERVICE (LOS)
LONG-TERM CUMULATIVE BASE CONDITIONS

		Weekday AM		Weekend Midday	
Intersection	**Control**[b]	**Delay**[c]	**LOS**	**Delay**[c]	**LOS**
Mecham Road at Central Site Access Driveway[a]	SSSC	11.0	B	15.2	C
Mecham Road at Stony Point Road	Signal	18.9	B	19.9	B
SR 116 at Stony Point Road	Signal	121.1	F	44.0	D

a. Worst movement LOS at two-way stop-controlled intersections; overall intersection LOS at signalized intersections.
b. Signal = Signal controlled, TWSC = Two-way stop (sign) controlled.
c. Average Stopped Delay expressed in terms of Seconds per Vehicle.

SOURCE: ESA, 2010 using TRAFFIX and the Transportation Research Board *2000 Highway Capacity Manual* operations analysis methodology.

Under Long-Term Cumulative Base traffic conditions, the access intersection would operate at acceptable levels of service (LOS C or better) during the weekday a.m. and weekend peak hours. The intersection of Stony Point Road and SR 116 would operate at unacceptable LOS F during the weekday a.m. peak hour.

Long-Term Cumulative Base plus Project Impacts

Impact 31.5: The Central Site Alternative would contribute to Long-Term Cumulative traffic volumes at the study intersection during the weekday a.m. and weekend peak hour. (Less than Significant)

Long-Term Cumulative Base plus Project conditions are defined as Long-Term Cumulative Base conditions plus traffic added by the Central Site Alternative. At project buildout, the Central Site Alternative would have up to approximately 15 percent higher capacity over Long-Term Cumulative Base Conditions. An increase of that level would not alter vehicle trips to and from the Central Site along the haul route to a degree that would be apparent to the average driver, and average vehicle delays at the study intersections would increase less than the five-second threshold of significance. The project would have a **less than significant** impact on cumulative traffic conditions.

Mitigation: None Required.

Long-Term Cumulative Traffic Safety

Access Road Improvements

Impact 31.6: The Central Site Alternative could worsen traffic safety due to design features or incompatible uses. (Less than Significant)

The Central Site composting facility would be accessed via the existing site access road via Mecham Road. However, truck traffic under the proposed project would only nominally increase (i.e., up to 15 percent) at project buildout. As sight distance and roadway geometrics are adequate to accommodate the projected traffic, this is a **less than significant** impact.

Mitigation: None Required.

Road Hazards

Impact 31.7: The Central Site Alternative would generate turning movements by heavy vehicles to and from Mecham Road, and could increase the potential for conflicts between Central Site Alternative traffic and through traffic. (Less than Significant)

The Central Site Alternative would cause an incremental increase (up to 15 percent) in traffic including heavy trucks on Mecham Road at buildout of the project. However, as described above, the Central Site Alternative access driveway would operate at an acceptable level of service during peak hours of background traffic under long-term cumulative conditions, even with incremental increases in traffic. The number of trucks slowing to make the tuning movement into the existing landfill site would not substantially increase the potential for vehicle conflicts above current operating conditions. The project would have a **less than significant** impact.

Mitigation: None Required.

Roadwear Impacts

Impact 31.8: The Central Site Alternative would contribute to the degradation of pavement on public roads. (Less than Significant)

The truck trips generated by the Central Site Alternative would cause incremental damage and wear to roadway pavement surfaces along the haul route; however, truck traffic under the proposed project would be less than under existing operating conditions at the project site and at buildout would only increase by up to 15 percent. The proposed project's impact on pavement degradation would be **less than significant** because the haul routes are currently designed to accommodate heavy truck traffic.

Mitigation: None Required.

Construction

Impact 31.9: Project construction would result in temporary increases in truck traffic and construction worker traffic. (Significant)

Please see the discussion of Impact 12.8 discussion in Chapter 12, Traffic and Transportation. This impact would have the same effects as Impact 12.8. Without mitigation, this impact would be **significant**.

Mitigation Measure

Mitigation Measure 31.9: Implement Mitigation Measure 12.8

Significance after Mitigation: Less than Significant.

31.4 References

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CHAPTER 32
Aesthetics/Central Site Alternative

32.1 Introduction

This chapter discusses the existing visual character of the Central Site and analyzes the potential for the alternative to affect the existing visual characteristics and views of the Central Site. A site visit was conducted on May 19, 2010 to evaluate views from the Central Site and from the surrounding area. The information presented in this chapter is unique to the Central Site and the reader is referred to Chapter 13, Aesthetics, in cases where aesthetic setting information and/or impact analysis is the same for the Central Site as the project site.

32.2 Setting

Regional Characteristics

The Central Site is also located within the Petaluma and Environs Planning Area. The regional characteristics of this area are discussed in Chapter 13, Aesthetics. The Central Site is located in a rural and agrarian area, within the existing Central Disposal Site, just west of the City of Cotati.

Central Site Characteristics

The Central Site is located on and adjacent to the Central Disposal Site land. The site is adjacent to the existing composting facility, and no structures are present within the project footprint. The immediate vicinity includes rural residences, grazing lands, and open space. The Central Site is located in an area with rolling hills. Site elevation ranges from approximately 350 to 650 feet above mean sea level. The Central Site is not within an area designated as a community separator or scenic landscape unit. In the vicinity of the project, Valley Ford Road and Bodega Avenue are designated as scenic corridors by Sonoma County.

Viewpoints

Due to the nature of the terrain, the Central Site composting area would not be visible from the majority of the surrounding area. A definition of short-range and long-range is provided in Chapter 13, Aesthetics. Due to the location of the composting area on the Central Site, there are no short-range views of the site. Based on a review of aerial photography and May 2010 site visit, several viewpoints were chosen to characterize off-site views. These viewpoints are shown on **Figure 32-1**. The long-range affected views (over one-quarter mile from the site) include public roadways and private properties in the vicinity.

SOURCE: DeLorme Street Atlas USA, 2000; and ESA, 2010

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Figure 32-1
Viewpoint Map

The Central Site is also intermittently visible for motorists along Roblar Road, Pepper Road and Mecham Road. The site is not visible from Highway 101.

Long-Range Views

Long-range views of the Central Site include public roadways and private properties. Private properties include single-family rural residences and commercial agricultural operations such as dairy farming or grazing. **Figure 32-2a and 2b** provides photographs of several long-range views of the Central Site. The Central Site is visible from Pepper Road (Viewpoint 1) and portions of Roblar Road (Viewpoints 5 and 6), although views from Roblar Road (Viewpoint 4) are primarily obscured by eucalyptus trees on the hill north of the Central Site. Motorist views along these roadways are short due to the speed of travel, and intermittent due to topography. There is not a direct view of the site from Mecham Road (Viewpoints 2 and 3) due to a hill and trees between the road and the Central Site.

Visual Sensitivity

The Sonoma County's Permit and Resource Management Department provides Visual Assessment Guidelines which are discussed in Chapter 13, Aesthetics. The Central Site would be considered of moderate visual quality. The Central Site and the surrounding vicinity are rural and characterized by agricultural uses and open space on rolling hills. The Central Site is not located within a scenic corridor setback (defined as 30 percent of the depth of the lot to a maximum of 200 feet from the centerline of the roadway), and the site's zoning and land use designation do not identify it as a protected scenic resource. The rolling hills and agricultural use on the Central Site contribute to the rural character along the nearby scenic corridors. The site itself does not contain individual landscape or architectural features with significant aesthetics value.

Regulatory Environment

California Scenic Highway Program and Scenic Corridor Protection Program

The State's Scenic Highway Program is described in Chapter 13, Aesthetics. The nearest state designated scenic highway to the project area is State Route 116, located 2.25 miles northeast of the Central Site (California Scenic Highway Mapping System, 2007).

Viewpoint 1. View from Pepper Road, looking north

Viewpoint 5. View from Dunham Elementary School, looking south

Viewpoint 6. View from Roblar Road, looking southeast

SOURCE: ESA, 2010

Figure 32-2b
Viewpoint Photograph

Sonoma County General Plan 2020

The relevant objectives and policies of the Sonoma County General Plan 2020 for aesthetic issues are discussed in Chapter 13, Aesthetics. The Central Site is not located within a community separator area or scenic landscape unit. A scenic landscape unit is located approximately 1 mile northeast of the Central Site. Valley Ford Road and Bodega Avenue are designated as scenic corridors (Sonoma County, 2008).

32.3 Impacts and Mitigation Measures

Significance Criteria

The significance criteria are the same as those discussed in Chapter 13, Aesthetics.

Impact Discussion

Impact 32.1: The Central Site Alternative would alter the visual character of the Central Site. (Significant)

While SCWMA is not required to use County Visual Assessment Guidelines, they provide a useful method for analyzing visual impacts within Sonoma County. As discussed in the Visual Sensitivity setting information above, the Central Site is considered of moderate visual sensitivity. The visual dominance of the Central alternative is dependent on many elements or characteristics of the development (See Chapter 13, Aesthetics, **Table 13-2)**. Building structures would be single-story and neutral in color. Without screening, the visual dominance of the Central Site Alternative would be co-dominant or dominant. In terms of significance, under the County Visual Assessment Guidelines, a co-dominant project would not be considered significant in an area of moderate sensitivity, however, a dominant project would be considered significant in the same area (See Chapter 13, Aesthetics, **Table 13-3**). Due to the subjective nature of the assessment it is possible that the dominance of this alternative for off-site viewers is a **significant** impact. Implementation of **Mitigation Measure 32.1**, visual screening, would reduce impacts to sensitive viewers from the north and south.

Mitigation Measure

> **Mitigation Measure 32.1:** The alternative shall incorporate landscaping or other screening measures, such as the use of native trees and/or a vegetated berm, along the northwestern and southern boundaries of the Central Site composting area.

Significance after Mitigation: Less than significant.

Impact 32.2: The Central Site alternative could result in the production of new sources of light and/or glare. (Significant)

The Central Site Alternative does not contain components which are anticipated to create a substantial amount of glare such as metal or glass; however, Mitigation Measure 32.1 discussed above would aid in reducing day-time glare. Typical hours of operation for the alternative would be between 7:00 a.m. and 4:00 p.m., Monday through Sunday. The site could operate infrequently during the permitted evening hours, for activities such as temperature monitoring. Within the Central Site composting area, existing nighttime lighting is associated with farm structures, residences, and automobiles traveling along nearby roadways. This lighting is of low-intensity and dispersed. The Central Site Alternative would introduce new nighttime lighting sources for security and operational purposes. This impact is **significant**.

Mitigation Measure

> **Mitigation Measure 32.2:** Implement Mitigation Measure 13.2.
>
> **Significance after Mitigation:** Less than significant.

32.4 References

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CHAPTER 33
Other CEQA Considerations

33.1 Significant and Unavoidable Environmental Impacts

The proposed project, if implemented, could result in significant adverse environmental impacts. Mitigation measures proposed as part of the project, as well as measures identified by this EIR, would avoid or reduce most of the impacts to a less-than-significant level. The significant unavoidable adverse impacts at Sites 5A, 40 and the Central Site are listed in Section 2.2 of the Summary Chapter.

If the SCWMA approves the project despite the identified significant and unavoidable impacts, the SCWMA must find that specific economic, legal, social, technological, or other considerations make infeasible the mitigation measures or project alternatives identified in the EIR. In addition, the SCWMA must state the reasons for its action in writing. This “Statement of Overriding Considerations” must be included in the record of project approval.

33.2 Climate Change and Water Resources

Emissions of greenhouse gases (GHGs) associated with the proposed project (Site 5A) are discussed in **Section 5, Air Quality**, including the potential for the project to contribute to climate change. Compost facility development at Site 13 or Site 40 would result in similar GHG emissions as the project, as discussed in Chapter 4 and Chapter 15, respectively. Compost facility development at the Central Site would result in less GHG emissions than the project, as discussed in Chapter 24. The following additional discussion provides a review of potential changes associated with water resources and water resources availability, storage, and similar issues, as relevant to climate change in California. This section also provides a review of how the project would exacerbate or mitigate the anticipated effects of climate change on water resources.

Climate Change and Water Resources Background

Current scientific research indicates that observed climate change is most likely a result of increased emission of GHGs associated with human activity (IPCC, 2007a, 2007b). GHGs include all of the following naturally-occurring and anthropogenic (man-made) gases: carbon dioxide (CO_2), methane, nitrous oxide (N_2O), sulfur hexafluoride, perfluorocarbons, hydrofluorocarbons, and nitrogen trifluoride (NF_3) (California Health and Safety Code §38505(g)). These gases, once released to the atmosphere, trap heat near the earth’s surface, resulting in an overall increase in average global temperature.

Global climate change is anticipated to affect water resources in California via sea-level rise, more extreme weather patterns causing increases in the intensity of stormwater runoff and flooding events, and changes in the availability of water for beneficial use.

Sea-level Rise

According to an overview provided by the California Department of Water Resources (DWR), mean sea level at the Golden Gate Bridge has risen by at least 8 inches since 1900 (DWR, 2006). This is in general agreement with Intergovernmental Panel on Climate Change (IPCC) estimates, which indicate average increases of 3.9 to 7.9 inches globally during the last century. The observed sea-level rise likely results from a combination of factors, including melting of polar and terrestrial ice and snow, and thermal expansion of ocean water as the earth's temperature increased gradually over time (IPCC, 2007b).

The IPCC has attempted to predict the amount of sea-level rise that is likely to occur in the future under various worldwide GHG emissions scenarios over the next century. Results from that study indicate that global sea level could increase by an estimated 7 to 23 inches by 2099, or about 0.6 to 3.8 inches every 10 years (IPCC, 2007b). While several other assessments have been made and there is some disagreement and uncertainty about sea-level rise projections (Munk, 2002), the 2007 IPCC report contains what is probably the most highly regarded of projections published to date.

Precipitation and Flooding

Most precipitation in northern California, including the project area, occurs during the October through April rainy season, with the largest amount of water falling between November and March. A recent analysis by the United States National Weather Service (USNWS), using data from 1931 through 2005, indicates a long-term trend of increasing annual precipitation in California, especially in northern California, where data show an increase of up to 1.5 inches per decade (USNWS, 2008). A second investigation completed by DWR indicates a statistically significant trend towards increased total precipitation in northern and central California since the late 1960s (DWR, 2006). An investigation of rainfall during November through March of 1930 through 1997 indicates significant increases in California rainfall (distinct from snowfall) (Mote, 2005). A single investigation by Bardini et al. (2001) indicates potentially decreasing annual precipitation in California. However, this result is likely an artifact of the specific subset of data that the Bardini study relied upon, with extremes at the beginning or end of the time series data substantially affected the identified trend (DWR, 2006).

There is also evidence that the amount of precipitation that occurs on an annual basis is becoming more variable. That is, periods of both high and low rainfall are becoming more common. Specifically, a study performed by DWR (2006) indicates that present-day variability in annual precipitation is about 75 percent greater than that of the early 20th century.

In terms of flooding, an analysis by DWR reviewed historic flows in three California rivers that are tributary to the Delta: the Feather, American, and Tuolumne Rivers (DWR, 2006). The investigation divided in half a century-long dataset to compare pre-1955 to post-1955 data. Results indicated that the 100-year 3-day peak flows have more than doubled in the American (111 percent increase) and Tuolumne (102 percent increase) Rivers, and increased by 51 percent in the Feather River. Comparing the pre- to post-1955 periods, only one major flood event occurred prior to 1955 in the three rivers, while four occurred during the post-1955 period. Thus, annual peak 3-day mean discharges in these northern California watersheds are becoming larger and more variable. Independent climate modeling efforts predict that these trends toward more variable river and stream flows, including more frequent flooding events, will continue as a result of climate change (Dettinger et al., 2004).

Project Effects

Proposed Project Site 5A and Sea Level Rise

As discussed in greater detail in Chapter 8, Hydrology and Water Quality, the proposed project site 5A is located within Petaluma River hydrologic subarea (CRA, 2009), just east of the mouth of the Petaluma river, as it drains into San Pablo Bay. The Petaluma River is strongly tidally influenced in this area, with a hydrology that is substantially defined by the diurnal tidal flows associated with San Pablo Bay. Assuming that sea level rise in San Pablo Bay will continue in accordance with projections made by the IPCC, or at a rate of up to 3.8 inches every decade, mean water levels in the Petaluma River could rise by up to a foot in approximately 30 years. As a result, it is anticipated that flooding potential within affected portions of the project area could increase. Additionally, strain on existing levee systems would be anticipated to increase, as would the potential for levee overtopping during storm events occurring during high tide events.

Implementation of the project would include installation of levees around the project site that would ensure the site is protected from tsunami and seiche (see Impact 8.7) and would also protect the project from effects of sea level rise.

Proposed Project and Climate-Induced Precipitation and Flooding

Confounding the issue flooding associated with sea level rise are the potential effects of increasing the proportion of winter precipitation that would fall as rain. As discussed above, under the anticipated climate change scenarios, a higher proportion of winter precipitation would fall as rain, which would result in greater peak storm flows, greater peak flood flows, and added annual probability of flooding. Additionally, greater variation in the intensity of storm events, including projected increases in the frequency of intense precipitation events, would result in additional peak stormwater flows being conveyed through existing stormwater facilities. This situation, in turn, is anticipated to further increase flood potential, by increasing the amount of stormwater discharged to watersheds in the project area.

As discussed in greater detail in Section 8, Hydrology and Water Quality and as shown on **Figure 8-3**, the entire project site 5A is located within the FEMA-defined 100-year floodplain. Levees installed around the Site 5A perimeter would protect the project site from on-site flooding due to increased frequency of intense precipitation events. However, installation of the levees would eliminate floodplain storage capacity at the project site and result in the backing up of floodwaters onto adjacent properties. This situation could result in increased flood depths along adjacent properties, and could also result in additional land areas becoming subject to 100-year flooding, which are not currently subject to 100-year flooding, as a result of project implementation. No feasible mitigation is available to reduce such increases in flood extent and depth.

33.3 Cumulative Impacts

CEQA defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative analysis is intended to describe the "incremental impact of the project when added to other, closely related past, present, or reasonably foreseeable probable future projects" and can result from "individually minor but collectively significant projects taking place over a period of time" (*Guidelines* Sec. 15355).

The cumulative impact analyses in this EIR are based on a cumulative growth scenario that incorporates reasonably foreseeable future development within Sonoma County under the General Plan. Cumulative project area growth in traffic volumes for the Near-Term Cumulative (Year 2011) and Long-Term Cumulative (Year 2030) were developed using the Sonoma County Transportation Authority (SCTA) Transportation Demand Model (2005-2035).

Each issue area analysis presented in Chapters 5 through 13, and 15 through 32 considers possible cumulative impacts related to the discussion, as applicable, and identifies circumstances in which the project would contribute to significant cumulative impacts. .

33.4 Growth Inducing Impacts

The proposed project would not result in a substantial increase in employment, and correspondingly, would not result in an increase in population and associated demand for housing in the area. Traffic mitigation for Site 5A identified in Chapter 12 would improve intersection level of service and decrease potential conflicts between project trucks and bicyclists/pedestrians and other vehicles. The purpose of these transportation improvements is to respond to the project's contribution to near-term and/or and long-term cumulative deficiencies at these locations, and not to provide excess capacity for the purpose of accommodating future growth anticipated in the region. For these reasons, the project is not anticipated to result in substantial growth inducement.

33.5 Effects Found Not to Be Significant

The environmental effects of the proposed project (Site 5A) are identified and discussed in detail in Chapter 5 through Chapter 13, and are summarized in **Table 2-1**. Significant unavoidable effects are identified in Section 2.2 of this EIR, all other identified significant environmental effects of the project would be less than significant with mitigation.

As required by CEQA, this EIR focuses on expected significant or potentially significant environmental effects (CEQA Guidelines 15143). A Notice of Preparation (NOP) was prepared for the project which identified the issues to be evaluated in the EIR (Appendix NOP). Comments received on the NOP helped to further refine the list of environmental issues to be evaluated in this EIR. The following is a brief discussion of the effects which were determined to not be significant at the proposed project site (Site 5A).

- Geology and Soils
- Hazards and Hazardous Materials
- Mineral Resources
- Population and Housing
- Recreation

Geology and Soils

Sonoma County is a seismically active region. The project site is not located within an Alquist-Priolo Fault Zone (Sonoma County, Figure PS-1h, 2008). The nearest fault is Rogers Creek Fault approximately 5 miles east of the project site (Sonoma County, 2001a). The project site is in an area with gentle slope and low elevation meaning there is little to no chance of landslides (Sonoma County, 2001b). In regards to liquefaction, the project will need to comply with California Standard Building Codes, as well as any local County ordinances related to building construction.

Hazards and Hazardous Materials

The only hazardous materials associated with composting operations would be required for the maintenance of the processing equipment, such as diesel fuel, lubricants, and antifreeze. These materials would be controlled by following Best Management Practices (BMPs). In addition, the Phase 1 report for the project site showed no areas of hazardous material concern within 2 miles of the project site (Environmental Data Resources, 2009). Fire hazards are discussed in Chapter 11, Public Services and Utilities, and would be less than significant without mitigation. Airport compatibility is discussed in Chapter 9, Land Use Planning and Agriculture, and would be less than significant with implementation of Mitigation Measure 9.5 regarding bird control at the project site.

Mineral Resources

Sonoma County includes a Mining Resource (MR) combining district for the conservation and protection of land that is necessary for future mineral resource production. The project site is not located in an area with a zoning designation for mineral resources.

Population and Housing

The project would not create population growth as it would simply relocate existing operations. Any road or infrastructure improvements are designed to provide capacity for the project and are not designed with excess capacity. The project would not displace existing housing.

Recreation

The establishment of composting operations at the project site would not increase demands on recreational facilities nor does the project include the construction of recreational facilities.

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CHAPTER 34
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Sonoma County Permit and Resource Management Department, Senior Environmental Specialist	Chris Seppeler
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CHAPTER 35
Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ABAG	Association of Bay Area Governments
ACOE	Army Corps of Engineers
ADC	Alternative Daily Cover
ARDP	Archaeological Data Recovery Program
ADT	average daily traffic
AF	acre feet
AF/yr	acre feet per year
ARDTP	Archaeological Research Design and Treatment Plan
ASP	aerated static pile
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
BMP	Best Management Practices
BR	Biotic Resource
CA-MUTCD	*California Manual on Uniform Traffic Control Devices*
CALTRANS	California Department of Transportation
CalRecycle	California Department of Resources, Recycling and Reuse (formerly CIWMB)
CAP	Clean Air Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCOF	California Certified Organic Farms
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act

CFR	Code of Federal Regulations
CH_4	methane
CIWMA	California Integrated Waste Management Act
CIWMB	California Integrated Waste Management Board (now CalRecycle)
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CoIWMP	Countywide Integrated Waste Management Plan
CO_2	carbon dioxide
CO_2e	CO_2 equivalents
CRA	California Resources Agency
CRLF	California Red-legged Frog
CWA	Clean Water Act
CWHR	California Wildlife Habitats Relationships
dB	decibel
dBA	A-weighted decibels
DOC	California Department of Conservation
DPM	diesel particulate matter
DPR	California Department of Parks and Recreation
Draft EIR	Draft Environmental Impact Report
DWR	Department of Water Resources
ECWRF	Ellis Creek Water Recycling Facility
EIR	Environmental Impact Report
ESA	*Environmental Science Associates*
ESU	Evolutionary Significant Unit
FAA	Federal Aviation Authority
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIGR	Federated Indians of the Graton Rancheria
FMMP	Farmland Mapping and Monitoring Program
FPD	Fire Protection District
FTA	Federal Transit Administration
gpd	gallons per day

gpm	gallons per minute
GHG	greenhouse gas
HAP	hazardous air pollutant
HCM	Highway Capacity Manual
HI	hazard index
HQ	hazard quotient
HRA	Health Risk Assessment
Hz	Hertz
LEA	Land Extensive Agriculture
LOS	Level of Service
MACT	Maximum Achievable Control Technology
MEI	Maximally Exposed Individual
MOM	Mixed Organic Material
mph	miles per hour
MR	Mining Resource
msl	mean sea level
MTC	Metropolitan Transportation Commission
NAHC	Native American Heritage Commission
NESHAP	National Emissions Standard for Hazardous Air Pollutants
N_2O	nitrous oxide
NOI	Notice of Intent
NOP	Notice of Preparation
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazards Assessment
OHP	California Office of Historic Preservation
OMRI	Organic Materials Review Institute
OPR	Office of Planning and Research
OSRC	Open Space and Resource Conservation

PCE	passenger car equivalent
PF	Public Facilities
PG&E	Pacific Gas and Electric Company
PPV	peak particle velocity
PQP	Public and Quasi Public
PRC	California Public Resources Code
PRMD	Permit and Resource Management Department
RCSI	Report of Composting Site Information
REL	reference exposure level
RMS	root mean square
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SCC	Sonoma Compost Company
SCTA	Sonoma County Transportation Authority
SCWMA	Sonoma County Waste Management Agency
SFRWQCB	San Francisco Bay Regional Water Quality Control Board
SIP	State Implementation Plan
SSSC	side-street stop-controlled
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
T-BACT	Best Available Control Technology for Toxics
TI	traffic index
TMDL	total maximum daily load
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VMT	vehicle miles traveled
VOC	volatile organic compound
VOH	valley oak habitat